Fall 10-22-2020

A Quantitative Study of Collaborative Theories of Action, Teacher Collective Efficacy, and the Behaviors of Student Self-Directedness

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by

Melissa Ann Huff

October 22, 2020

A Dissertation submitted to the Education Faculty of Lindenwood University in partial fulfillment of the requirements for the degree of

Doctor of Education

School of Education

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This Dissertation has been approved as partial fulfillment

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Doctor of Education

Lindenwood University, School of Education

Dr. Sherry DeVore, Dissertation Chair — Date 10/22/2020

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Dr. Anthony Rossetti, Committee Member — Date 10.22.20

Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work at Lindenwood University and that I have not submitted it for any other college or university course or degree.

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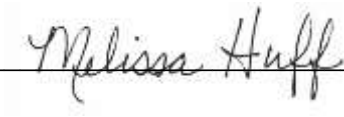
Signature:  Date: 10-22-20

Acknowledgements

Throughout the dissertation process, I have been supported by committee members, professors, research participants, and family members. First, Dr. DeVore devoted considerable time to editing my work and provided feedback to help improve my writing. In addition to numerous readings and revisions of my dissertation draft, Dr. Moeller provided hours of conversation and inspiration around one of our favorite topics, collaboration. Dr. Rossetti provided thoughtful feedback and encouraged me to think about the purpose of my study. I would also like to thank Dr. Kevin Cooper for facilitating meaningful conversations during our class meetings and for supporting our Webb City cohort. Additionally, I would like to thank Dr. Kathy Grover for helping to make the IRB process stress-free.

I would also like to thank professional educators, superintendents, principals, and teachers for reviewing my survey instrument, providing permission, forwarding emails, and answering survey questions to help address the research questions. Without your help, this study would not have been possible. Special thanks to Ms. Karen Brownfield and Dr. Terri Doman for always providing support and encouragement.

I would like to thank my family for supporting and encouraging me every step of the way. You never failed to remind me I could do this. Thank you for inspiring me through numerous dinner conversations about education, your love of "the family business," and through your example of lifelong dedication to better the future of our beloved students. Finally, I would especially like to thank my niece, Trachelle, for her willingness to give up Friday night football games to hold me accountable during study sessions.

Abstract

This quantitative study was conducted to investigate the relationships among teacher collective efficacy, espoused theories of collaboration, collaborative theories in use, the gap between these theories, and student self-directedness. Costa and Kallick (2014) and Tough (2016) suggested student success is more than just academic. Frey, Hattie, and Fisher (2018) indicated student success is achieved when students develop a self-directed disposition. Based on the historical work of Argyris, Putnam, and Smith (1987), establishing the difference between espoused theories and theories in use, espoused theories of collaboration, collaborative theories in use, and the gap between these theories of action were investigated. The sample for this study included randomly selected first- through fourth-grade teachers in buildings whose districts were members of the Southwest Center for Educational Excellence. A survey was developed by the researcher, and data were collected from the sample using Qualtrics. A statistically significant relationship was found between the theories of action gap and student self-directedness, indicating a need to develop self-awareness about who teachers are as collaborators.

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Chapter One: Introduction

Hattie and Zierer (2018) used ants and bees as a metaphor to represent working together, a picture of communication and collaboration. Ants and bees working together to form a colony provide "classic examples of how much benefit the individual can derive from the community and of how the whole can be greater than the sum of its parts" (Hattie & Zierer, 2018, p. 26). Communities thrive as individuals work together and collaborate (Donohoo & Velasco, 2016; DuFour, 2015; Fullan & Quinn, 2016a; Garmston & Wellman, 2016).

Additionally, according to Hattie and Zierer (2018), teachers with high collective efficacy believe they can overcome barriers to help students succeed and subsequently help students achieve more than a year's growth within the time span of a year. Though researchers have stipulated teacher collective efficacy is linked to student success (DeWitt, 2019; DeWitt, Hattie, & Quaglia, 2017; Eells, 2011; Gray, Kruse, & Tarter, 2017; Hattie & Zierer, 2018; Tschannen-Moran & Barr, 2004), and collaboration is valued among efficacious teachers (Donohoo, Hattie, & Eells, 2018; Garmston & Wellman, 2016; Hattie & Zierer, 2018), there is little research concerning the relationship between collective teacher efficacy and teacher collaboration.

While Hattie indicated academic progress was the most common measure associated with student success, Guskey (2015), from another perspective, emphasized the importance of additional measures of student success. Guskey (2015) suggested students no longer need to be prepared for industrial jobs, which are obsolete, but "we must educate students for a continuously evolving information society that demands flexibility, creativity, and initiative" (p. 4). Guskey (2015) further identified a need to

prepare students to develop self-directed skills which will allow them to redirect and improve their individual performance. Tough (2016), regarding the future success of students, emphasized the value of qualities that go beyond cognitive skills, such as "perseverance, conscientiousness, self-control, and optimism" (p. 4).

Background of the Study

Bandura (1993) specified, "A major goal of formal education should be to equip students with the intellectual tools, self-beliefs, and self-regulatory capabilities to educate themselves throughout their lifetime" (p. 136). However, students do not naturally use self-regulating strategies (Bandura, 1993). Bandura (1993) further documented, "It is commonly acknowledged that self-directed learning requires motivation as well as cognitive and metacognitive strategies" (p. 136). Students should learn how to "approach difficult tasks as challenges to be mastered rather than as threats to be avoided" (Bandura, 1993, p. 144).

In addition to his research concerning self-directedness, Bandura (1993) also explained efficacious teachers are determined to teach all students, and they believe no matter the background of students, the highest levels of achievement can be obtained. Hattie and Zierer (2018) defined efficacious teachers as those who are confident in their ability to overcome factors that inhibit a year's growth. Hattie and Zierer (2018) further specified the need to be mindful of evidence indicating the desired impact.

Researchers have also stipulated efficacious teachers value collaboration with others (Donohoo et al., 2018; Garmston & Wellman, 2016; Hattie & Zierer, 2018). DuFour (2004) declared professional collaboration assumes "the core mission of formal education is not simply to ensure that students are taught but to ensure that they learn.

This simple shift—from a focus on teaching to a focus on learning—has profound implications for schools" (p. 8). DuFour (2004) suggested collaborative teams must ask themselves the following question: "What indicators could we monitor to assess our progress?" (p. 8). DuFour (2004) further stated when teams begin to collaborate, "teachers become aware of the incongruity between their commitment to ensure learning for all students and their lack of a coordinated strategy to respond when some students do not learn" (p. 8).

Collective efficacy is linked to higher student achievement (DeWitt et al., 2017; Eells, 2011; Hattie & Zierer, 2018). Efficacious teams believe their group as a whole can overcome obstacles and produce results (Donohoo et al., 2018). Tschannen-Moran and Barr (2004) stated, "Collective teacher efficacy refers to the collective self-perception that teachers in a given school make an educational difference to their students over and above the educational impact of their homes and communities" (p. 190).

According to Donohoo (2017), collective efficacy has a positive impact on student learning. School leaders seeking school improvement should focus on collective teacher efficacy due to the influences it has on the success of students (Eells, 2011). Hattie and Zierer (2018) determined, "Successful teachers behave the way they do on account of their mindframes. It is more about how they think about what they do that matters most" (p. xv). Efficacious teachers foster autonomy and self-directedness (Donohoo, 2017).

Most recently, researchers have stated the need to help students develop self-directedness (DeWitt et al., 2017; Fisher, Frey, & Hattie, 2016; Fisher, Frey, & Hite, 2016; Frey, Hattie, & Fisher, 2018; Hoerr, 2017; Kallick & Zmuda, 2017a, 2017b;

Rickabaugh, 2016; Smith, Frey, Pumpian, & Fisher, 2017; Wiggins & McTighe, 2017). As Kallick and Zmuda (2017b) concluded based on their work regarding students who are at the center of their learning: “Classroom instruction rarely focuses on the importance of the skills students need to function with independence” (p. 81). In addition, Kallick and Zmuda (2017b) asserted, “Teachers must create the conditions of gradual release from a tightly scheduled organization toward a self-directed organization” (p. 82).

Educators must design ways to help students develop self-directed dispositions (Frey, Hattie et al., 2018). Costa and Kallick (2014) added students need to develop self-directedness to become productive citizens. Tough (2016) agreed student success is more than academics. The development of self-directed learners is “critical for school success” (Frey, Hattie et al., 2018, p. 2).

In addition to asking what indicators should be monitored, Donohoo (2017) indicated student achievement is related to the behaviors of teachers and is connected with teacher efficacy. Ryan and Deci (2017) proclaimed the importance of an individual’s awareness and attention to oneself and stated, “When people become more aware, they become more likely to experience insight” (p. 267). Moreover, Smith (2013) suggested actions of individuals are guided by their mindframes.

While Ryan and Deci (2017) detailed the importance of an awareness of oneself, Argyris, Putnam, and Smith (1987) stipulated the significance of two theories that guide one’s actions, those which one espouses and those which one uses. Argyris et al. (1987) explained, “Action is designed; and, as agents, they are responsible for the design.

Espoused theory and theory-in-use may be consistent or inconsistent, and the agent may or may not be aware of any inconsistency" (p. 82).

Conceptual Framework

The conceptual framework of this study was based on the connections among student success, teacher collective efficacy, collaborative culture, trust, and alignment of collaborative beliefs and behaviors. Considering the theory of action for the development of collective teacher efficacy, Donohoo and Velasco (2016) indicated success is increased within collaborative teams who clearly think about and reflect on a theory of action. Donohoo (2017) further explained, "The theory is fostering collective teacher efficacy to realize increased student achievement, and it involves creating opportunities for meaningful collaboration, empowering teachers, establishing goals and high expectations, and helping educators interpret results and provide feedback" (p. 35).

Student learning is the primary goal of education (DuFour, 2004). For students to become productive citizens, they not only need to learn academics but also develop self-directness (Tough, 2016). Teacher efficacy and teacher behaviors impact student success (Donohoo, 2017). Following meta-analytic research of over 70,000 studies, Frey, Hattie et al. (2018) specified an effect size of 1.57 for teacher collective efficacy (p. 3). Frey, Hattie et al. (2018) defined 0.4 as the hinge point for representing a year's growth (p. 3).

Frey, Hattie et al. (2018) stated a meta-analysis identifies patterns from multiple studies and provides statistical data to inform decisions about the magnitude of a given effect. Fullan and Quinn (2016b) declared, "The leader who helps develop focused collective capacity will make the greatest contribution to student learning" (p. 57).

Furthermore, the quality of teacher development in collaborative groups will likely produce learning gains in students (Venables, 2018).

Sharratt, Planche, Knight, Hattie, and Fullan (2016) stated, "One of the most impactful actions system leaders can pursue is engaging in Collaborative Learning and co-laboring to strive for greater systemic coherence in instruction, assessment, and the ownership of student achievement and educator growth" (p. 66). Donohoo and Velasco (2016) explained, "Collaborative inquiry holds the potential to transform learning, leading, and teaching" (p. 2). In like manner, Garmston and Wellman (2016) indicated, "Collaborative inquiry is at the Heart of improving student achievement" (p. 37). According to Donohoo and Velasco (2016), "The transformative potential of collaborative inquiry is also reflected in the relationship between collaboration, inquiry, and efficacy" (p. 3). Furthermore, Donohoo and Velasco (2016) concluded, "Without the establishment and maintenance of trust as part of the shift in culture, teacher teams may resist engaging in the depth of discussion needed to critically assess the impact of their actions" (p. 85).

Danner and Coopersmith (2015) defined trust as the influence which creates efficacy in an agency. High levels of trust are followed by collective efficacy (DeWitt et al., 2017). Tschannen-Moran and Tschannen-Moran (2018) specified, "Trust is a matter of feeling at ease in a situation of interdependence in which important outcomes depend upon the contribution of others" (p. 27). Based on research on collaborative leadership, DeWitt et al. (2017) posed, "Trust underpins the collaborative behavior necessary for cultivating high performance" (p. xiii).

Rock (2008), when describing his SCARF model of psychological safety, signified, “The greater that people trust one another, the stronger the collaboration and the more information that is shared” (p. 6). The SCARF model was developed through neuroscience research and investigation of how the human brain reacts in social situations (Rock, 2008). Rock (2008) explained, “The SCARF model involves five domains of human social experience: Status, Certainty, Autonomy, Relatedness, and Fairness” (p. 1). In addition, Zakrzewski (2015) stated:

> Trust in schools comes down to one thing: psychological safety. By this I mean safety to speak one’s mind, to discuss with openness and honesty what is and isn’t working, to make collective decisions, to take risks, to fail—all things researchers tell us are required for deep organizational change and transformation. (para. 3)

Trust and collaboration are required to retain teachers in schools (Zakrzewski, 2015).

Researchers of leadership theories of action associated with collective efficacy suggested the importance of collaboration (Donohoo, 2017). Fullan and Quinn (2016b) stated, “Collaborative work is a key driver in shifting behavior” (p. 73). Dilts and Epstein (2017) indicated things valued or believed are just as important as behaviors. Donohoo (2017) explained leadership theory of action “involves creating opportunities for meaningful collaboration, empowering teachers, establishing goals and high expectations, and helping educators interpret results and provide feedback” (p. 35). Furthermore, Dilts and Epstein (2017) referred to the levels of influence model and suggested, “Capabilities connect our beliefs and values to our behaviors” (p. 4). Argyris et al.’s (1987) research on theories of action and their relationship to collaborative cultures was utilized for this study.

Statement of the Problem

A plethora of research has led authors to suggest there is more to student success than academics (Anderson, 2016; Frey, Hattie et al., 2018; Kallick & Zmuda, 2017b; Tough, 2016). Smith (1983) contributed, "People hold theories of action about how to produce the consequences they intend. The effectiveness of people's theory of action is the degree to which they are able to produce their intended consequences" (p. 50). Donohoo and Velasco (2016) stated, "Mindframes relate to how we think, and the specific mindframes that teachers have about their role is critical" (p. 10). Teachers must visualize and identify themselves as agents of change (DeWitt et al., 2017). Without an awareness of collaborative theories of action, educators may not exhibit the behaviors necessary to help students become self-directed learners (Donohoo & Katz, 2020).

Donohoo and Velasco (2016) declared, "Learning is solidified as team members identify, articulate, and reflect on the incongruence between espoused theories of action and theories-in-use. Teachers lead and learn *with* and *from* each other" (p. 10). According to Smith (1983), "It is essential for faculty development specialists to become aware of our own theory of action, our theory-in-use as it influences our actions" (p. 58).

Purpose of the Study

Included in relevant literature are research findings that link collaboration with teacher collective efficacy and teacher collective efficacy with student success. The relationships among these three variables were examined in this current study because many researchers suggested the success of students is more than just academic (Tough, 2016). Students succeed when they develop self-directed dispositions (Frey, Hattie et al., 2018). Additionally, based on the work of Argyris et al. (1987) and the difference

between espoused theories and theories in use, collaboration was investigated in terms of espoused theories of collaboration, collaborative theories in use, and the gap between these theories of action.

Research questions and hypotheses. The following research questions and hypotheses guided this study:

1. What is the relationship between teacher collective efficacy and teacher-espoused theories of collaboration?

$H1_0$: There is no statistically significant relationship between teacher collective efficacy and teacher-espoused theories of collaboration.

$H1_a$: There is a statistically significant relationship between teacher collective efficacy and teacher-espoused theories of collaboration.

2. What is the relationship between teacher collective efficacy and teacher self-reported demonstration of collaborative theories in use?

$H2_0$: There is no statistically significant relationship between teacher collective efficacy and teacher self-reported demonstration of collaborative theories in use.

$H2_a$: There is a statistically significant relationship between teacher collective efficacy and teacher self-reported demonstration of collaborative theories in use.

3. What is the relationship between teacher collective efficacy and the gap between the theories of action?

$H3_0$: There is no statistically significant relationship between teacher collective efficacy and the gap between the theories of action.

$H3_a$: There is a statistically significant relationship between teacher collective efficacy and the gap between the theories of action.

4. What is the relationship between teacher collective efficacy and the level of elementary student self-directedness?

$H4_0$: There is no statistically significant relationship between teacher collective efficacy and the level of elementary student self-directedness.

$H4_a$: There is a statistically significant relationship between teacher collective efficacy and the level of elementary student self-directedness.

5. What is the relationship between teacher-espoused theories of collaboration and the level of elementary student self-directedness?

$H5_0$: There is no statistically significant relationship between teacher-espoused theories of collaboration and the level of elementary student self-directedness.

$H5_a$: There is a statistically significant relationship between teacher-espoused theories of collaboration and the level of elementary student self-directedness.

6. What is the relationship between teacher self-reported demonstration of collaborative theories in use and the level of elementary student self-directedness?

$H6_0$: There is no statistically significant relationship between teacher self-reported demonstration of collaborative theories in use and the level of elementary student self-directedness.

$H6_a$: There is a statistically significant relationship between teacher self-reported demonstration of collaborative theories in use and the level of elementary student self-directedness.

7. What is the relationship between the gap between the theories of action and the level of elementary student self-directedness?

$H7_0$: There is no statistically significant relationship between the gap between theories of action and the level of elementary student self-directness.

$H7_a$: There is a statistically significant relationship between the gap between theories of action and the level of elementary student self-directness.

Significance of the Study

The development of desired teacher skills and mindframes regarding collaboration characteristics needed in PreK-12 systems and teacher preparation programs was examined in this current study. A study surrounding this topic is warranted, as determined by Bialka (2016), who stated there is a growing trend to identify the strategies or evidence providing the biggest impact on teaching. Hattie and Zierer (2018) suggested teachers' mindframes lead to behaviors. Furthermore, Meidl and Baumann (2015) indicated, "Dispositions are of importance because many students in teacher education programs are encouraged to think of themselves as pre-professionals and behave as such" (p. 90).

Meidl and Baumann (2015) studied the mindframes of pre-service teachers and the importance of developing these mindframes. For PreK-12 systems, research findings may also inform the teacher selection process, development of individual professional growth plans, and systemic professional development opportunities. Hargreaves and O'Connor (2018) explained:

> We need to know more about the different ways that educators can and do collaborate, about how effective these various approaches are, and about how appropriate they are for the cultures that are adopting them and the purposes for which they are being employed. We need to know these things so that the

> teaching profession can become both more collaborative and more professional in order to have the best possible impact on all students and the future society. (p. 12)

For teacher education programs, the results of this study may be used to develop individual and collaborative goals for the development of pre-service teachers.

Definition of Key Terms

For the purpose of this study, the following key terms are defined:

Collaborative theories in use. Donohoo and Velasco (2016) explained, "Teams begin to map out a theory of action in order to identify assumptions and strengthen and share their theorizing" (p. 6). Collaborative theories in use are defined as the exhibited collaborative behaviors of an individual, which strengthen and refine skills (Donohoo & Velasco, 2016). Furthermore, Argyris et al. (1987) stated, "There are two kinds of theories of action. Espoused theories are those an individual claims to follow. Theories-in-use are those that can be inferred from action" (pp. 81-82).

Collective teacher efficacy. Collective teacher efficacy is the confidence a group holds in the belief of their capabilities to overcome obstacles and to collectively, as well as individually, make a difference and help students learn (DeWitt et al., 2017; Donohoo, 2017; Garmston & Wellman, 2016; Goddard, Hoy, & Hoy, 2004; Hargreaves & O'Connor, 2018; Hattie & Zierer, 2018; Tschannen-Moran & Barr, 2004).

Mindframe. A mindframe is what teachers think about what they do (Hattie & Zierer, 2018). Ericsson and Pool (2016) defined mindframe as a "mental structure that corresponds to an object, an idea, a collection of information, or anything else, concrete or abstract, that the brain is thinking about" (p. 58). Mindframes are also referred to as

dispositions, mental maps, mental representations, mindfulness, or mindsets (Claxton, Costa, & Kallick, 2016; Ericsson & Pool, 2016, Garmston & Wellman, 2016; Klaus, 2017; Ryan & Deci, 2017; Smith et al., 2017; Spencer & Juliani, 2017; Zhao, 2016).

Self-directed. Self-directed was defined by Berger, Woodfin, and Vilen (2016) as independently searching for knowledge and refining skills. Researchers have determined self-directedness is cognitive engagement which involves productive struggle to figure out what one does not understand and the steps needed to advance learning (DeWitt et al., 2017: Fisher, Frey, & Hattie, 2016, 2017; Fisher, Frey, & Hite, 2016; Frey, Hattie et al., 2018; Guskey, 2015; Hattie & Zierer, 2018; Sharratt et al., 2016). Self-directedness is also referred to as assessment capability, self-assessment, self-initiated behaviors, self-evaluation, self-feedback, self-guided, self-management, self-regulation, and visible learner (Frey, Fisher, & Hattie, 2018; Frey, Hattie et al., 2018; Guskey, 2015; Ostroff, 2016; Pink, 2019; Ryan & Deci, 2017; Sharratt et al., 2016; Smith et al., 2017; Wiggins & McTighe, 2017).

Delimitations, Limitations, and Assumptions

The scope of the study was bound by the following delimitations:

Timeframe. The research timeframe was during the fall 2019 semester.

Location of the study. The study took place in randomly selected elementary schools whose districts were members of the Southwest Center for Educational Excellence. The Southwest Center for Educational Excellence (2018) is an education agency founded in 1996 which provides professional development and networking opportunities to member school districts and universities.

Sample. Elementary buildings were randomly selected using a clustering procedure until the number of first- through fourth-grade teachers exceeded 149 plus the number of teachers in the largest building within the population. Bluman (2018) stated, "According to the central limit theorem, approximately 95% of the sample means fall within 1.96 standard deviations of the population mean if the sample size is 30 or more" (p. 374). Therefore, a minimum return rate of 30 was required for this study.

Criteria. The participants included first- through fourth-grade teachers selected for the sample.

The following limitations were identified in this study:

Sample demographics. The sample was limited to first- through fourth-grade teachers in randomly selected buildings who were members of the Southwest Center for Educational Excellence.

Instrument. Specific sections of the survey were developed by the researcher and are considered a limitation of this study.

Bias. Teachers within buildings may have had a bias concerning collaboration, which may not have been clarified in the definitions or instructions.

The following assumptions were accepted in this study:

1. The professional responses were given honestly and voluntarily by the participants.

2. The professional responses of the participants were representative of first- through fourth-grade teachers who were members of the Southwest Center for Educational Excellence.

Summary

In Chapter One, the background of the study and conceptual framework were described. Chapter One also included a description of the statement of the problem; the purpose of the study; research questions and hypotheses; the significance of the study; the definition of terms; and the delimitations, limitations, and assumptions of the study.

Chapter Two is a review of the literature related to student success, teacher collective efficacy, collaborative culture, trust, and alignment of collaborative beliefs and behaviors. The literature review includes a description of collaborative theories of action, including espoused theories and theories in use. Historical literature, as well as previous studies related to these topics, are summarized in Chapter Two.

Chapter Two: Review of Literature

Although more information is needed concerning developing factors of collective efficacy and the leadership theories of action which contribute to efficacy, Donohoo and Velasco (2016) further explained effective leaders facilitate meaningful collaboration and develop teacher empowerment. When teachers have conversations and share ideas or theories, gaps are identified, new practices are developed, and skills are refined (Donohoo & Velasco, 2016). Donohoo (2017) indicated research on leadership theories of action associated with collective efficacy is important for meaningful collaboration.

As Kallick and Zmuda (2017b) concluded, much of classroom instruction does not focus on helping students become independent. Rimm-Kau (2020) argued what matters most is for educators to understand "how students learn—how their full engagement with teachers, peers, and classroom materials contributes to a gradual process of growth, development, and learning" (p. 30). Educators must design ways to help students develop self-directed dispositions (Frey, Fisher et al., 2018; Frey, Hattie et al., 2018). Costa and Kallick (2014) expressed their belief that to help students become productive citizens, educators must support student self-directedness. Kittle and Gallagher (2020) added to help students prepare for their future, educators transfer decision making to the students and allow them to do the thinking. In addition, Frey, Hattie et al. (2018) divulged the development of self-directed learners is "critical for school success" (p. 2).

Conceptual Framework

The conceptual framework used to guide this study was selected as appropriate for the exploration of collective efficacy and its relationship with espoused theories of

collaboration, collaborative theories in use, and self-directed learners. Hattie and Zierer (2018) indicated, “Teachers’ collective efficacy refers to the enhanced confidence to overcome any barriers and limitations and have the collective belief that all students in this school can gain more than a year’s growth for a year’s input” (p. 26). Their work was expanded from an earlier meta-analysis by Eells (2011), who identified a strong positive relationship between teacher collective efficacy and achievement in students across academic areas. While Frey, Hattie et al. (2018) defined student success as the acquisition of knowledge, Guskey (2015) communicated a need to prepare students to develop self-directed skills, which allow them to redirect and improve their performance.

Tough (2016) further explained self-directed skills “are an important element of educational success, especially among low-income students” (p. 5). Other researchers have disclosed the need for developing self-directedness (Guskey, 2015; Tough, 2016). Self-directed relationships based upon a dispositional measure of student success instead of an academic measure were investigated in this study.

Teacher collective efficacy is strongly related to increased student achievement (DeWitt et al., 2017; Eells, 2011; Hattie & Zierer, 2018). Donohoo et al. (2018) stipulated, “When a team of individuals share the belief that through their unified effort they can overcome challenges and produce intended results, groups are more effective” (p. 41). As specified by Garmston and Wellman (2016) in the 1990 McLaughlin RAND Change Agent Study, teacher collective efficacy is connected to achieving success in schools.

Similarly, Hattie signified teacher collective efficacy has an effect size of 1.57, which is almost four times a normal year’s impact on student learning (DeWitt et al.,

2017, p. 60; Donohoo, 2017, p. 6; Donohoo et al., 2018, p. 43). Eells (2011) concluded collective teacher efficacy influences student success and must be a focus for school districts seeking improvement. A number of researchers also implied highly efficacious teachers value collaboration (Donohoo et al., 2018; Garmston & Wellman, 2016; Goddard, Goddard, Sook Kim, & Miller, 2015; Hattie & Zierer, 2018). Donohoo (2017) emphasized, "The collaborative inquiry process has been found particularly effective in increasing efficacy" (p. 62).

While Eells (2011) indicated schools seeking improvement should focus on collective teacher efficacy, Argyris et al. (1987) argued the importance of theories of action. Argyris et al. (1987) further designated two theories which guide one's actions—those which one espouses and those which one uses. Smith (2013) believed the actions of people are guided by their mindframes. Though Hattie and Zierer (2018) specified teachers' beliefs or mindframes have a greater ability to shape student success than the behaviors exhibited by teachers in the classroom, Argyris et al. (1987) emphasized the actions of people are not accidental. Furthermore, following historical research of theories of action, Argyris et al. (1987) documented, "Espoused theory and theory-in-use may be consistent or inconsistent, and the agent may or may not be aware of any inconsistency" (p. 82). In addition, Ryan and Deci (2017) discussed the need to develop self-regulation to be aware of these inconsistencies.

In current research, much evidence exists concerning the importance of the development of self-directed students (Costa, Kallick, McTighe, & Zmuda, 2020; DeWitt et al., 2017; Fisher, Frey, & Hattie, 2016; Frey, Hattie et al., 2018; Hoerr, 2017; Kallick & Zmuda, 2017a, 2017b; Rickabaugh, 2016; Smith et al., 2017). Moreover, Frey, Hattie

et al. (2018) indicated too many students depend on adults for their learning when the desired state is to develop learners "who understand their current performance, recognize the gap between their current performance and the expected performance, and select strategies to close that gap" (p. 6). In fact, when students develop self-directedness, "students know how to learn, which equips them to be able to learn about concepts and skills we haven't even dreamed of yet. They are ready for anything that the world hands them and they know how to succeed" (Frey, Hattie et al., 2018, p. 20). To support students in this pursuit, educators must become architects in designing and creating independent, self-directed, assessment-capable learners (Frey & Fisher, 2018; Frey, Fisher et al., 2018; Frey, Hattie et al., 2018).

Equally important, Costa and Kallick (2014) related the demand for educators to develop skills such as problem solving and creativity to sustain successful schools. As the importance of developing self-directedness has become more widely recognized, Costa and Kallick (2014) indicated, "In the absence of these dispositions, students will be unable to become productive, innovative, problem solvers for our economy and for our democracy" (para. 8).

Student Success

Stewart (2018) conveyed, through work with the International Summit of the Teaching Profession, that teachers are tremendously important to the success of students within diverse educational systems. Portnoy (2020) referred to the future and indicated education is changing. Educators are preparing students for deep inquiry in the ever-growing technology age, which cultivates the need for a shift in pedagogy (Portnoy, 2020). Schwab (2017) referred to this new age as a fourth industrial revolution.

Mindframes

Hattie and Zierer (2018) noted teacher mindframes impact teacher actions. Zierer (2017) communicated educational progress is not obtained through improvement measures alone, but comes to life through the mindframes of teachers. When referring to the fundamental importance of educator beliefs, which stem from attitudes, Zierer, Lachner, Tögel, and Weckend (2018) communicated beliefs have an impact on actions. In addition, Zierer et al. (2018) stated, "Teacher professionalism involves more than just subject matter knowledge, pedagogical competence, and didactic competence. Rather, the effectiveness of this triad depends above all on the teacher's mindframes" (p. 12). Hanham and McCormick (2018) further indicated the need to study student mindframes as they relate to engagement and the actions of students.

Students. Although Almarode and Vandas (2019) suggested successful students understand how to think through situations when they become stuck or do not know what to do, Armstrong (2019) defined mindfulness as "the practice of attending to each present moment in time with an attitude of acceptance, openness, and curiosity" (p. 48). According to Armstrong (2019), "By engaging in this practice on a regular basis, students and their teachers and administrators can learn to train their minds, regulate their emotions, control their behaviors, and cultivate healthier relationships with the people and events around them" (p. 48). Armstrong (2019) suggested focus, monitoring, and attitude are important components of mindfulness.

Teachers. Donohoo and Velasco (2016) noted the significance of teacher mindframe on student success. Although Armstrong (2019) and Harper (2020) referred to mindfulness as reducing stress and taking care of the body to be a more effective

teacher, Kallick and Zmuda (2017b) stated the significance of developing habits of mind where thinking is just as important as teaching. Kallick and Zmuda (2017b) argued teachers use habits of mind to help students think and further indicated mindframes can "be deconstructed into a set of teachable behaviors" (p. 13). Through this deconstruction of "Goals; Inquiry and Idea Generation; Task and Audience; Evaluation; Feedback; Instructional Plan; and Cumulative Demonstration of Learning," students are more prepared to develop self-directedness (Kallick & Zmuda, 2017a, p. 54).

Autonomy

Knight (2019) indicated one of the greatest factors of improved student success is to take notice of teacher autonomy and respect the decisions of teachers. Knight (2019) noted a decrease in autonomy within schools, based on the research of Warner-Griffin, Cunningham, and Noel (2018) regarding teacher perceptions of autonomy. In addition, Thiers (2017) defined collaborative professionalism as autonomous teachers working with others to figure out what actions are needed to ensure the best for students. Thiers (2017) also indicated, "Collaborative professionalism is fueled by both good autonomy and good teamwork" (p. 9). Furthermore, Rodman (2018) referenced personalized learning for teachers and explained leaders who empower teachers by allowing them to have ownership and create learning develop lasting change. Likewise, Donohoo and Velasco (2016) stated collaborative inquiry transforms professional learning when teachers lead their own learning.

Not only are educators developing autonomy, Portnoy (2020) added students are developing autonomy as they develop problem-solving skills in a diverse learning environment. Hart (2019) further explained the importance of developing the autonomy

of students by helping them make connections and set goals to take charge of their learning. Educators can influence student learning by modeling self-directed learning and improving skills (Knight, 2018). According to Hart (2019), "Self-determination theory posits that people achieve their best when they feel competent, related, and autonomous" (p. 31).

Theories of Action

When discussing professional learning communities, DuFour (2004) indicated the foundation must be based on the perception that "education is not simply to ensure that students are taught but to ensure that they learn. This simple shift—from a focus on teaching to a focus on learning—has profound implications for schools" (p. 8). Collaborative teams must ask themselves how progress will be monitored and then develop strategies focused on learning collectively (DuFour, DuFour, Eaker, Many, & Mattos, 2016). In addition, DuFour (2004) stated as professional learning communities develop an awareness of inconsistencies between beliefs and strategies to accomplish goals, behaviors to help students learn become more apparent.

According to Schmoker (2018), essential schools need a coherent curriculum, sound instruction, and the intentional teaching of reading and writing across subjects. Schmoker (2018) suggested educators utilize these essentials instead of pushing them aside. When referring to what is essential for effective schools, Fullan and Quinn (2016b) noted educators isolate themselves and get caught up in doing the same things over and over without focusing on improvement, and yet, "if the strategy for improvement is not precise, actionable, and clear, we may see activity but at very superficial levels" (p. 25).

Knight (2018) indicated the actions of educators can be interrupted consciously or unconsciously and concluded learning is sometimes interrupted due to the altered reality of perceptions. Furthermore, Portnoy (2020) discussed the future of education requires a change in the way educators currently do things. In fact, Berg (2020) concluded educators will be better able to meet the needs of students when connecting with each other, developing deep conversations, and creating an identity as professionals. In like manner, Donohoo and Velasco (2016) documented:

> When collaborative inquiry teams articulate a theory of action, it helps to ensure the team's vision is clear to all stakeholders, which will increase the likelihood of success. It also helps to expose their thinking and reasons behind the actions they plan to take. (pp. 44-45)

Furthermore, Garmston and Zoller (2018) indicated group members must consider the intentions of colleagues during conversations and choose behaviors congruent to advancing the group.

Espoused theories. Fullan (2017) emphasized change is hard for individuals, regardless if they are for or against the change. People continue to do things the way they have always done them until confidence and skills are developed (Fullan, 2017). Argyris et al. (1987) indicated two types of human behaviors are observed in theories of action. Often there is a discrepancy between what a person says and what he or she does, and learning occurs when these actions are congruent (Argyris et al., 1987). Donohoo and Velasco (2016) defined, "Espoused theories are those in which we claim to follow how we think we behave in certain circumstances. Theories-in-use can be inferred from our actions—in other words, how we actually behave in certain circumstances" (p. 65).

Theories in use. Donohoo and Velasco (2016) indicated educators' beliefs divulge incongruences between theories of action. Teams who discover the incongruences between the theories they espouse and theories in use or practice are able to act upon their theories and close the gap (Donohoo & Velasco, 2016). Donohoo and Katz (2020) further stated:

> A lack of collective teacher efficacy results in unproductive thoughts and inactivity that, in turn, translate into underperformance. Underperformance leads to poor results that further diminish collective efficacy, creating a downward spiral in which collective efficacy continues to decrease as implementation and results decline. (p. 17)

Similarly, Berg (2020) concluded the quality of or preparation put into collaboration determine the outcome and explained dialogue about students and instruction does not automatically add merit to work.

Robinson and Aronica (2016) clarified a major role of teachers is to facilitate learning. In addition to this belief, Frey, Hattie et al. (2018) declared self-directed learners are cultivated by self-directed teachers. For teachers to develop self-directed students, teachers must help students acquire the skills needed to learn how to learn (Frey, Hattie et al., 2018). Frey, Hattie et al. (2018) posed, "Assessment-capable teachers mediate the thinking of their students as often as they possibly can so that their students can gain more insight into how and when they learn, and associate their actions to results" (p. 14).

While McTighe and Silver (2020) indicated the importance of constructing conceptual understanding in the minds of students for deep learning to occur, Garmston

and Zimmerman (2013) communicated, “The learning of all complex behaviors requires time, patience, practice, and reflection” (p. 13). DuFour et al. (2016) added the importance of focusing on the work that will make an impact. Furthermore, Almarode and Vandas (2019) asserted engagement in collaborative learning behaviors and conversations among adults, including leaders, is important.

Collective Efficacy

Frey, Hattie et al. (2018) described a meta-analysis as “a statistical tool for combining findings from different studies with the goal of identifying patterns that can inform practice” (p. 3). Researchers have agreed an effect size of .4 or greater represents a year’s worth of learning (Fisher, Frey, & Hattie, 2016, p. 10; Fisher et al., 2017, p. 3; Frey, Hattie et al., 2018, p. 3; Hattie, Fisher, & Frey, 2017, p. 5). From an additional viewpoint, Donohoo and Katz (2020) indicated research on the implementation of effective teaching strategies proves to be a challenge in schools.

Donohoo and Katz (2020) referred to quality educational change and concluded collective efficacy produces actions conducive to implementation and student success. Furthermore, Donohoo et al. (2018) added, “Success lies in the critical nature of collaboration and the strength of believing that together, administrators, faculty, and students can accomplish great things. This is the power of collective efficacy” (p. 44).

Donohoo et al. (2018) referred to Hattie’s research, which indicated collective efficacy was “greater than three times more powerful and predictive of student achievement than socioeconomic status. It is more than double the effect of prior achievement and more than triple the effect of home environment and parental

involvement" (pp. 41-42). Together as a whole, teachers can accomplish far greater than individuals working in isolation (Garmston & Wellman, 2016).

In earlier works, Donohoo (2017) declared, "Efficacy beliefs are very powerful because they guide educators' actions and behavior. Efficacy beliefs help determine what educators focus on, how they respond to challenges, and how they expend their efforts" (p. xv). Fullan and Quinn (2016b) agreed with the power of behaviors and indicated through collaboration, behaviors of group members are changed. Garmston and Wellman (2016) added collaborative interactions produce growth and learning.

While Fullan and Quinn (2016b) indicated efficacy beliefs are powerful, Donohoo et al. (2018) stated, "The assurance a person places in his or her team affects the team's overall performance" (p. 41). It is important for educators to understand the impact of the actions of a teacher on student success and the influence held by a collective group (Donohoo et al., 2018).

Self-Awareness

Lin, Szu, and Lai (2016) focused research on group awareness and the influences of this awareness and self-regulation on student learning. The authors concluded when compared to students who have a low level of regulation, students with a high level of awareness ask more questions and participate more readily (Lin et al., 2016). Furthermore, Kallick and Zmuda (2017a, 2017b) stated educators need to help students become aware of opportunities that will help them maneuver challenges and develop self-directness.

Wu and Pope (2019) stated the value of developing self-awareness is so students can use these skills throughout life. Wu and Pope (2019) concluded, "Self-aware critical

thinkers take responsibility for what they think and feel, and they make conscious decisions as to what they believe and do" (p. 36). Similarly, Ward and Butler (2019) indicated students with greater awareness of effective strategies perform better academically than lower-achieving students. In addition, higher-achieving students are more aware and can apply appropriate strategies across academic areas to achieve success (Ward & Butler, 2019).

From another perspective, Brown (2018) discussed the importance of leaders being self-aware. According to Brown (2018), failure was less about skills that were lacking and more about self-awareness. Brown (2018) also indicated when leaders are faced with tough conversations, they should be self-aware and self-reflective to avoid limiting perspectives. When referring to student life skills, Ventura (2020) asserted self-reflection has an interrelationship with happiness. Additionally, Maxwell (2018b) stated successful leadership includes self-awareness.

Psychological Safety

Stewart (2018) noted, "There is an emerging international consensus that more powerful professional learning opportunities are needed to enable teachers to become the best teachers they can be, and that job embedded, teacher-led learning is an essential component of these opportunities" (p. 30). Wanless and Winters (2018) identified key aspects of creating a professional learning community where teachers feel safe to engage in learning within the group. One of these elements is psychological safety (Wanless & Winters, 2018).

Wanless and Winters (2018) defined psychological safety as "the feeling that you can tolerate—and even feel comfortable with—an inherently uncomfortable situation" (p.

42). Radecki, Hull, McCusker, and Ancona (2018) indicated group members feel safe to engage in conversations based on feelings of value and acceptance. These feelings also include a willingness to trust other group members and share vulnerabilities (Garmston & Wellman, 2016; Zimmerman, Roussin, & Garmston, 2020; Brown, 2017).

Brown (2017) suggested psychological safety is not about hurt feelings or being wrong, but patterns called "*dehumanizing* language and behavior" (p. 71). In addition, Brown (2017) proposed that during conflict ". . . [we lose trust and] start to lose our ability to listen, communicate, and practice even a modicum of empathy" (p. 72). Radecki et al. (2018) noted the importance of psychological safety for teams to be effective.

Zimmerman et al. (2020) stated, "Social sensitivity, safety in team learning, and interpersonal trust are inextricably intertwined. Each is necessary in harmony with the others for psychological safety; pluck one and the others reverberate" (p. 11). In like manner, Zimmerman et al. (2020) stated:

> Psychological safe teams are socially sensitive, attending to the verbal and nonverbal communications from one another; they feel safe to learn together, to admit mistakes, acknowledge uncertainty, and ask for help; they trust colleagues and are trusted in return, and they know they will not be belittled by others in the team. (pp. 13-14)

Furthermore, Garmston (2019) proposed using the correct form of paraphrasing helps group members feel more comfortable during meetings. When referring to the psychological safety of students, Miller (2020) identified the value of working toward an environment where students feel safe. Posey (2019) referred to how the brain works and

concluded connectedness activates the medulla and further emphasized the importance of group member feelings when developing collaboration.

Trust in groups. Sharratt et al. (2016) indicated, "Trust allows team members to believe that they can be themselves" (p. 142). In addition, Muhammad and Cruz (2019) explained the importance of establishing purpose but also specified the importance of transformational leaders understanding the significance of relationships and connecting people. Educational organizations struggle when those who are following do not trust the leadership (Muhammad & Cruz, 2019).

Two types of trust were designated by Muhammad and Cruz (2019): trustworthiness and likability. Trustworthiness was noted as the most important (Muhammad & Cruz, 2019). In addition, Cui, Vertinsky, Robinson, and Branzei (2018) concluded:

> Social trust, a decision to trust others, is determined by both mental processing systems, and it has both affective and cognitive foundations. In many cases, trusting others without sufficient knowledge to assess their trustworthiness or improvised reactions to opportunistic behavior in a particular circumstance is an instinctive decision. (p. 383)

While Fullan and Kirtman (2019) explained when disagreements happen a group can move forward if trust has been established, Harper (2018) suggested the willingness to be vulnerable among peers while at work decreases stress and anxiety. Furthermore, Sharratt et al. (2016) added the significance of trust when interacting within a group. The interactions which take place in the workplace are related to the level of trust (Cui et al., 2018).

Student and teacher trust. The importance of trust when working in groups is indicated in research (Cui et al., 2018; Sharratt et al., 2016); moreover, Spiller and Power (2019) and Fisher, Frey, and Smith (2020) added the significance of developing a sense of trust with students. To fully embrace the challenges that come with academic learning, students must develop trust in their teachers (Smith, Frey, & Fisher, 2018). In addition to developing trust with students, Pink (2019) added the performance of an individual improves when he or she has a sense of belonging within the group (Pink, 2019).

Fisher and Frey (2018) explained how to build trust with students: "Students want to know their teachers really care about them as individuals and have their best academic and social interests at heart—and that teachers trust them" (p. 82). Furthermore, Fisher and Frey (2018) suggested several ways an educator can build trust with students: work to keep promises, be honest when having conversations with students about their performance, avoid catching students in the wrong, and examine personal feelings about a student to ensure negativity does not interrupt trust.

Relationships

Researchers have indicated the value of students developing healthy and caring relationships (Budge & Parrett, 2018; Frey, Fisher, & Smith, 2019). Posey (2019) explained students feel safe to learn in an area where they are able to interact and relate with each other. Caring relationships are not only a critical part of a child's education but an important part of the balance of being an effective leader (Muhammad & Cruz, 2019). From another perspective, Benn (2018) suggested school-age students have grown up in a technology age and require relationships to be earned and based on character traits such as trust and respect.

When referring to groups, Brown (2017) stated to protect relationships, group members often monitor themselves and discontinue speaking. It is necessary to monitor actions and reactions within a group while considering the feelings of others or how the action will affect others within the group (Garmston & Wellman, 2016). Furthermore, Brown (2017) noted, "The key is to learn how to navigate conflicts or differences of opinion in a way that deepens mutual understanding, even if two people still disagree" (p. 80).

Student Self-Directedness

Pink (2011) specified intrinsic motivation is dependent on three factors: autonomy, mastery, and purpose. He further added intrinsic motivation is self-directed (Pink, 2011). In fact, Pink (2011) stated intrinsic motivation "is devoted to becoming better and better at something that matters. And it connects that quest for excellence to a larger purpose" (pp. 78-79). Furthermore, Wiggins and McTighe (2017) suggested self-directed students have greater autonomy and self-awareness.

Deci's early work, dating back to 1969, produced a foundation for work by Pink (2011). Recently, Ryan and Deci (2017) revealed schools support students by helping them flourish and become successful. Ryan and Deci (2017) posed, "By flourishing we mean becoming motivated, vital, resourceful, and full functioning adults. Flourishing individuals feel both empowered and confident in their learning and problem solving and feel a sense of belonging to their schools and their larger community" (p. 354). Additionally, Tschannen-Moran and Clement (2018) determined educators must feel a sense of belonging to the group, feel they matter, and trust other group members to help them when needed.

Fullan and Kirtman (2019) indicated student success includes basic academics but also what they referred to as "global competencies" (p. 45). The global competencies include "character education, citizenship, communication, critical thinking and problem solving, collaboration, creativity and imagination" (Fullan & Kirtman, 2019, p. 45). Likewise, Tough (2016) referred to skills other than academics that help students become successful.

Frey, Hattie et al. (2018) referred to self-directed learners as assessment-capable learners:

> [These learners]… make the most of the opportunities their teachers create to fuel their own learning. These students are skilled at interpreting the data that give them an indication of where they are in their learning, and when they are ready to move forward. These assessment-capable visible learners can employ their own self assessments and use the results to inform their future learning. (p. 137)

Similarly, students need to be able to transfer their learning across subjects and to understand what to do when faced with new challenges (Jung, 2018; Kallick & Zmuda, 2017b; McTighe, 2018; McTighe & Silver, 2020).

According to Vatterott (2017), "Students' ability to set goals, pursue interests, and self-reflect are crucial to their progress" (p. 37). Rickabaugh, Sprader, and Murray (2017) indicated in a self-directed environment, students are more able to ask appropriate questions and accomplish their learning goals. Costa et al. (2020) believed skills are fostered by critical thinking habits routine instruction does not typically promote.

In addition to being taught skills, Frey, Hattie et al. (2018) stated students need nurturing from teachers and leaders who possess mindframes that help students

understand their role in learning. Berger, Woodfin, and Vilen (2016), on the other hand, identified a need for teachers to provide well-planned lessons designed to enhance the understanding of students. Frey, Hattie et al. (2018) further referred to self-directed learners as individuals who embrace 12 mindframes:

- Can be their own teacher
- Can articulate what they are learning and why
- Can talk about how they are learning—the strategies they are using to learn
- Can articulate their next learning steps
- Can use self-regulation strategies
- Seek, are resilient, and aspire to challenge
- Can set mastery goals
- See errors as opportunities and are comfortable saying that they don't know and/or need help
- Positively supports peers' learning.
- Know what to do when they don't know what to do
- Actively seek feedback
- Have metacognitive skills and can talk about these skills. (pp. 1-2)

Frey, Hattie et al. (2018) further explained attributes of a self-directed learner are critical for school success:

> Too many students are adult-dependent learners. Others are compliant learners. Neither will serve our society well. What we need are learners who understand their current performance, recognize the gap between their current performance and the expected performance, and select strategies to close the gap. (p. 6)

Berger et al. (2016) indicated self-directedness is a long-term investment that requires teachers and learners to change mindframes about how to accomplish success.

While Tomlinson (2018) suggested developing procedures and action steps with students to help them accomplish classroom goals, Tinley (2018) added the importance of understanding what actions help accomplish the vision and what actions do not. Additionally, Costa et al. (2020) referred to Habits of Mind and concluded, "Learning these dispositions takes practice, self-monitoring, and reflection" (p. 59). When referring to classroom reflection centered around literacy, Zimmerman, Litzau, and Murray (2016) stated the need for students to "reflect on their own learning" (p. 44).

Fullan (2017) emphasized the importance of ensuring deep learning among all students, because an intention without a corresponding behavior or action results in nothing being accomplished. Another perspective was provided by Duckworth (2018), who stated accomplishments stem from using acquired skills. In addition, Fullan (2017) indicated, "Pink found that the combination of purpose, mastery, and a degree of autonomy or self-direction was related to higher performance. To this I would add connectedness" (p. 2).

Many researchers have suggested the need for feedback (Almarode & Vandas, 2019; Gallagher & Thordarson, 2018; Sackstein, 2017; Zimmerman et al., 2020). Feedback provides information about current learning to help improve performance (Almarode & Vandas, 2019). Gallagher and Thordarson (2018) stated positive feedback is essential in the process of learning and perseverance.

From another viewpoint, Hart (2019) stated connectedness is vital among students, peers, and teachers, while Anderson (2020) suggested shifting the language

from teacher-centered to student-centered, transferring the ownership of ideas to students. Rickabaugh (2016) proposed educators should focus on helping students understand the relevance of what they are learning and shift their attention to how the concept will be real within their lives in the future.

Zimmerman et al. (2020) further indicated increased performance and innovation stem from feedback and other self-directed skills. While Sackstein (2017) described feedback as providing strategies to grow, Portnoy (2020) suggested formative assessments provide simultaneous support for students, drive learning forward, and identify where intervention is needed when a student is struggling. In addition, Portnoy (2020) explained, "When educators share the responsibility of assessment with their students, students become more self-reflective, independent learners who achieve greater agency and voice within the classroom" (p. 11).

Collaboration

Hargreaves and O'Connor (2018) documented, "The evidence that, in general, professional collaboration benefits students and teachers alike has become almost irrefutable. Professional collaboration boosts student achievement, increases teacher retention, and enhances the implementation of innovation and change" (p. 3). Stewart (2018) declared the benefits of working together with group members each week. From another viewpoint, Donohoo and Katz (2020) supported the importance of providing structures and protocols for teams to work effectively together. Engaging together to analyze student work as a team connects teaching and learning through the focus of rigor, instructional delivery, and student outcomes (Donohoo & Velasco, 2016). Furthermore,

Venables (2018) suggested teams who ask the right questions, trust their members, and give credit where credit is due are the most successful.

Additionally, Garmston and Wellman (2016) indicated professional communities are "built on the bedrock of norms and values, which are both honed by dialogue and discussion. Strong schools have core values about how children learn, what they should learn, and how faculties should work together" (p. 62). Fink (2018) agreed meetings are more productive when norms are established. Similarly, Anrig (2015) explained the necessity of establishing best practices to achieve student success.

Smith (2013) suggested people have mindframes that guide their actions. The espoused theory of collaboration is what one claims to follow when speaking of an action (Argyris et al., 1987). Smith (2013) also stated, "The words we use to convey what we do, or what we would like others to think we do, can then be called *espoused theory*" (para. 7). The collective efficacy of teachers is the binding that holds together actions and their subsequent results, which produce greater results for student success (Donohoo & Katz, 2019). When providing advice to new teachers about passion, Mielke (2019) commented, "The conditions of teaching matter, but your actions matter most" (p. 20).

Collaborative inquiry. Collaborative inquiry is defined as a professional learning approach of working together to construct and apply a greater understanding of a problem or goal (Donohoo & Velasco, 2016; Lockwood, 2018). Collaborative inquiry provides a structure to the collaborative professional learning process, which can make a meaningful difference in learning for teachers as well as students (Donohoo & Velasco, 2016). Collaborative conversations change from being centered around *what is taught* to a focus on *what is learned* (Donohoo & Velasco, 2016; DuFour, 2015). DuFour (2004)

concluded, “Despite compelling evidence indicating that working collaboratively represents best practice, teachers in many schools continue to work in isolation” (p. 9).

Hattie (2015) stated, “There is no way that a system will make an overall difference to student achievement by working one teacher at a time. Instead, the focus needs to be on everyone working collectively to improve student achievement” (p. 5). Additionally, Donohoo and Katz (2020) specified the value of quality implementation to achieve success.

Furthermore, Donohoo and Velasco (2016) asserted student success cannot be fostered if teachers work in isolation. Lockwood (2018) identified five key areas to developing collaborative inquiry within groups: develop and support a collaborative infrastructure, support teams in using data, promote improvement, create facilitators to build capacity, and gradually release responsibility and support teachers with instructional strategies. Additionally, Donohoo and Velasco (2016) stated, “Building quality professional relationships, shifting from cultures defined by professional development to one focused on professional learning, improving collaboration, and expanding the reach of learning are important concepts when considering shaping the development of a professional learning culture” (p. 99).

Systemic Coherence

Fullan and Kirtman (2019) indicated four areas of continuous importance when developing and sustaining dynamic coherence: vision, collaborative culture, learning together, and accountability. Although Fullan and Kirtman (2019) expressed the difficulty of building coherence with revolving staff from year to year, Fullan and Quinn (2016b) stated considerable growth in student learning is fabricated by leaders who

advance collaborative capacity among teachers. According to Donohoo et al. (2018), "Leaders can also influence collective efficacy by setting expectations for formal, frequent, and productive teacher collaboration and by creating high levels of trust for this collaboration to take place" (p. 43). DeWitt et al. (2017) disclosed, "Collaborative leaders foster collective expertise" and develop collective teacher efficacy by bringing teachers' strengths together (p. 6).

Leadership Mindframes

Robinson, Lloyd, and Rowe (2008) conducted a study about types of leaders, including transformational and instructional. Their findings indicated instructional leaders have a larger effect size on student learning than transformational leaders, yet Day, Gu, and Sammons (2016) discussed finding a balance between transformational and instructional leadership strategies to foster student success. Likewise, Gallagher and Thordarson (2018) identified an additional leadership style called *design-inspired leadership* and claimed this style of leadership "deals with more than just process; it is rooted in mindsets that you adopt in your work" (p. 6).

Muhammad and Cruz (2019) believed an effective transformational leader has the most noteworthy influence on the success of students. Although transformational and instructional leadership are common labels when it comes to describing leadership styles, DeWitt et al. (2017) suggested collaborative leadership is a more suitable label. From another perspective, DeWitt et al. (2017) indicated, "Collaborative leaders find a balance between leading initiatives and fostering cooperative learning between adults with diverse ideas" (p. xvi). In addition, DeWitt (2017) suggested the changing demands of the principal role require not only collaborative leadership but also collective efficacy.

Maxwell (2018a) indicated a leader is someone who influences others. In addition to influencing, Hall (2016) stated a principal has the ability to "create a school-wide collaborative culture… as measured, first and foremost, by indicators of student learning" (pp. 51-52). Hall (2016) also believed this professional learning culture develops the collective capacity of the group.

According to Pink (2019), leaders have the important job of setting the pace and communicating a direction. Leaders who approach change by communicating *the why* and building trusting relationships influence the capacity of others (Muhammad & Cruz, 2019). Followers become anxious or frustrated when given a task they do not understand (Muhammad & Cruz, 2019). Muhammad and Cruz (2019) proposed transformational leaders must develop the capacity of others to accomplish change, and they summarized the importance of developing the confidence of followers to avoid frustration.

Likewise, Day et al. (2016) and Hattie (2015) compared transformational leaders to instructional leaders. Instructional leaders are focused on the development of academic learning and the professional development of teachers to meet these needs (Day et al., 2016). Much like the traits of leadership and decision-making styles, Hattie (2015) identified seven mindsets of high-impact leaders of instruction. These characteristics are based upon what each leader believes his or her job to be:

- Understand the need to focus on learning and the impact of teaching.
- Believe their fundamental task is to evaluate the effect of everyone in their school on student learning.
- Believe that success and failure in student learning is about what they, as teachers or leaders, did or didn't do. They see themselves as change agents.

- See assessment as feedback on their impact.
- Understand the importance of dialogue and of listening to student and teacher voice.
- Set challenging targets for themselves and for teachers to maximize student outcomes.
- Welcome errors, share what they've learned from their own errors, and create environments in which teachers and students can earn from errors without losing face. (Hattie, 2015, p. 38)

Additional researchers have suggested these mindframes identify a belief system (DeWitt, 2017; Hattie, 2015). Spiller and Power (2019) stated mindframes are more significant than the plan and action steps. According to Donohoo and Katz (2020), "Collective efficacy is a significant belief system for improving student outcomes" (p. 88). Leaders who promote teachers working together will witness the collaborative actions of teachers who understand their impact, which has an above-average effect size of .91 (Hattie, 2015, p. 38).

Summary

In this chapter, details of research conducted in the areas of focus were explored, which included historical and current findings. Literature related to the variables of collective teacher efficacy, espoused theories of collaboration, collaborative theories in use, and student self-directedness was examined. The review was focused on the following topics: student success; student and teacher mindframes; autonomy; theories of action, which included espoused theories of collaboration and collaborative theories in use; collective efficacy; self-awareness; psychological safety; trust in groups; student-

teacher trust; relationships; student self-directedness; collaboration; systemic coherence; and leadership mindframes.

In Chapter Three, the methodology of the study is explained. The methodology selected for this study was applied to further understand the relationship among collective efficacy, collaborative theories of action, and student self-directedness. The explanation includes the problem and purpose overview, research questions and hypotheses, research design, population and sample, instrumentation, data collection, data analysis, and ethical considerations.

Chapter Three: Methodology

Introduction

The methodology is described in Chapter Three. The problem and purpose overview, research questions and hypotheses, research design, population and sample, instrumentation, data collection, data analysis, and ethical considerations are presented. The variables of teacher collective efficacy, collaborative theories of action, the gap between these theories of action, and the level of elementary student self-directedness were examined in this quantitative study.

Problem and Purpose Overview

A lack of research concerning collaborative theories of action was indicated in the review of literature. A need to become aware of one's own actions and subsequent theories in use was also indicated in the literature. Without an awareness of collaborative theories of action, educators may not be doing everything necessary to help students become self-directed learners.

Research questions and hypotheses. The following research questions and hypotheses guided this study:

1. What is the relationship between teacher collective efficacy and teacher-espoused theories of collaboration?

$H1_0$: There is no statistically significant relationship between teacher collective efficacy and teacher-espoused theories of collaboration.

$H1_a$: There is a statistically significant relationship between teacher collective efficacy and teacher-espoused theories of collaboration.

2. What is the relationship between teacher collective efficacy and teacher self-reported demonstration of collaborative theories in use?

$H2_0$: There is no statistically significant relationship between teacher collective efficacy and teacher self-reported demonstration of collaborative theories in use.

$H2_a$: There is a statistically significant relationship between teacher collective efficacy and teacher self-reported demonstration of collaborative theories in use.

3. What is the relationship between teacher collective efficacy and the gap between the theories of action?

$H3_0$: There is no statistically significant relationship between teacher collective efficacy and the gap between the theories of action.

$H3_a$: There is a statistically significant relationship between teacher collective efficacy and the gap between the theories of action.

4. What is the relationship between teacher collective efficacy and the level of elementary student self-directedness?

$H4_0$: There is no statistically significant relationship between teacher collective efficacy and the level of elementary student self-directedness.

$H4_a$: There is a statistically significant relationship between teacher collective efficacy and the level of elementary student self-directedness.

5. What is the relationship between teacher-espoused theories of collaboration and the level of elementary student self-directedness?

$H5_0$: There is no statistically significant relationship between teacher-espoused theories of collaboration and the level of elementary student self-directedness.

$H5_a$: There is a statistically significant relationship between teacher-espoused theories of collaboration and the level of elementary student self-directedness.

6. What is the relationship between teacher self-reported demonstration of collaborative theories in use and the level of elementary student self-directedness?

$H6_0$: There is no statistically significant relationship between teacher self-reported demonstration of collaborative theories in use and the level of elementary student self-directedness.

$H6_a$: There is a statistically significant relationship between teacher self-reported demonstration of collaborative theories in use and the level of elementary student self-directedness.

7. What is the relationship between the gap between the theories of action and the level of elementary student self-directedness?

$H7_0$: There is no statistically significant relationship between the gap between theories of action and the level of elementary student self-directness.

$H7_a$: There is a statistically significant relationship between the gap between theories of action and the level of elementary student self-directness.

Research Design

A quantitative research design was selected for this study to quantify the relationship among the variables of teacher collective efficacy, collaborative theories of action, the gap between these theories of action, and the level of elementary student self-directedness. A five-part survey was developed to obtain information concerning the relationship of these variables. Part A elicits demographic information about the participant. Part B includes statements about teacher collective efficacy developed by

Tschannen-Moran and Barr (2004). The 16 statements in Parts C and D were developed to determine the relationship between espoused theories of collaboration and their subsequent collaborative theory in use. The final eight statements were designed to determine the relationship among a student's self-directedness, theories in action, and teacher collective efficacy. These statements were developed based on historical and current research regarding the influence of collective teacher efficacy.

A random cluster method was used to select first- through fourth-grade buildings within member school districts of the Southwest Center for Educational Excellence. Approval was secured from school district superintendents of the selected districts. The survey was distributed electronically to the teachers via email, and data were collected, organized, and analyzed from completed surveys. Relationships between variables were analyzed using the Pearson Product-Moment Correlation Coefficient. The value of *r* indicated the relationship.

Population and Sample

A population in a research study is the group for which a sample can be generalized (Fraenkel, Wallen, & Hyun, 2019). Bluman (2018) indicated, "The only way to prove anything statistically is to use the entire population, which in most cases, is not possible. The decision, then, is made on the basis of probabilities" (p. 419). Creswell and Creswell (2018) indicated the population size should be stated and is sometimes difficult to determine; therefore, a sample of the population was used in this study. The sample for this study was first- through fourth-grade teachers from member districts of the Southwest Center for Educational Excellence.

A cluster random sampling procedure was used to determine the first- through fourth-grade teachers selected for this study (Bluman, 2018; Creswell & Creswell, 2018; Fraenkel et al., 2019). A cluster random sampling was determined as appropriate due to the size of the population (Fraenkel et al., 2019). Fraenkel et al. (2019) explained:

> The selection of groups, or clusters, of subjects rather than individuals is known as a **cluster random sampling**. Just as simple random sampling is more effective with larger numbers of individuals; cluster random sampling is more effective with larger numbers of clusters. (p. 96)

First, member districts of the Southwest Educational Center for Education Services were identified from a list provided on the organization's website. At the time of this study, the center had 42 member school districts (Southwest Center for Educational Excellence, 2018). Eighty-four elementary buildings and 2,540 teachers within these member districts were identified (Missouri Department of Elementary and Secondary Education [MODESE], 2019). Based on the sample, teachers of grades one through four represented approximately 60% of teachers in elementary buildings (MODESE, 2019). Bluman (2018) explained 150 participants in the sample are needed to have a survey return rate of 30. Since 150 is 60% of 250, buildings were randomly selected up to 249 teachers, plus the building with the largest number of teachers.

Instrumentation

An online survey instrument was developed by the researcher based upon a review of literature (Argyris et al., 1987; DeWitt et al., 2017; Donohoo, 2017; Donohoo & Velasco, 2016; DuFour, 2004; Frey, Fisher et al., 2018; Frey, Hattie et al., 2018; Garmston & Wellman, 2016; Hattie & Zierer, 2018; Kallick & Zmuda, 2017b; Sharratt et

al., 2016; Smith, 2013; Tschannen-Moran & Barr, 2004; Tschannen-Moran & Tschannen-Moran, 2018). Permission to use the Collective Teacher Beliefs Scale in this research was given (see Appendix A). The survey included questions about demographic information and attitude scales (see Appendix B). The survey items were piloted for validity and clarity with a small number of teacher leaders, instructional coaches, and administrators who were not participants in the study. Feedback regarding clarity of the directions, clarity of the wording of the questions, and length of time to complete the survey were considered, and changes were made to improve the validity of the instrument.

Data Collection

After receiving approval from Lindenwood University's Institutional Review Board (IRB) (see Appendix C), superintendent email addresses were obtained from each district's website. Then, the participating school superintendents were contacted through email (see Appendix D). Information regarding surveying teachers in selected buildings was provided in the recruitment letter.

Following permission to survey teachers, each building principal's email address was identified through the district website. Then, an email was sent to principals of the selected buildings (see Appendix E) with a request to forward the letter of participation and consent form (see Appendices F and G) to the teachers within their buildings. A link to the survey via the Qualtrics software program was included in the consent form. The Qualtrics software program was used to distribute the survey and collect participant responses.

Data Analysis

Data were analyzed to help understand the research findings (Roberts & Hyatt, 2019). The Pearson Product-Moment Correlation Coefficient (PPMC) was utilized in this quantitative study (Explorable, 2020). The PPMC was used to identify the correlation coefficient for the collected numerical data for each research question variable to identify the significance of the relationships between the variables (Bluman, 2018; Ly, Marsman, & Wagenmakers, 2017). According to Bluman (2018), "The linear correlation coefficient computed from the sample data measures the strength and direction of a linear relationship between two quantitative variables" (p. 552). Ly et al. (2017) further indicated relationships have been studied extensively through the statistical work of researchers such as Fisher and Pearson.

The PPMC was selected for this study based on the following statement by Bluman (2018): "Continuous random variables are obtained from data that can be measured rather than counted" (p. 258). Bluman (2018) also quantified, "[When] . . . the value of *r* is near +1 or -1, there is a strong linear relationship. When the value of *r* is near 0, the linear relationship is weak or nonexistent" (p. 556).

Ethical Considerations

Safeguards were used throughout the duration of this study to assure confidentiality and anonymity among participants. Documentation and data for this study were housed on a password-protected electronic device or in a locked cabinet. Data were reported in subgroups, and no individual responses were considered for this study. To ensure anonymity, responses were submitted anonymously through Lindenwood's Qualtrics account.

At the time of this study, the researcher did not hold a supervisory role with any of the participants in the sample. A conflict of interest during the collection of data was not a possibility. Participants consented to participate in the study by clicking a link to the electronic survey, which was included on the consent form.

Summary

To better understand the construction of this research, the details concerning the methodology used in this study were presented. A description of the problem and purpose, research questions and hypotheses, research design, population and sample, instrumentation, data collection, data analysis, and ethical considerations were described in Chapter Three. Chapter Four includes an analysis of the data.

Chapter Four: Analysis of Data

In Chapter One, an introduction to the study was provided. Literature surrounding the topic of study was reviewed and synthesized in Chapter Two. The methodology for this study was described in Chapter Three. An analysis of the data is presented in this chapter.

To prepare students to become productive citizens, educators should develop self-directedness in their students to help them become successful (Costa & Kallick, 2014; Tough, 2016). Furthermore, student success is impacted in schools by teacher efficacy and teacher behaviors (Donohoo, 2017). While endeavors for student success increase in number, leaders are shifting their focus toward collaborative cultures consisting of educators working together and establishing plans to meet the needs of each student (Goode, Hegarty, & Levy, 2018). Teacher development within these collaborative groups will likely produce learning gains in students (Venables, 2018). Therefore, the conceptual framework of this study was based on the connections among student success, teacher collective efficacy, collaborative culture, trust, and alignment of collaborative beliefs and behaviors.

Researchers have indicated the need for educators to become aware of their intentions and subsequent theories in use (Donohoo & Velasco, 2016). There is a lack of research concerning collaborative theories of action. Without an awareness of effective collaboration, educators may not be doing everything necessary to help students become self-directed learners (Spiller & Power, 2019). In addition, Spiller and Power (2019) explored “the disconnect between what we know and what we do” and indicated this disconnect may lead to the needs of students not being met (p. 87).

The purpose of this study was to investigate the relationships among the variables of teacher collective efficacy, teacher-espoused theories of collaboration, teacher self-reported demonstration of collaborative theories in use, the gap between these theories of action, and the level of student self-directedness. Research questions were developed based upon a less-frequently used definition of student success. Guskey (2015) referred to success as a need to prepare students to develop self-directedness. The relationship among collective teacher efficacy; espoused theories of collaboration, who one says one is or wants to be; the collaborative theories in use, who one is; and student self-directedness were explored.

A quantitative research design was used for this study (Fogarty, 2019). A survey instrument was developed to collect quantitative data from elementary teachers who teach in member districts of the Southwest Center for Educational Excellence. The survey instrument was developed by the researcher and included items used with permission from the Collective Teacher Beliefs Scale. The survey items were designed to generate a score for the variables. The instrument included the following five parts: demographic information, collective teacher efficacy, espoused theories of collaboration, collaborative theories in use, and student self-directedness.

An analysis of the significance of the relationships between these variables is included in this chapter accompanied by data for each research question. In addition, a basic summary of the data is included in Chapter Four. Visual representations in the form of scatterplots and box-and-whisker charts are also provided to create a full depiction of the data (Fischetti, 2018).

Survey Instrument Design

A 35-item survey instrument was developed and administered to participants using a Qualtrics account distributed by Lindenwood University. The five parts of the survey instrument included demographic information (Part A), collective teacher efficacy (Part B), espoused theories of collaboration (Part C), collaborative theories in use (Part E), and student self-directedness (Part E). Parts B, C, D, and E were designed to gather specific data regarding the research variables. Each part of the survey instrument included items designed to help answer the research questions.

Part A questions were developed by the researcher and designed to elicit demographic information concerning the sample. The survey results were used to gather demographics including the current grade level taught, number of classroom teachers at that grade level, number of years in current position, number of years taught, and the highest level of education.

The first question of Part A of the survey was used to identify which teachers were first-, second-, third-, and fourth-grade teachers. Participants who selected "I am not a grade 1-4 classroom teacher" were excluded from completing items two through 35 of the survey instrument. Question two of Part A was designed to gather data concerning the number of teachers at the same grade level within the building. Almarode and Vandas (2019) examined essential practices that empower students and teachers and concluded, "When groups of teachers and leaders dive into the standards, the best practices around creating clarity, and their curricular resources, students can only benefit from that work" (p. 177). Hargreaves and O'Connor (2018) further explained educators believe together they can have a larger impact. Teachers identify issues, solve them

together, and share success (Hargreaves & O'Connor, 2018). Therefore, it may be important to understand with how many other teachers the teacher may collaborate.

Questions three, four, and five were posed to gather information about the years of experience participants had completed and the level of advanced degrees obtained. Stronge (2018) described the complexity of teaching and the skillset needed to be an effective teacher. In addition, Carl (2020) and Emdin (2016) affirmed the importance of building relationships and understanding cultures as important characteristics of effective teachers. Stronge (2018) further explained, "Expert teachers (with expertness typically coming from practice, or experience) perceive classroom situations and nuances more quickly, more accurately, and more holistically than novice teachers" (p. 31).

Part B of the survey instrument includes six items designed to gather perceptions of collective teacher efficacy. These questions were designed by Tschannen-Moran and Barr (2004) to calculate perceptions teachers may have about their collective ability to overcome obstacles or challenges which inhibit the learning of students. Part B of the survey instrument, items six through 11, was adapted with permission from Tschannen-Moran and Barr's (2004) Collective Teacher Beliefs Scale.

Items 12 through 19, Part C of the survey, were developed based on the research of Donohoo (2017), Garmston and Wellman (2016), Goddard et al. (2004), and Frey, Fisher, et al. (2018). The items were designed to gather data regarding the sample's espoused theories of collaboration. The survey questions were used to gather opinions concerning the perspectives of other teachers, constructing thoughtful responses, clarity of thinking, sharing ideas, contributions of group members, monitoring group members, and data judgments.

Part D of the survey instrument included items 20 through 27. These items were developed by the researcher based on the research of Garmston and Wellman (2016), Hargreaves and O'Connor (2018), and Hattie and Zierer (2018) concerning collaborative theories in use. The items were designed to gather opinions about collaborative theories in use including pausing, paraphrasing, posing questions, offering ideas, data without judgments, balancing participation of group members, and presuming positive intentions.

Finally, Part E, items 28-35 of the survey, was developed by the researcher based on the research of Berger et al. (2016); Frey, Fisher et al. (2018); Frey, Hattie et al. (2018); and Hattie and Zierer (2018). The items were designed to elicit quantitative data concerning each teacher's perception of student self-directedness. In addition to the calculations from the survey items, the gap between espoused theories of collaboration and collaborative theories in use was calculated.

Collection of Data

After the survey instrument was designed and field-tested, permission to conduct research was obtained from school district superintendents. Once permission was received from district superintendents, a letter of participation and a survey consent form were emailed to building principals. The email included a request for the principal to forward the letter of participation and survey consent form, which included the survey link, to classroom teachers within the building.

Bluman (2018) stated, "According to the central limit theorem, approximately 95% of the sample means fall within 1.96 standard deviations of the population mean if the sample size is 30 or more" (p. 374). Data from 13 elementary buildings within member districts of the Southwest Center for Educational Excellence were collected and

analyzed. Twenty-two of the 52 teachers who responded to the survey indicated they were not a first-, second-, third-, or fourth-grade classroom teacher and were excluded from the analysis of data. Therefore, from the 324 teachers within the 13 elementary buildings, 30 responses were analyzed for the purpose of this study, signifying a response rate of 9%.

Survey Data

The survey data were analyzed from Part B, Part C, Part D, and Part E of the survey instrument to address the research questions. A value was assigned to each Likert scale answer. Scores were assigned from one to nine for teacher collective efficacy: 1 = none at all, 2 = between none at all and very little, 3 = very little, 4 = between very little and some degree, 5 = some degree, 6 = between some degree and quite a bit, 7 = quite a bit, 8 = between quite a bit and a great deal, and 9 = a great deal. A value of one through five was assigned to espoused theories of collaboration, collaborative theories of use, and student self-directedness: 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, and 5 = strongly agree. A composite score for each variable was generated for each teacher, as well as for each item, by calculating a total sum score derived from the Likert scale responses.

Data Analysis

Creswell and Creswell (2018) suggested using inferential and descriptive information to better understand research questions and data. For this study, data were analyzed to answer the research questions in two stages. Demographic information and survey data were analyzed using descriptive statistics to investigate possible existing patterns within the sample.

To quantify the variables, a total participant score was calculated for each variable. The sum of items six through 11 was calculated to generate a total collective teacher efficacy score for each participant. Data from items 12 through 19 were used to generate the total for espoused theories of collaboration. A sum calculated for items 20 through 27 was used to calculate a total score for collaborative theories in use. Items 28 through 35 were added to determine the score for student self-directedness. Finally, a gap score was calculated based on the difference between the sum of espoused theories of collaboration and the sum of collaborative theories in use.

To measure the variability of the data, an interquartile range was calculated by distributing the data into four equal groups or quartiles (Bluman, 2018). The range was calculated by finding the difference between the maximum and minimum scores and checking for outliers. The resulting quartiles were calculated for each variable. Bluman (2018) clarified, "Like the standard deviation, the more variable the data set is, the larger the value of the interquartile range will be" (p. 157).

A five-number summary was completed to organize the data and to create an additional visual of the data (Bluman, 2018; Rumsey, 2016). The five-number summary included calculations of the minimum, first quartile, second quartile, third quartile, and the maximum. Upon determining the total score derived from the survey data, a calculation of the mean, median, mode, and standard deviation was completed. To investigate the possibility of existing patterns, the data were collected to answer research questions. A measure of central tendency was calculated and recorded as a single value (Deshpande, Gogtay, & Thatte, 2016; Mertler & Reinhart, 2016). According to

Deshpande et al. (2016) and Mertler and Reinhart (2016), the most common form of a measure of central tendency is the arithmetic mean.

A box-and-whisker figure was generated for each subgroup using the data organized in a five-number summary and the standard deviation (Bluman, 2018; Rumsey, 2016). A box-and-whisker figure was used to provide a visual representation of the middle 50% of the data. Boxes are placed side by side in the figure to provide a visual comparison of the interquartile and box length (Bluman, 2018). Furthermore, the lines outside the box extend to the minimum and maximum of the data set (Rumsey, 2016).

The visual representation of the box-and-whisker figure provides a picture of the variance within the data (Bluman, 2018). Furthermore, the visual indicates the density of the population variance surrounding the mean of the variable (Bluman, 2018). The box and whiskers further depict the relationship and correlation between the variables (Edwards, Özgün-Koca, & Barr, 2017). To create the box-and-whisker plot, the data indicated in the five-number summary were utilized (Bluman, 2018; Edwards et al., 2017).

Finally, an analysis of the data using inferential statistics was completed to investigate a potential significant relationship among the variables of the study. A Pearson Product-Moment Correlation Coefficient was applied to analyze the correlation between research variables and to address the hypotheses.

Descriptive Statistics

First, data were organized and calculated for each current grade level taught as follows: values, percentage of sample, five-number summary, measures of central tendency, and standard deviation (see Table 1). First- through fourth-grade teacher

values were depicted. The percentages of the sample were as follows: 20% of the teachers completing the survey taught first grade, 30% taught second grade, 13% taught third grade, and 37% taught fourth grade.

In addition, data were organized in a five-number summary for each current grade level taught. Teacher collective efficacy quartiles for first-grade teachers were calculated as Quartile 1 = 48, Quartile 2 = 49, Quartile 3 = 52.25, and Quartile 4 = 54. The minimum was 40, and the maximum was 54. Second-grade teacher collective efficacy quartiles were calculated as Quartile 1 = 46, Quartile 2 = 51, Quartile 3 = 54, and Quartile 4 = 54. The minimum was 37, and the maximum was 54. Teacher collective efficacy quartiles for third-grade teachers were calculated as Quartile 1 = 49, Quartile 2 = 50.5, Quartile 3 = 51.25, and Quartile 4 = 52. The minimum was 46, and the maximum was 52. Quartiles for fourth-grade teacher collective efficacy were calculated as Quartile 1 = 50, Quartile 2 = 51, Quartile 3 = 54, and Quartile 4 = 54. The minimum was 28, and the maximum was 54. Finally, totals for teacher collective efficacy for first- through fourth-grade teachers were calculated as Quartile 1 = 28, Quartile 2 = 46.5, Quartile 3 = 51, and Quartile 4 = 54. The minimum was 28, and the maximum was 54.

Furthermore, demographic data were analyzed to create a representation of the sample. The arithmetic mean (*M*), median (*MD*), mode, and standard deviation (*SD*) were calculated for grade-level demographics. The mean was calculated to find a midpoint of the group of numbers (Bluman, 2018). Additional measures of central tendency, which included the median and mode, were calculated to further summarize the data (Deshpande et al., 2016). The standard deviation was calculated to understand the

variance of the calculated mean, because “when the means are equal, the larger the variance or standard deviation is, the more variable the data are” (Bluman, 2018, p. 132).

Table 1

Collective Efficacy for Grade Level Taught

Values	First Grade	Second Grade	Third Grade	Fourth Grade	Total
Percentage of Sample	20	30	13	37	100
Five-Number Summary					
Minimum	40.00	37.00	46.00	28.00	28.00
Quartile 1	48.00	42.00	49.00	50.00	46.50
Quartile 2	49.00	51.00	50.50	51.00	51.00
Quartile 3	52.25	54.00	51.25	54.00	54.00
Maximum	54.00	54.00	52.00	54.00	54.00
Measures of Central Tendency					
M	48.83	48.11	49.75	49.27	48.90
MD	49.00	51.00	50.50	51.00	51.00
Mode	48.00	54.00	NA	54.00	54.00
SD	5.00	6.21	2.63	7.91	6.13

These data were utilized to create a box-and-whisker plot (see Figure 1). The figure depicts five series of data for grade level taught: first-grade teachers, second-grade teachers, third-grade teachers, fourth-grade teachers, and total teachers. The boxes in the figure depict the clusters of the data, and the tails depict the variance among the variable data.

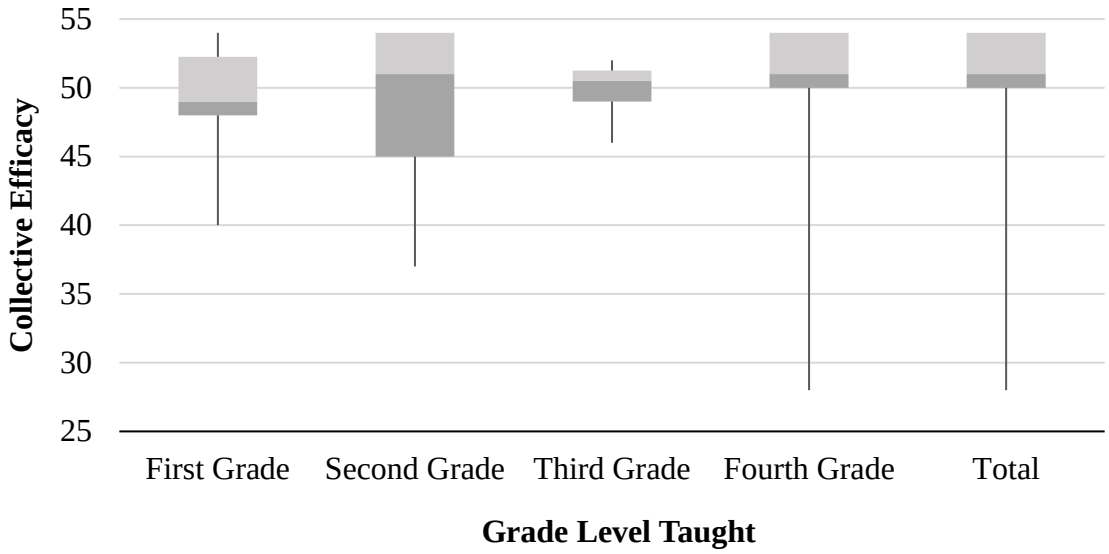

Figure 1. Collective efficacy for grade level taught.

Next, data were organized and calculated for the number of grade-level teachers (see Table 2). Values were depicted from one teacher per grade level to more than 10 teachers per grade level. The percentages of the sample were as follows: 0% of the buildings had one teacher per grade level; 30% had two or three teachers per grade level; 27% had four, five, or six teachers per grade level; 36% had seven, eight, or nine teachers per grade level; and 7% had more than 10 teachers in the building per grade level.

In addition, data were organized in a five-number summary for the number of classroom teachers per grade level within the building. Zero percent reported having one teacher per grade level in the building; therefore, the data were recorded as not applicable (NA). Collective efficacy quartiles for buildings with two or three teachers per grade level were calculated as Quartile 1 = 45, Quartile 2 = 48, Quartile 3 = 51, and Quartile 4 = 54. The minimum was 37, and the maximum was 54. Teacher collective efficacy quartiles for buildings with four, five, or six teachers per grade level were calculated as

Quartile 1 = 49, Quartile 2 = 51, Quartile 3 = 53.25, and Quartile 4 = 54. The minimum was 42, and the maximum was 54. Teacher collective efficacy quartiles for seven, eight, and nine teachers per grade level were calculated as Quartile 1 = 48.50, Quartile 2 = 54, Quartile 3 = 54, and Quartile 4 = 54. The minimum was 28, and the maximum was 54. Teacher collective efficacy quartiles for buildings with more than 10 teachers were calculated as Quartile 1 = 48.75, Quartile 2 = 49.50, Quartile 3 = 50.25, and Quartile 4 = 51. The minimum was 48, and the maximum was 51. Quartiles were calculated for the entire subgroup as Quartile 1 = 46, Quartile 2 = 51, Quartile 3 = 54, and Quartile 4 = 54. The minimum was 28, and the maximum was 54.

Furthermore, data were analyzed to create a representation of the sample. Three measures of central tendency were calculated as follows: arithmetic mean (*M*), median (*MD*), and mode. Finally, the standard deviation (*SD*) was calculated for teachers per grade level demographics.

Table 2

Collective Efficacy for Teachers Per Grade Level

Values	1 Teacher	2-3 Teachers	4-6 Teachers	7-9 Teachers	10+ Teachers	Total
Percentage of Sample	0	30	27	36	7	100
Five-Number Summary						
Minimum	NA	37.00	42.00	28.00	48.00	28.00
Quartile 1	NA	45.00	49.00	48.50	48.75	46.00
Quartile 2	NA	48.00	51.00	54.00	49.50	51.00
Quartile 3	NA	51.00	53.25	54.00	50.25	54.00
Maximum	NA	54.00	54.00	54.00	51.00	54.00
Measures of Central Tendency						
M	NA	47.33	50.13	49.18	49.50	48.90
MD	NA	49.00	51.00	54	49.50	51.00
Mode	NA	NA	54.00	54	NA	54.00
SD	NA	5.66	4.19	8.20	2.12	6.13

These data were utilized to create a box-and-whisker plot (see Figure 2). The figure depicts the cluster and variance of six series of data: one teacher, two or three teachers, four through six teachers, seven through nine teachers, more than 10 teachers, and the total number of teachers.

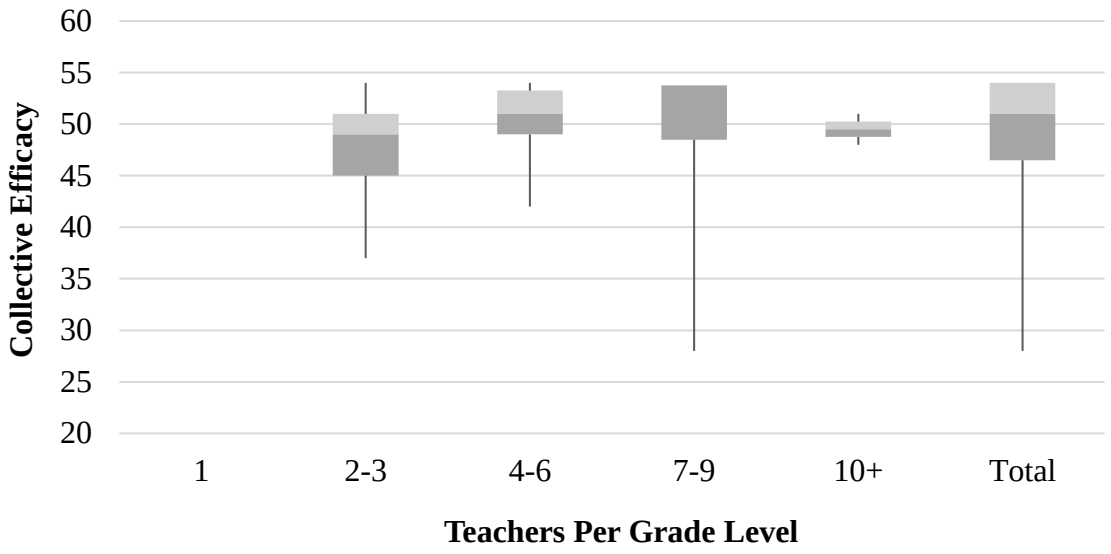

Figure 2. Collective efficacy for teachers per grade level.

Next, data were organized and calculated for number of years in current position (see Table 3). Values were depicted as follows: one through five years, six through 10 years, 11 through 15 years, 16 through 20 years, 21 through 25 years, and 26-plus years. The percentages of the sample for years in current position were as follows: 60% had taught one to five years in their current positions, 20% had five to 10 years of teaching experience in their current positions, 10% had 11-15 years of experience in their current positions, 10% had 16-20 years of experience in their current positions, 0% had 21-25 years of experience in their current positions, and 0% reported teaching 26 years or more in their current positions.

In addition, data were organized in a five-number summary for number of years in current position. Teacher collective efficacy quartiles for one through five years in current position were calculated as Quartile 1 = 45.25, Quartile 2 = 50.50, Quartile 3 = 51.75, and Quartile 4 = 54. The minimum was 37, and the maximum was 54. Teacher

collective efficacy quartiles for teachers teaching in current position six through 10 years were calculated as Quartile 1 = 51, Quartile 2 = 52.5, Quartile 3 = 54, and Quartile 4 = 54. The minimum was 28, and the maximum was 54. Teacher collective efficacy quartiles for teachers teaching in current position 11 through 15 years were calculated as Quartile 1 = 51, Quartile 2 = 54, Quartile 3 = 54, and Quartile 4 = 54. The minimum was 48, and the maximum was 54. Teacher collective efficacy quartiles for teachers teaching in current position 16 through 20 years were calculated as Quartile 1 = 47.5, Quartile 2 = 49, Quartile 3 = 51.50, and Quartile 4 = 54. The minimum was 46, and the maximum was 54.

Data were not reported for any teachers who were in their current positions for more than 25 years; therefore, the data were reported as not applicable (NA). Quartiles for the total subgroup were calculated as Quartile 1 = 46.5, Quartile 2 = 51, Quartile 3 = 54, and Quartile 4 = 54. The minimum was 28, and the maximum was 54. Finally, measures of central tendency and the standard deviation were calculated for years in current position demographics.

Table 3

Collective Efficacy for Years in Current Position

Values	1-5 Years	6-10 Years	11-15 Years	16-20 Years	21-25 Years	26+ Years	Total
Percentage of Sample	60	20	10	10	0	0	100
Five-Number Summary							
Minimum	37.00	28.00	48.00	46.00	NA	NA	28.00
Quartile 1	45.25	51.00	51.00	47.50	NA	NA	46.50
Quartile 2	50.50	52.50	54.00	49.00	NA	NA	51.00
Quartile 3	51.75	54.00	54.00	51.50	NA	NA	54.00
Maximum	54.00	54.00	54.00	54.00	NA	NA	54.00
Measures of Central Tendency							
M	48.33	48.67	52.00	49.67	NA	NA	48.90
MD	50.50	52.50	54.00	49.00	NA	NA	51.00
Mode	51.00	54.00	54.00	NA	NA	NA	54.00
SD	5.28	10.23	3.46	4.04	NA	NA	6.13

These data were utilized to create a box-and-whisker plot (see Figure 3) for number of years in current position. The figure depicts seven series of data: one through five years, six through 10 years, 11 through 15 years, 16 through 20 years, 21 through 25 years, 26-plus years, and the total number of years in current position.

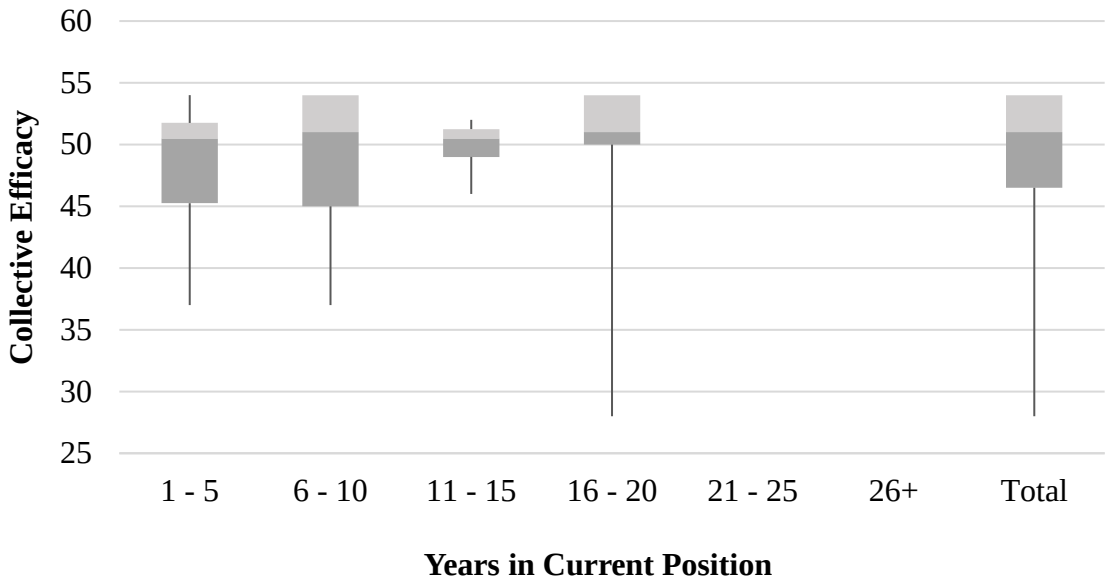

Figure 3. Collective efficacy for years in current position.

Next, data were organized and calculated for total number of years taught (see Table 4). Values were depicted as follows: one through five years, six through 10 years, 11 through 15 years, 16 through 20 years, 21 through 25 years, and 26-plus years. The percentages of the sample for number of years taught were as follows: 40% of participants had taught one to five years, 27% had five to 10 years of teaching experience, 10% had 11-15 years of experience, 13% had 16-20 years of experience, 10% had 21-25 years of experience, and 0% reported teaching 26 years or longer.

In addition, data were organized and calculated in a five-number summary for total number of years taught. Teacher collective efficacy quartiles for teachers teaching one through five total years were as follows: Quartile 1 = 44.25, Quartile 2 = 50.50, Quartile 3 = 52.25, and Quartile 4 = 54. The minimum was 40, and the maximum was 54. Teacher collective efficacy quartiles for teachers teaching six through 10 total years were calculated as Quartile 1 = 49.50, Quartile 2 = 51, Quartile 3 = 54, and Quartile 4 =

54. The minimum was 28, and the maximum was 54. Teacher collective efficacy quartiles for teachers teaching 11 through 15 total years were calculated as Quartile 1 = 49.50, Quartile 2 = 51, Quartile 3 = 52.50, and Quartile 4 = 54. The minimum was 48, and the maximum was 54.

Teacher collective efficacy quartiles for teachers teaching 16 through 20 total years were calculated as Quartile 1 = 49.75, Quartile 2 = 52.50, Quartile 3 = 54, Quartile 4 = 54. The minimum was 46, and the maximum was 54. Teacher collective efficacy quartiles for teaching 21 through 25 years were calculated as Quartile 1 = 43, Quartile 2 = 49, Quartile 3 = 51.5, and Quartile 4 = 54. The minimum was 37, and the maximum was 54. Totals for the subgroup were calculated as Quartile 1 = 46.5, Quartile 2 = 51, Quartile 3 = 54, and Quartile 4 = 54. The minimum was 28, and the maximum was 54. Finally, measures of central tendency and the standard deviation were calculated for total number of years taught demographics.

Table 4

Collective Efficacy for Number of Years Taught

Values	1-5 Years	6-10 Years	11-15 Years	16-20 Years	21-25 Years	26+ Years	Total
Percentage of Sample	40	27	10	13	10	0	100
Five-Number Summary							
Minimum	40.00	28.00	48.00	46.00	37.00	NA	28.00
Quartile 1	44.25	49.50	49.50	49.75	43.00	NA	46.50
Quartile 2	50.50	51.00	51.00	52.50	49.00	NA	51.00
Quartile 3	52.25	54.00	52.50	54.00	51.50	NA	54.00
Maximum	54.00	54.00	54.00	54.00	NA	NA	54.00
Measures of Central Tendency							
M	48.25	48.75	51.00	51.25	46.67	NA	48.90
MD	50.50	51.00	51.00	52.50	49.00	NA	51.00
Mode	51.00	54.00	NA	54.00	NA	NA	54.00
SD	5.19	8.66	3.00	3.77	8.73	NA	6.13

These data were utilized to create a box-and-whisker plot (see Figure 4) for number of years taught. The figure depicts seven series of data: one through five years of teaching, six through 10 years of teaching, 11-15 years of teaching, 16-20 years of teaching, 21-25 years of teaching, 26+ years of teaching, and the total number of years of teaching.

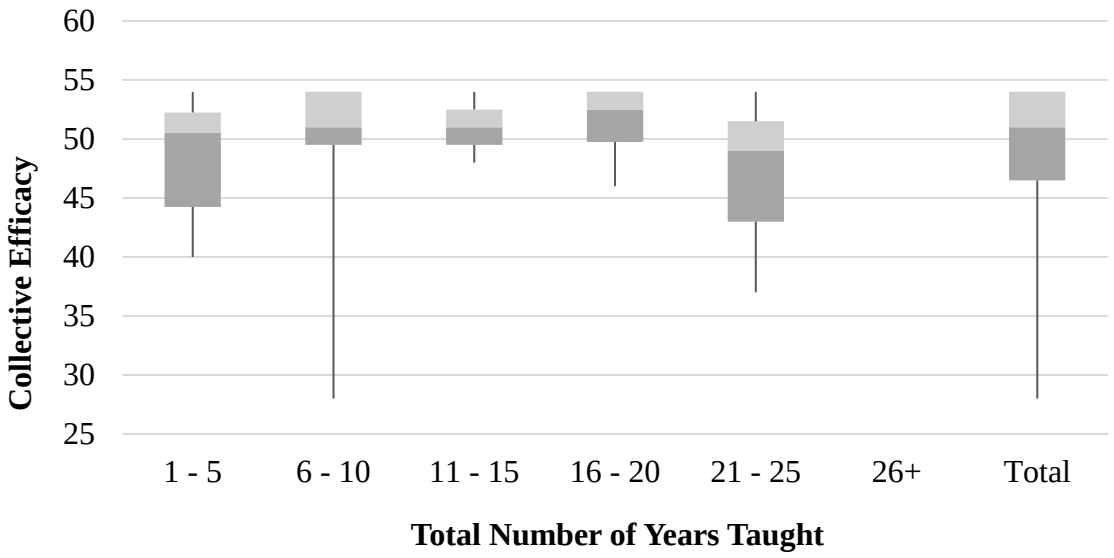

Figure 4. Collective efficacy for number of years taught.

Finally, teacher collective efficacy data were organized and calculated for highest level of education (see Table 5). Values were depicted for bachelor's degree, master's degree, specialist degree, and doctorate degree. The percentages of the sample for highest level of education were as follows: 44% of participants had earned a bachelor's degree, 53% had earned a master's degree, 3% had earned a specialist degree, and 0% indicated completing a doctorate degree.

Teacher collective efficacy quartiles for teachers whose highest level of education was a bachelor's degree were calculated as Quartile 1 = 50, Quartile 2 = 51, Quartile 3 = 54, and Quartile 4 = 54. The minimum was 41, and the maximum was 54. The collective efficacy quartiles for teachers who had completed a master's degree were calculated as Quartile 1 = 44.25, Quartile 2 = 51, Quartile 3 = 54, and Quartile 4 = 54. The minimum was 28, and the maximum was 54. Teacher collective efficacy quartiles for teachers whose highest degree was a specialist degree were calculated as Quartile 1 =

46, Quartile 2 = 46, Quartile 3 = 46, and Quartile 4 = 46. The minimum was 46, and the maximum was 46. There were no responses from participants with doctorate degrees; therefore, no quartiles were calculated. Totals for this subgroup were calculated as Quartile 1 = 46.5, Quartile 2 = 51, Quartile 3 = 54, and Quartile 4 = 54. The minimum was 28, and the maximum was 54. Finally, measures of central tendency and the standard deviation were calculated for each subgroup.

Table 5

Collective Efficacy for Highest Level of Education

Values	Bachelor's Degree	Master's Degree	Specialist Degree	Doctorate Degree	Total
Percentage of Sample	44	53	3	0	100
Five-Number Summary					
Minimum	41.00	28.00	46.00	NA	28.00
Quartile 1	50.00	44.25	46.00	NA	46.50
Quartile 2	51.00	51.00	46.00	NA	51.00
Quartile 3	54.00	54.00	46.00	NA	54.00
Maximum	54.00	54.00	46.00	NA	54.00
Measures of Central Tendency					
M	50.54	47.75	46.00	NA	48.90
MD	51	51	46.00	NA	51.00
Mode	54	54.00	NA	NA	54.00
SD	3.80	7.54	NA	NA	6.13

These data were utilized to create a box-and-whisker plot (see Figure 5). The figure depicts five series of data: bachelor's degree, master's degree, specialist degree, doctorate degree, and the total.

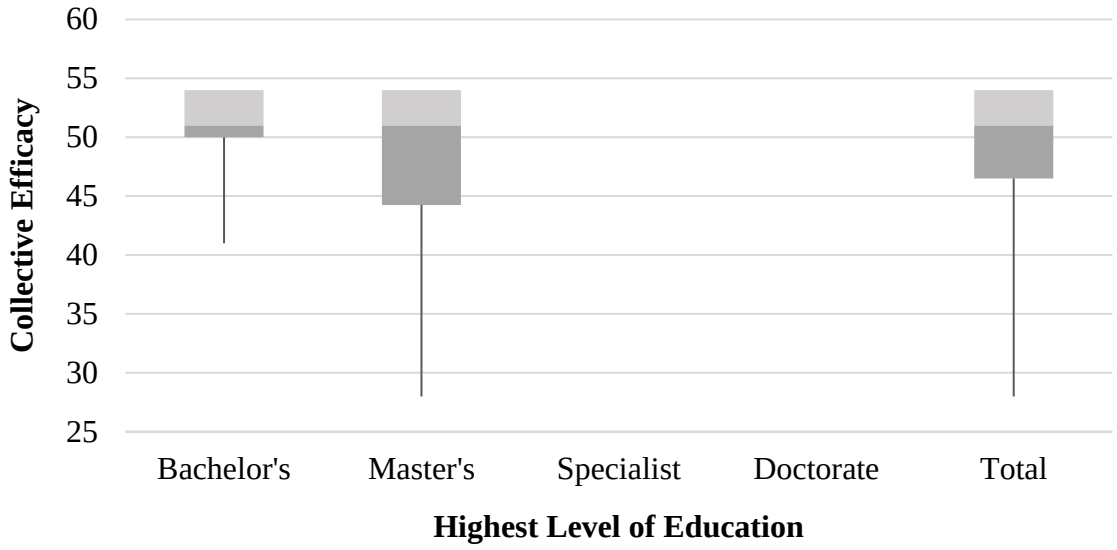

Figure 5. Collective efficacy for highest level of education.

Next, data were organized and calculated in a five-number summary for espoused theories of collaboration and each current grade level taught (see Table 6). Espoused theories of collaboration quartiles for first-grade teachers were calculated as Quartile 1 = 39, Quartile 2 = 39.5, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 34, and the maximum was 40. The second-grade teachers' espoused theories of collaboration quartiles were calculated as Quartile 1 = 39, Quartile 2 = 40, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 32, and the maximum was 40.

Teacher-espoused theories of collaboration for third-grade teachers were calculated as Quartile 1 = 37, Quartile 2 = 39, Quartile 3 = 40, and Quartile 4 = 40. The

minimum was 34, and the maximum was 40. Quartiles for fourth-grade teacher collective efficacy were calculated as Quartile 1 = 35, Quartile 2 = 40, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 32, and the maximum was 40. Totals for teacher-espoused theories of collaboration for first- through fourth-grade teachers were calculated as Quartile 1 = 36.50, Quartile 2 = 40, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 32, and the maximum was 40. Finally, measures of central tendency and the standard deviation were calculated for grade level taught within espoused theories of collaboration.

Table 6

Espoused Theories of Collaboration for Grade Level Taught

Values	First Grade	Second Grade	Third Grade	Fourth Grade	Total
Percentage of Sample	20	30	13	37	100
Five-Number Summary					
Minimum	34.00	32.00	34.00	32.00	32.00
Quartile 1	39.00	39.00	37.00	35.00	36.50
Quartile 2	39.50	40.00	39.00	40.00	40.00
Quartile 3	40.25	40.00	40.00	40.00	40.00
Maximum	40.00	40.00	40.00	40.00	40.00
Measures of Central Tendency					
M	38.67	38.22	38.00	37.45	38.00
MD	39.50	40.00	39.00	40.00	40.00
Mode	40.00	40.00	40.00	40.00	40.00
SD	2.34	3.03	2.83	3.36	2.90

These data were utilized to create a box-and-whisker plot (see Figure 6). The figure depicts five series of data for current grade taught: first-grade teachers, second-grade teachers, third-grade teachers, fourth-grade teachers, and total.

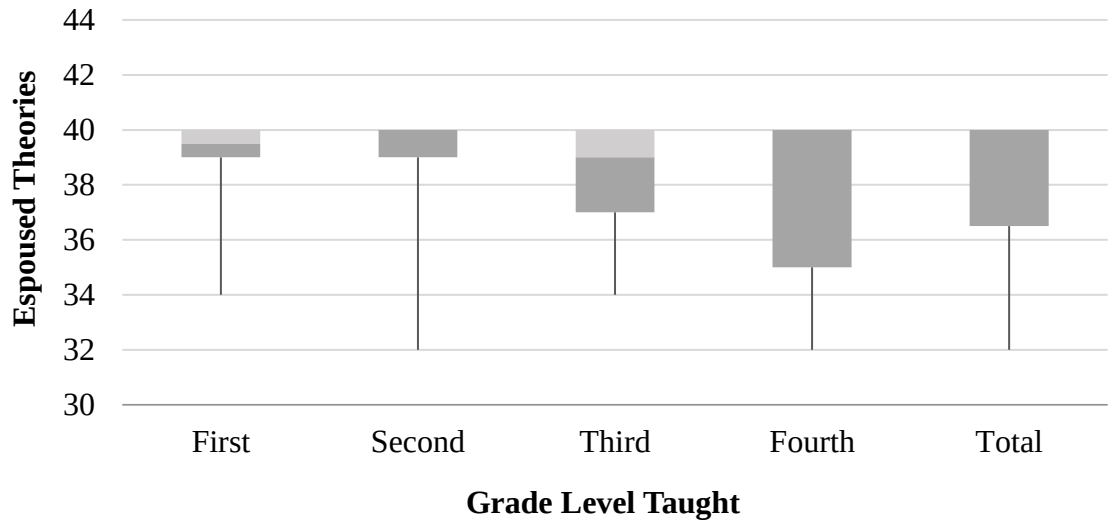

Figure 6. Espoused theories of collaboration for grade level taught.

In addition, espoused theories of collaboration demographic data were analyzed for teachers per grade level (see Table 7). Values were depicted from one teacher per grade level to more than 10 teachers per grade level. Data collected for first- through fourth-grade teacher percentages of the sample were as follows: 20% of the teachers completing the survey currently taught first grade, 30% currently taught second grade, 13% currently taught third grade, and 37% currently taught fourth grade.

Then, data were organized and calculated in a five-number summary for the number of classroom teachers per grade level within the building. Zero percent of the sample reported having one teacher per grade level in the building; therefore, the data were recorded as not applicable (NA). Espoused theories of collaboration quartiles for buildings with two or three teachers per grade level were calculated as Quartile 1 = 39, Quartile 2 = 39, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 34, and the maximum was 40.

Espoused theories of collaboration quartiles for buildings with four, five, or six teachers per grade level were calculated as Quartile 1 = 37.5, Quartile 2 = 40, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 34, and the maximum was 40. Espoused theories of collaboration quartiles for seven, eight, or nine teachers per grade level were calculated as Quartile 1 = 36, Quartile 2 = 40, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 32, and the maximum was 40.

Espoused theories of collaboration quartiles for buildings with more than 10 teachers per grade level were calculated as Quartile 1 = 34, Quartile 2 = 34, Quartile 3 = 34, and Quartile 4 = 34. The minimum was 34, and the maximum was 34. Quartiles were calculated for the entire subgroup as Quartile 1 = 36.5, Quartile 2 = 40, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 32, and the maximum was 40. Finally, measures of central tendency and standard deviation for espoused theories of collaboration were calculated for teachers per grade level.

Table 7

Espoused Theories of Collaboration for Teachers per Grade Level

Values	1 Teacher	2-3 Teachers	4-6 Teachers	7-9 Teachers	10+ Teachers	Total
Percentage of Sample	0	30	27	36	7	100
Five-Number Summary						
Minimum	NA	34.00	34.00	32.00	34.00	32.00
Quartile 1	NA	39.00	37.5.00	36.00	34.00	36.50
Quartile 2	NA	39.00	40.00	40.00	34.00	40.00
Quartile 3	NA	40.00	40.00	40.00	34.00	40.00
Maximum	NA	40.00	40.00	40.00	34.00	40.00
Measures of Central Tendency						
M	NA	38.67	38.50	37.82	34.00	38.00
MD	NA	39.00	40.00	40.00	34.00	40.00
Mode	NA	39.00	40.00	40.00	34.00	40.00
SD	NA	1.87	2.33	3.74	0	2.90

These data were utilized to create a box-and-whisker plot (see Figure 7). The figure depicts six series of data: one teacher, two or three teachers, four through six teachers, seven through nine teachers, more than 10 teachers, and the total number of teachers.

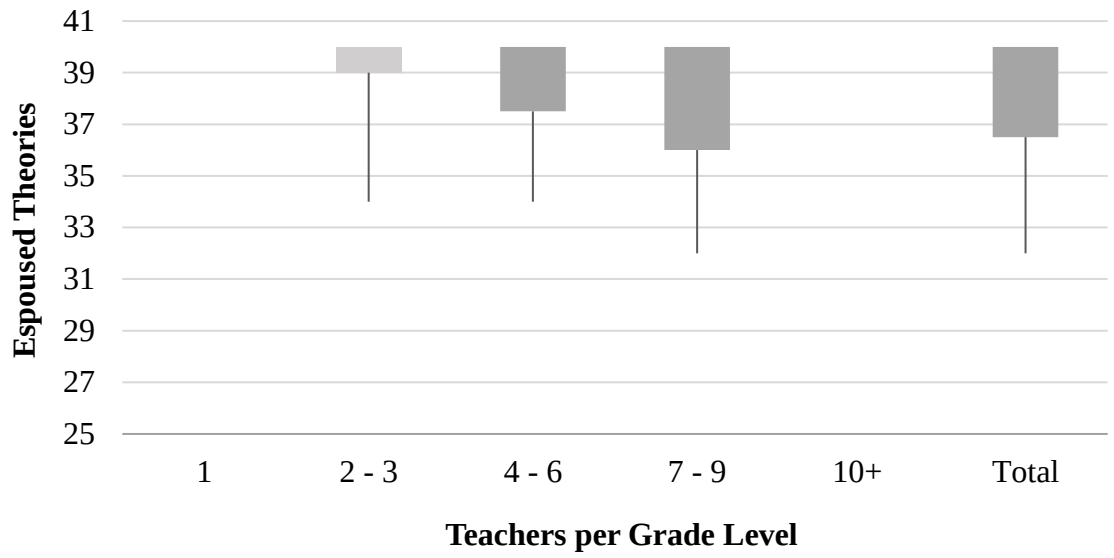

Figure 7. Espoused theories of collaboration for teachers per grade level.

Next, data were organized and calculated for number of years in current position (see Table 8). Espoused theories of collaboration quartiles for one through five years in current position were calculated as Quartile 1 = 38.25, Quartile 2 = 39.50, Quartile 3 = 40.00, and Quartile 4 = 40.00. The minimum was 32, and the maximum was 40. Espoused theories of collaboration quartiles for teachers teaching in current positions six through 10 years were calculated as Quartile 1 = 37, Quartile 2 = 40, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 34, and the maximum was 40.

Espoused theories of collaboration quartiles for teachers teaching in current positions 11 through 15 years were calculated as Quartile 1 = 37, Quartile 2 = 40, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 34, and the maximum was 40. Espoused theories of collaboration quartiles for teachers teaching in current positions 16 through 20 years were calculated as Quartile 1 = 35, Quartile 2 = 38, Quartile 3 = 39, and Quartile 4 = 40. The minimum was 32, and the maximum was 40. Data were not

reported for any teacher who had been teaching in the current position for more than 20 years; therefore, the data were reported as not applicable (NA). Quartiles for the total subgroup were calculated as Quartile 1 = 36.50, Quartile 2 = 40, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 32, and the maximum was 40. Finally, measures of central tendency and the standard deviation were calculated for number of years in current position.

Table 8

Espoused Theories of Collaboration for Years in Current Position

Values	1-5 Years	6-10 Years	11-15 Years	16-20 Years	21-25 Years	26+ Years	Total
Percentage of Sample	60	20	10	10	0	0	100
Five-Number Summary							
Minimum	38.25	34.00	34.00	32.00	NA	NA	32.00
Quartile 1	39.50	37.00	37.00	35.00	NA	NA	36.50
Quartile 2	40.00	40.00	40.00	38.00	NA	NA	40.00
Quartile 3	40.00	40.00	40.00	39.00	NA	NA	40.00
Maximum	40.00	40.00	40.00	40.00	NA	NA	40.00
Measures of Central Tendency							
M	38.11	38.33	38.00	36.67	NA	NA	38.00
MD	39.50	40.00	40.00	38.00	NA	NA	40.00
Mode	40.00	40.00	40.00	NA	NA	NA	40.00
SD	2.55	2.66	3.46	4.16	NA	NA	2.90

These data were utilized to create a box-and-whisker plot (see Figure 8) for number of years in current position. The figure depicts seven series of data: one through five years in current position, six through 10 years in current position, 11-15 years in current position, 16-20 years in current position, 21-25 years in current position, 26+ years in current position, and the total number of years in current position.

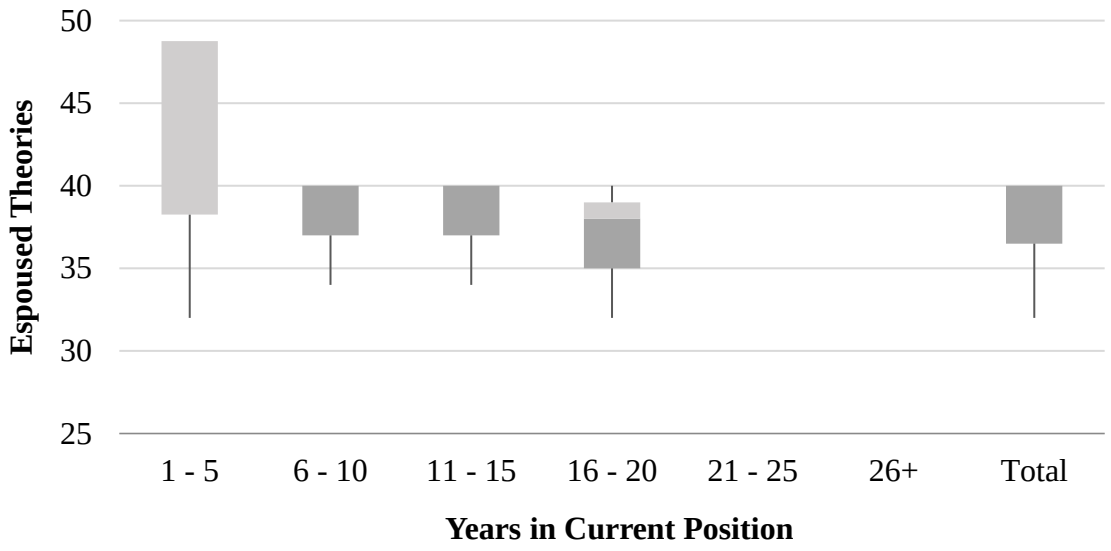

Figure 8. Espoused theories of collaboration for years in current position.

Data were organized and calculated for total number of years taught (see Table 9). Espoused theories of collaboration quartiles for teachers teaching one through five total years were calculated as Quartile 1 = 39, Quartile 2 = 40, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 32, and the maximum was 40. Espoused theories of collaboration quartiles for teachers teaching six through 10 total years were calculated as Quartile 1 = 37, Quartile 2 = 40, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 32, and the maximum was 40.

Espoused theories of collaboration quartiles for teachers teaching 11 through 15 total years were calculated as Quartile 1 = 34, Quartile 2 = 34, Quartile 3 = 37, and Quartile 4 = 40. The minimum was 34, and the maximum was 40. Espoused theories of collaboration quartiles for teachers teaching 16 through 20 total years were calculated as Quartile 1 = 35, Quartile 2 = 38, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 32, and the maximum was 40. Espoused theories of collaboration quartiles for teaching 21 through 25 years were calculated as Quartile 1 = 36, Quartile 2 = 38, Quartile 3 = 39, and Quartile 4 = 40. The minimum was 34, and the maximum was 40. The totals for the subgroup were calculated as Quartile 1 = 36.5, Quartile 2 = 40, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 32, and the maximum was 40. Finally, measures of central tendency and the standard deviation were calculated for number of years taught.

Table 9

Espoused Theories of Collaboration for Number of Years Taught

Values	1-5 Years	6-10 Years	11-15 Years	16-20 Years	21-25 Years	26+ Years	Total
Percentage of Sample	40	27	10	13	10	0	100
Five-Number Summary							
Minimum	32.00	32.00	34.00	32.00	34.00	NA	32.00
Quartile 1	39.00	37.00	34.00	35.00	36.00	NA	36.50
Quartile 2	40.00	40.00	34.00	38.00	38.00	NA	40.00
Quartile 3	40.00	40.00	37.00	40.00	39.00	NA	40.00
Maximum	40.00	40.00	40.00	40.00	40.00	NA	40.00
Measures of Central Tendency							
M	39.00	38.00	36.00	37.00	37.33	NA	38.00
MD	40.00	40.00	34.00	38.00	38.00	NA	40.00
Mode	40.00	40.00	34.00	40.00	NA	NA	40.00
SD	2.26	3.21	3.46	3.83	3.06	NA	2.90

These data were utilized to create a box-and-whisker plot (see Figure 9) for number of years taught. The figure depicts seven series of data: one through five years of teaching, six through 10 years of teaching, 11-15 years of teaching, 16-20 years of teaching, 21-25 years of teaching, 26+ years of teaching, and the total number of years of teaching.

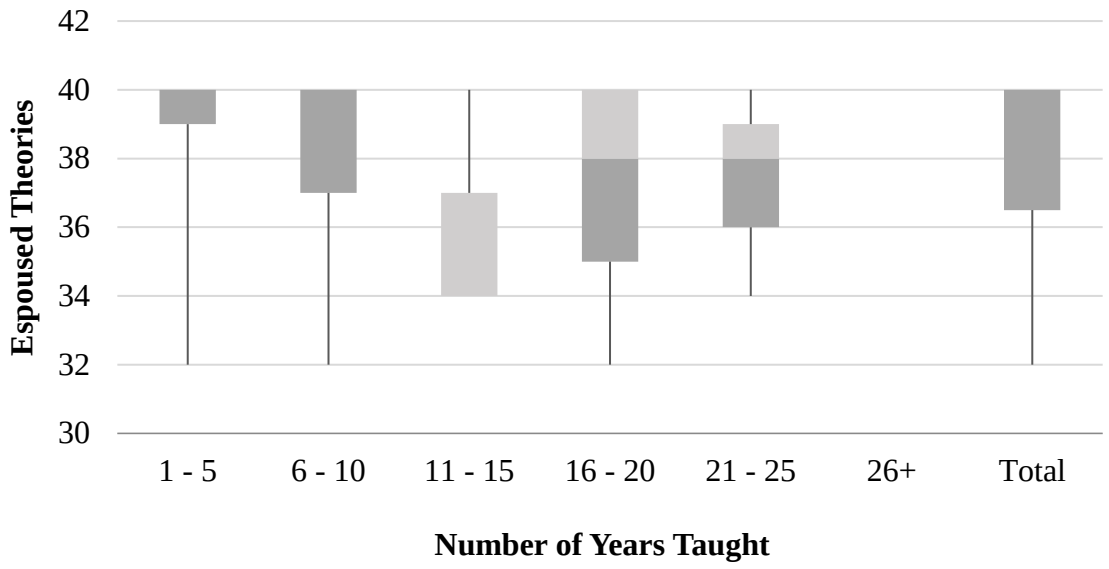

Figure 9. Espoused theories of collaboration for number of years taught.

Data were organized and calculated in a five-number summary for highest level of education (see Table 10). Espoused theories of collaboration quartiles for teachers whose highest level of education was a bachelor's degree were calculated as Quartile 1 = 34, Quartile 2 = 39, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 32, and the maximum was 40. The espoused theories of collaboration quartiles for teachers who had completed a master's degree were calculated as Quartile 1 = 38.75, Quartile 2 = 40, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 34, and the maximum was 40.

Espoused theories of collaboration quartiles for teachers whose highest degree was a specialist degree were calculated as Quartile 1 = 40, Quartile 2 = 40, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 40, and the maximum was 40. There were no responses from participants with doctorate degrees; therefore, no quartiles were calculated. Totals for this subgroup were calculated as Quartile 1 = 36.5, Quartile 2 = 40, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 32, and the maximum was 40.

Finally, measures of central tendency and standard deviations were calculated for highest degree earned.

Table 10

Espoused Theories of Collaboration for Highest Level of Education

Values	Bachelor's Degree	Master's Degree	Specialist Degree	Doctorate Degree	Total
Percentage of Sample	44	53	3	0	100
Five-Number Summary					
Minimum	32.00	34.00	40.00	NA	32.00
Quartile 1	34.00	38.75	40.00	NA	36.50
Quartile 2	39.00	40.00	40.00	NA	40.00
Quartile 3	40.00	40.00	40.00	NA	40.00
Maximum	40.00	40.00	40.00	NA	40.00
Measures of Central Tendency					
M	37.00	38.69	40.00	NA	38.00
MD	39.00	40.00	40.00	NA	40.00
Mode	40.00	40.00	NA	NA	40.00
SD	3.80	2.12	NA	NA	2.90

These data were utilized to create a box-and-whisker plot (see Figure 10). The figure depicts five series of data: bachelor's degree, master's degree, specialist degree, doctorate degree, and the total.

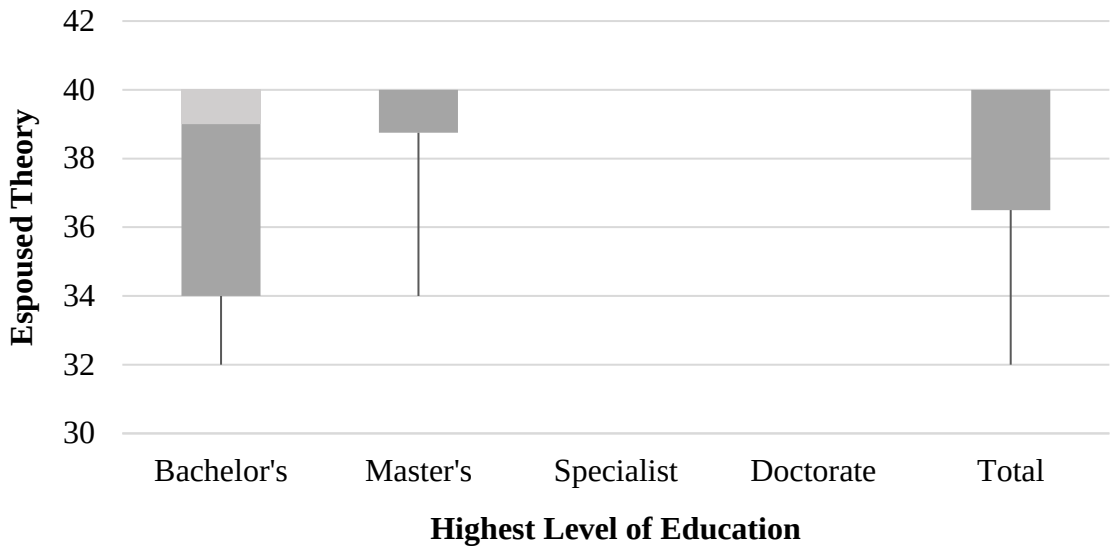

Figure 10. Espoused theories of collaboration for highest level of education.

Data were organized and calculated in a five-number summary for collaborative theories in use and each current grade level taught (see Table 11). Collaborative theories in use quartiles for first-grade teachers were calculated as Quartile 1 = 29, Quartile 2 = 29.5, Quartile 3 = 31.5, and Quartile 4 = 33. The minimum was 27, and the maximum was 33. The collaborative theories in use quartiles for second grade were calculated as Quartile 1 = 28, Quartile 2 = 30, Quartile 3 = 32, and Quartile 4 = 35. The minimum was 25, and the maximum was 35.

Collaborative theories in use for third-grade teachers were calculated as Quartile 1 = 30.75, Quartile 2 = 32, Quartile 3 = 33, and Quartile 4 = 33. The minimum was 30, and the maximum was 33. Quartiles for fourth-grade collaborative theories in use were calculated as Quartile 1 = 35, Quartile 2 = 40, Quartile 3 = 40, and Quartile 4 = 40. The minimum was 32, and the maximum was 40. Totals for teacher-espoused theories of collaboration for first- through fourth-grade teachers were calculated as Quartile 1 = 25,

Quartile 2 = 28, Quartile 3 = 32, and Quartile 4 = 35. The minimum was 24, and the maximum was 35. Finally, measures of central tendency and standard deviations were calculated for current grade level taught.

Table 11

Collaborative Theories in Use for Grade Level Taught

Values	First Grade	Second Grade	Third Grade	Fourth Grade	Total
Percentage of Sample	20	30	13	37	100
Five-Number Summary					
Minimum	27.00	25.00	30.00	24.00	24.00
Quartile 1	29.00	28.00	30.75	25.00	27.25
Quartile 2	29.50	30.00	32.00	28.00	30.00
Quartile 3	31.50	32.00	33.00	32.00	32.00
Maximum	33.00	35.00	33.00	35.00	35.00
Measures of Central Tendency					
M	30.00	29.89	31.75	28.91	29.80
MD	29.50	30.00	32.00	28.00	30.00
Mode	29.00	32.00	33.00	32.00	32.00
SD	2.19	3.02	1.50	4.21	3.24

These data were utilized to create a box-and-whisker plot (see Figure 11). The figure depicts five series of data for current grade taught: first-grade teachers, second-grade teachers, third-grade teachers, fourth-grade teachers, and total teachers.

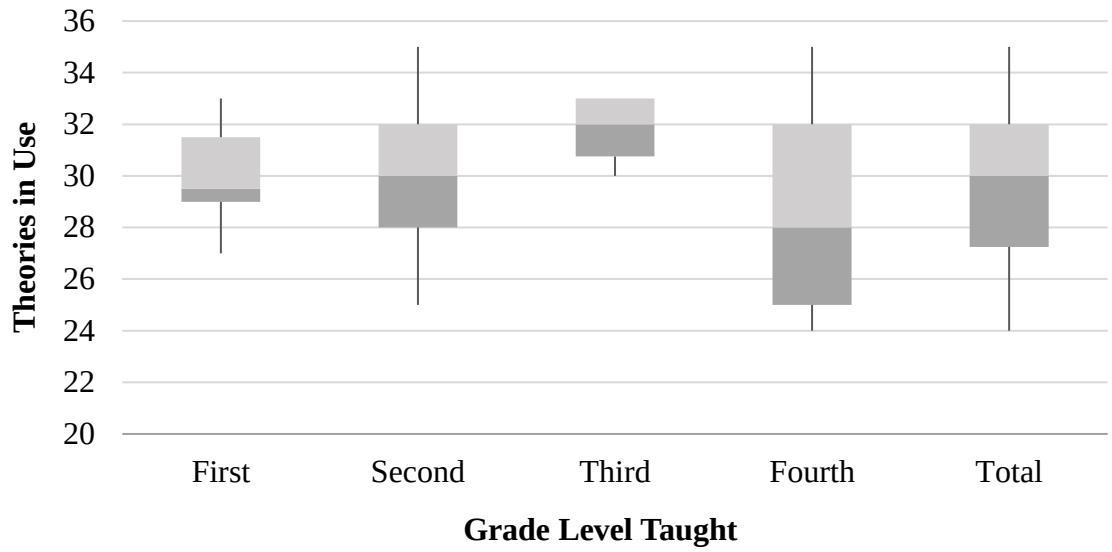

Figure 11. Collaborative theories in use for grade level taught.

Data were organized and calculated in a five-number summary for the number of classroom teachers per grade level within the building (see Table 12). Zero percent reported having one teacher per grade level in the building; therefore, the data were recorded as not applicable (NA). Collaborative theories in use quartiles for buildings with two or three teachers per grade level were calculated as Quartile 1 = 29, Quartile 2 = 32, Quartile 3 = 33, and Quartile 4 = 35. The minimum was 25, and the maximum was 35.

Collaborative theories in use quartiles for buildings with four, five, or six teachers per grade level were calculated as Quartile 1 = 30.75, Quartile 2 = 32, Quartile 3 = 32.25, and Quartile 4 = 33. The minimum was 30, and the maximum was 33. Collaborative theories in use quartiles for seven, eight, or nine teachers per grade level were calculated as Quartile 1 = 26.50, Quartile 2 = 28, Quartile 3 = 30, and Quartile 4 = 35. The minimum was 24, and the maximum was 35. Collaborative theories in use quartiles for

buildings with more than 10 teachers per grade level were calculated as Quartile 1 = 25.25, Quartile 2 = 26.50, Quartile 3 = 27.75, and Quartile 4 = 29. The minimum was 24, and the maximum was 29. Quartiles were calculated for the entire subgroup as Quartile 1 = 27.25, Quartile 2 = 30, Quartile 3 = 32, and Quartile 4 = 35. The minimum was 24, and the maximum was 35. Finally, measures of central tendency and standard deviations were calculated for number of classroom teachers per grade level.

Table 12

Collaborative Theories in Use for Teachers per Grade Level

Values	1 Teacher	2-3 Teachers	4-6 Teachers	7-9 Teachers	10+ Teachers	Total
Percentage of Sample	0	30	27	36	7	100
Five-Number Summary						
Minimum	NA	25.00	30.00	24.00	24.00	24.00
Quartile 1	NA	29.00	30.75	26.50	25.25	27.25
Quartile 2	NA	32.00	32.00	28.00	26.50	30.00
Quartile 3	NA	33.00	32.25	30.00	27.75	32.00
Maximum	NA	33.00	33.00	35.00	29.00	35.00
Measures of Central Tendency						
M	NA	30.78	31.63	28.27	26.50	29.80
MD	NA	32.00	32.00	28.00	26.50	30.00
Mode	NA	32.00	32.00	28.00	NA	32.00
SD	NA	3.31	1.19	3.35	3.54	3.24

These data were utilized to create a box-and-whisker plot (see Figure 12). The figure depicts six series of data: one teacher, two or three teachers, four through six teachers, seven through nine teachers, more than 10 teachers, and the total number of teachers.

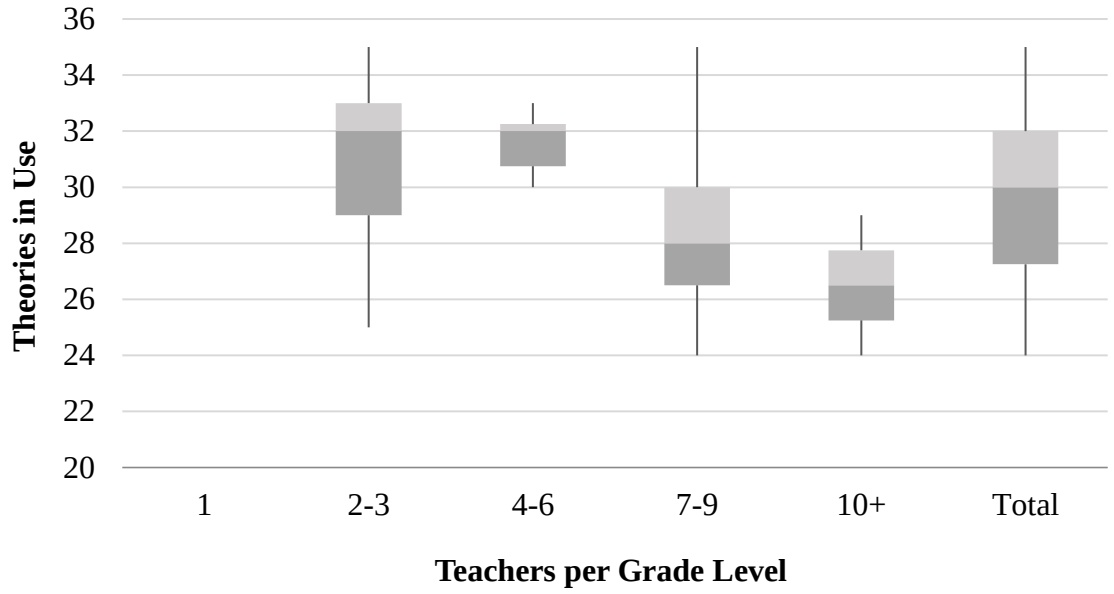

Figure 12. Collaborative theories in use for teachers per grade level.

The number of grade-level teachers in each building were as follows: 0% of the buildings had one teacher per grade level, 30% had two or three teachers per grade level, 27% had four through six teachers per grade level, 36% had seven through nine teachers per grade level, and 7% had more than 10 teachers in the building per grade level.

Next, data were organized and calculated in a five-number summary for number of years in current position (see Table 13). Collaborative theories in use quartiles for one through five years in current position were calculated as Quartile 1 = 27.25, Quartile 2 = 30.50, Quartile 3 = 32.75, and Quartile 4 = 35.00. The minimum was 24, and the

maximum was 35. Collaborative theories in use quartiles for teachers teaching in current position six through 10 years were calculated as Quartile 1 = 26.25, Quartile 2 = 29, Quartile 3 = 31.75, and Quartile 4 = 35. The minimum was 24, and the maximum was 35.

Collaborative theories in use quartiles for teachers teaching in current position 11 through 15 years were calculated as Quartile 1 = 29.50, Quartile 2 = 30, Quartile 3 = 31, and Quartile 4 = 32. The minimum was 29, and the maximum was 32. Collaborative theories in use quartiles for teachers teaching in current position 16 through 20 years were calculated as Quartile 1 = 29, Quartile 2 = 30, Quartile 3 = 31, and Quartile 4 = 32. The minimum was 28, and the maximum was 32. Data were not reported for any teachers who had been teaching in their current positions for more than 20 years; therefore, the data were reported as not applicable (NA). Quartiles for the total subgroup were calculated as Quartile 1 = 27.25, Quartile 2 = 30, Quartile 3 = 32, and Quartile 4 = 35. The minimum was 24, and the maximum was 35.

Table 13

Collaborative Theories in Use for Years in Current Position

Values	1-5 Years	6-10 Years	11-15 Years	16-20 Years	21-25 Years	26+ Years	Total
Percentage of Sample	60	20	10	10	0	0	100
Five-Number Summary							
Minimum	24.00	24.00	29.00	28.00	NA	NA	24.00
Quartile 1	27.25	26.25	29.50	29.00	NA	NA	27.25
Quartile 2	30.50	29.00	30.00	30.00	NA	NA	30.00
Quartile 3	32.75	31.75	31.00	31.00	NA	NA	32.00
Maximum	35.00	35.00	32.00	32.00	NA	NA	35.00
Measures of Central Tendency							
M	29.89	29.17	30.33	30.00	NA	NA	29.80
MD	30.50	29.00	30.00	30.00	NA	NA	30.00
Mode	32.00	NA	NA	NA	NA	NA	32.00
SD	3.21	4.17	1.53	2.00	NA	NA	3.24

The data were utilized to create a box-and-whisker plot (see Figure 13) for number of years in current position. The figure depicts seven series of data: one through five years in current position, six through 10 years in current position, 11-15 years in current position, 16-20 years in current position, 21-25 years in current position, 26+ years in current position, and the total number of years in current position.

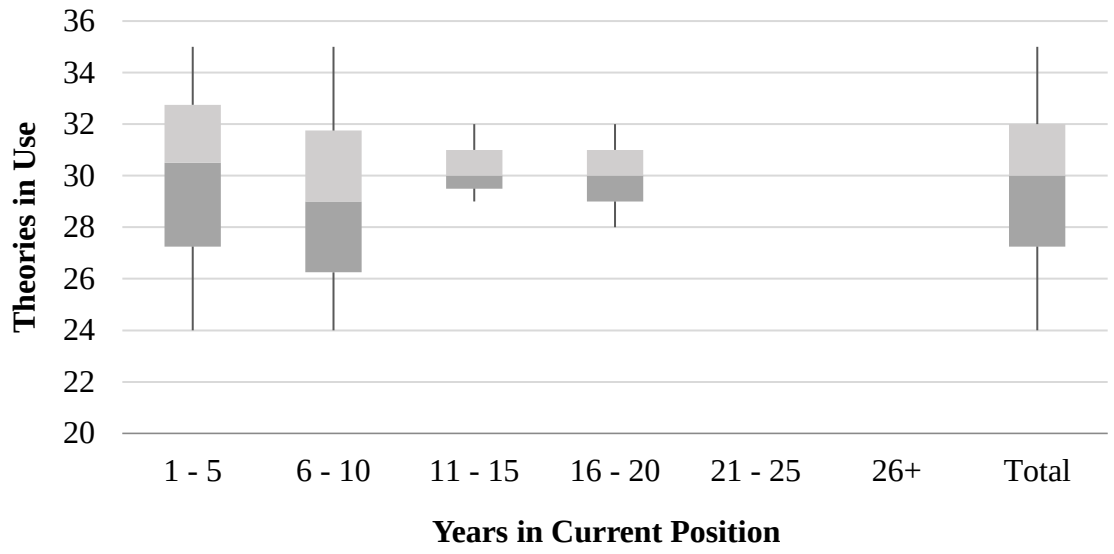

Figure 13. Collaborative theories in use for years in current position.

The number of years in current position demographics were as follows: 60% of teachers had taught one to five years in their current positions, 20% had five to 10 years of teaching experience in their current positions, 10% had 11-15 years of experience in their current positions, 10% had 16-20 years of experience in their current positions, 0% had 21-25 years of experience in their current positions, and 0% reported teaching 26 years or longer in their current positions.

In addition, data were organized and calculated in a five-number summary for total number of years taught (see Table 14). Collaborative theories in use quartiles for teachers in their current positions for one through five total years were calculated as Quartile 1 = 29, Quartile 2 = 31.50, Quartile 3 = 32.25, and Quartile 4 = 35. The minimum was 27, and the maximum was 35. Collaborative theories in use quartiles for teachers in their current positions six through 10 total years were calculated as Quartile 1

= 25.50, Quartile 2 = 27.00, Quartile 3 = 33.25, and Quartile 4 = 35. The minimum was 24, and the maximum was 35.

Collaborative theories in use quartiles for teachers in their current positions 11 through 15 total years were calculated as Quartile 1 = 29.5, Quartile 2 = 30, Quartile 3 = 30.5, and Quartile 4 = 31. The minimum was 29, and the maximum was 31. Collaborative theories in use quartiles for teachers in their current positions 16 through 20 total years were calculated as Quartile 1 = 27, Quartile 2 = 29, Quartile 3 = 30.5, and Quartile 4 = 32. The minimum was 24, and the maximum was 32. Collaborative theories in use quartiles for 21 through 25 years in current positions were calculated as Quartile 1 = 28.5, Quartile 2 = 32, Quartile 3 = 32, and Quartile 4 = 32. The minimum was 28.5, and the maximum was 32. Finally, the totals for the subgroup were calculated as Quartile 1 = 27.25, Quartile 2 = 30, Quartile 3 = 32, and Quartile 4 = 35. The minimum was 24, and the maximum was 35.

Table 14

Collaborative Theories in Use for Number of Years Taught

Values	1-5 Years	6-10 Years	11-15 Years	16-20 Years	21-25 Years	26+ Years	Total
Percentage of Sample	40	27	10	13	10	0	100
Five-Number Summary							
Minimum	27.00	24.00	29.00	24.00	25.00	NA	32.00
Quartile 1	29.00	25.50	29.50	27.00	28.50	NA	36.50
Quartile 2	31.50	27.00	30.00	29.00	32.00	NA	40.00
Quartile 3	32.35	33.25	30.50	30.50	32.00	NA	40.00
Maximum	35.00	35.00	31.00	32.00	32.00	NA	40.00
Measures of Central Tendency							
M	30.92	28.75	30.00	28.50	29.67	NA	29.80
MD	31.50	27.00	30.00	29.00	32.00	NA	30.00
Mode	32.00	27.00	NA	NA	32.00	NA	32.00
SD	2.35	4.53	1	3.42	4.04	NA	3.24

The data were utilized to create a box-and-whisker plot (see Figure 14) for number of years taught. The figure depicts seven series of data: one through five years of teaching, six through 10 years of teaching, 11-15 years of teaching, 16-20 years of teaching, 21-25 years of teaching, 26+ years of teaching, and the total number of years teaching.

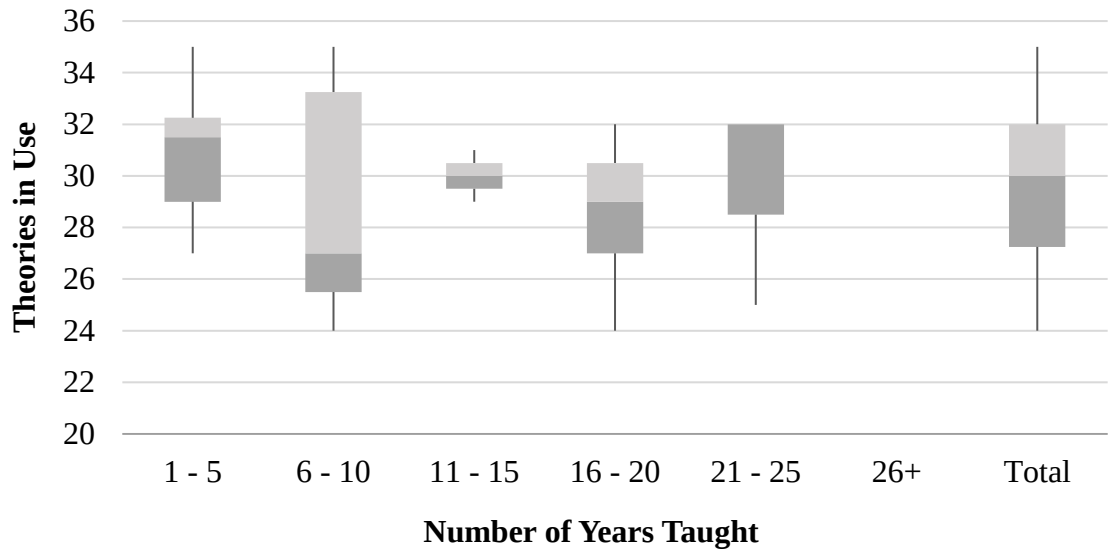

Figure 14. Collaborative theories in use for number of years taught.

Participant number of years taught were as follows: 40% of the participants taught one to five years, 27% had five to 10 years of teaching experience, 10% had 11-15 years of experience, 13% had 16-20 years of experience, 10% had 21-25 years of experience, and 0% reported teaching 26 years or longer.

Finally, data were organized and calculated in a five-number summary for highest level of education (see Table 15). Collaborative theories in use quartiles for teachers whose highest level of education was a bachelor's degree were calculated as Quartile 1 = 27, Quartile 2 = 29, Quartile 3 = 31, and Quartile 4 = 34. The minimum was 24, and the maximum was 34. Collaborative theories in use quartiles for teachers who completed a master's degree were calculated as Quartile 1 = 28.5, Quartile 2 = 32, Quartile 3 = 32.25, and Quartile 4 = 35. The minimum was 24, and the maximum was 35.

Collaborative theories in use quartiles for teachers whose highest degree was a specialist degree were calculated as Quartile 1 = 30, Quartile 2 = 30, Quartile 3 = 30, and

Quartile 4 = 30. The minimum was 30, and the maximum was 30. There were no responses from participants with doctorate degrees; therefore, no quartiles were calculated. Finally, totals for this subgroup were calculated as Quartile 1 = 27.25, Quartile 2 = 30, Quartile 3 = 32, and Quartile 4 = 35. The minimum was 24, and the maximum was 35.

Table 15

Collaborative Theories in Use for Highest Level of Education

Values	Bachelor's Degree	Master's Degree	Specialist Degree	Doctorate Degree	Total
Percentage of Sample	44	53	3	0	100
Five-Number Summary					
Minimum	24.00	24.00	30.00	NA	24.00
Quartile 1	27.00	28.50	30.00	NA	27.50
Quartile 2	29.00	32.00	30.00	NA	30.00
Quartile 3	31.00	32.25	30.00	NA	32.00
Maximum	34.00	35.00	30.00	NA	35.00
Measures of Central Tendency					
M	29.08	30.38	30.00	NA	29.80
MD	29.00	32.00	30.00	NA	30.00
Mode	31.00	32.00	NA	NA	32.00
SD	3.15	3.40	NA	NA	3.24

The data were utilized to create a box-and-whisker plot (see Figure 15). The figure depicts five series of data: bachelor's degree, master's degree, specialist degree, doctorate degree, and the total.

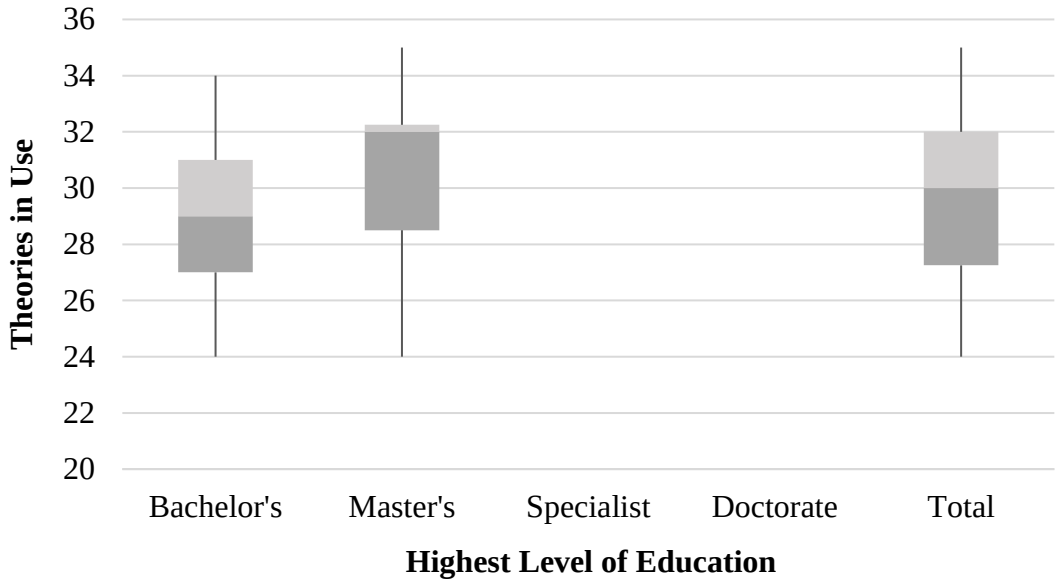

Figure 15. Collaborative theories in use for highest level of education.

Demographic data were analyzed to create a representation of the sample. The highest level of education was as follows: 44% of participants earned a bachelor's degree, 53% earned a master's degree, 3% earned a specialist degree, and 0% indicated completing a doctorate degree (see Table 16).

Next, data were organized and calculated in a five-number summary for student self-directedness and each current grade level taught. Student self-directedness quartiles for first-grade teachers were calculated as Quartile 1 = 25.25, Quartile 2 = 26.5, Quartile 3 = 27.75, and Quartile 4 = 28. The minimum was 20, and the maximum was 28. Second-grade student self-directedness quartiles were calculated as Quartile 1 = 27,

Quartile 2 = 29, Quartile 3 = 31, and Quartile 4 = 32. The minimum was 24, and the maximum was 32.

Student self-directedness scores for third-grade teachers were calculated as Quartile 1 = 31.25, Quartile 2 = 32.5, Quartile 3 = 33.25, and Quartile 4 = 34. The minimum was 29, and the maximum was 36. Quartiles for fourth-grade student self-directedness were calculated as Quartile 1 = 28, Quartile 2 = 29, Quartile 3 = 32, and Quartile 4 = 36. The minimum was 24, and the maximum was 36. Totals for teacher-student self-directedness for first- through fourth-grade teachers were calculated as Quartile 1 = 27, Quartile 2 = 29, Quartile 3 = 32, and Quartile 4 = 36. The minimum was 20, and the maximum was 36.

Table 16

Student Self-Directedness for Grade Level Taught

Values	First Grade	Second Grade	Third Grade	Fourth Grade	Total
Percentage of Sample	20	30	13	37	100
Five-Number Summary					
Minimum	20.00	24.00	29.00	24.00	20.00
Quartile 1	25.25	27.00	31.25	28.00	27.00
Quartile 2	26.50	29.00	32.50	29.00	29.00
Quartile 3	27.75	31.00	33.25	32.00	32.00
Maximum	28.00	32.00	34.00	36.00	36.00
Measures of Central Tendency					
M	25.67	28.78	32.00	29.92	29.00
MD	26.50	29.00	32.50	29.00	29.00
Mode	28.00	32.00	NA	32.00	32.00
SD	3.01	2.99	2.16	4.04	3.74

The data were utilized to create a box-and-whisker plot (see Figure 16). The figure depicts five series of data for current grade level taught: first-grade teachers, second-grade teachers, third-grade teachers, fourth-grade teachers, and total teachers.

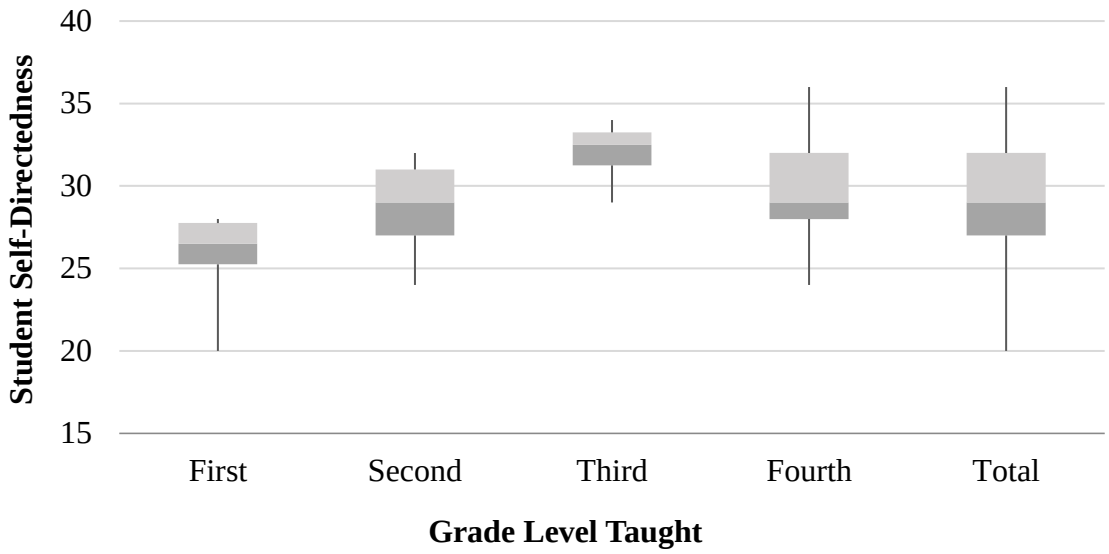

Figure 16. Student self-directedness for grade level taught.

In addition, demographic data were analyzed to create a representation of the sample. The arithmetic mean (*M)*, median (*MD*), mode, and standard deviation (*SD*) (see Table 12) were calculated for grade-level demographics. The first- through fourth-grade teacher demographics were as follows: 20% of the teachers completing the survey currently taught first grade, 30% currently taught second grade, 13% currently taught third grade, and 37% currently taught fourth grade.

Then, data were organized and calculated in a five-number summary for the number of classroom teachers per grade level within the building (see Table 17). Zero percent reported having one teacher per grade level in the building; therefore, the data were recorded as not applicable (NA). Student self-directedness quartiles for buildings with two or three teachers per grade level were calculated as Quartile 1 = 26, Quartile 2 = 27, Quartile 3 = 32, and Quartile 4 = 36. The minimum was 20, and the maximum was 36.

Student self-directedness quartiles for buildings with four, five, or six teachers per grade level were calculated as Quartile 1 = 28, Quartile 2 = 30.5, Quartile 3 = 32.25, and Quartile 4 = 34. The minimum was 25, and the maximum was 34. Student self-directedness quartiles for seven, eight, or nine teachers per grade level were calculated as Quartile 1 = 26, Quartile 2 = 29, Quartile 3 = 31, and Quartile 4 = 36. The minimum was 24, and the maximum was 36. Student self-directedness quartiles for buildings with more than 10 teachers were calculated as Quartile 1 = 28.75, Quartile 2 = 29.50, Quartile 3 = 30.25, and Quartile 4 = 31. The minimum was 28, and the maximum was 31. Finally, quartiles were calculated for the entire subgroup as Quartile 1 = 27, Quartile 2 = 29, Quartile 3 = 32, and Quartile 4 = 36. The minimum was 20, and the maximum was 36.

Table 17

Student Self-Directedness for Teachers per Grade Level

Values	1 Teacher	2-3 Teachers	4-6 Teachers	7-9 Teachers	10+ Teachers	Total
Percentage of Sample	0	30	27	36	7	100
Five-Number Summary						
Minimum	NA	20.00	25.00	24.00	28.00	20.00
Quartile 1	NA	26.00	28.75	26.00	28.75	27.00
Quartile 2	NA	27.00	30.50	29.00	29.50	29.00
Quartile 3	NA	32.00	32.25	31.00	30.25	32.00
Maximum	NA	36.00	34.00	36.00	31.00	36.00
Measures of Central Tendency						
M	NA	38.67	38.50	37.82	34.00	38.00
MD	NA	39.00	40.00	40.00	34.00	40.00
Mode	NA	39.00	40.00	40.00	34.00	40.00
SD	NA	1.87	2.33	3.74	0	2.90

The data were utilized to create a box-and-whisker plot (see Figure 17). The figure depicts six series of data: one teacher, two or three teachers, four through six teachers, seven through nine teachers, more than 10 teachers, and the total number of teachers.

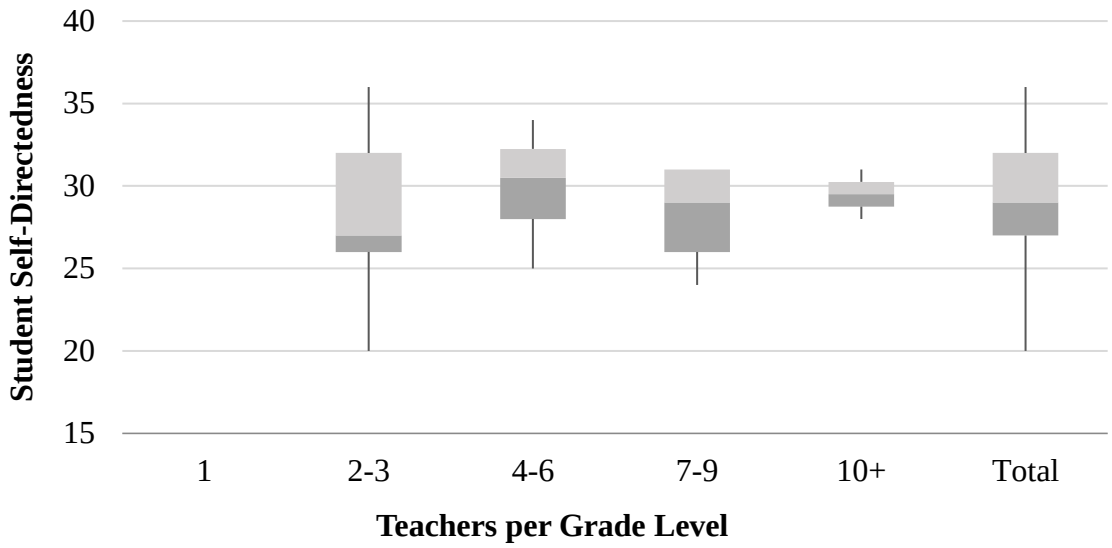

Figure 17. Student self-directedness for teachers per grade level.

The percentage of grade-level teachers in each building were as follows: 0% of the buildings had one teacher per grade level; 30% had two or three teachers per grade level; 27% had four through six teachers per grade level; 36% had seven, eight, or nine teachers per grade level; and 7% had more than 10 teachers in the building per grade level.

Next, data were organized and calculated in a five-number summary for number of years in current position (see Table 18). Student self-directedness quartiles for one through five years in current position were calculated as Quartile 1 = 25.25, Quartile 2 = 28.50, Quartile 3 = 31, and Quartile 4 = 36.00. The minimum was 20, and the maximum was 36. Student self-directedness quartiles for teachers teaching in current position six through 10 years were calculated as Quartile 1 = 28.25, Quartile 2 = 29, Quartile 3 = 31.25, and Quartile 4 = 33. The minimum was 24, and the maximum was 33.

Student self-directedness quartiles for teachers teaching in current position 11 through 15 years were calculated as Quartile 1 = 28, Quartile 2 = 28, Quartile 3 = 30, and Quartile 4 = 32. The minimum was 28, and the maximum was 36. Student self-directedness quartiles for teachers teaching in current position 16 through 20 years were calculated as Quartile 1 = 31, Quartile 2 = 34, Quartile 3 = 35, and Quartile 4 = 36. The minimum was 28, and the maximum was 36. Data were not reported for any teacher who had been teaching in the current position for more than 20 years; therefore, the data were reported as not applicable (NA). Finally, quartiles for the total subgroup were calculated as Quartile 1 = 27, Quartile 2 = 29, Quartile 3 = 32, and Quartile 4 = 36. The minimum was 20, and the maximum was 36.

Table 18

Student Self-Directedness for Years in Current Position

Values	1-5 Years	6-10 Years	11-15 Years	16-20 Years	21-25 Years	26+ Years	Total
Percentage of Sample	60	20	10	10	0	0	100
Five-Number Summary							
Minimum	20.00	24.00	28.00	28.00	NA	NA	20.00
Quartile 1	25.25	28.25	28.00	31.00	NA	NA	27.00
Quartile 2	28.50	29.00	28.00	34.00	NA	NA	29.00
Quartile 3	31.00	31.25	30.00	35.00	NA	NA	32.00
Maximum	36.00	33.00	32.00	36.00	NA	NA	36.00
Measures of Central Tendency							
M	28.28	29.17	29.33	32.67	NA	NA	29.00
MD	38.50	29.00	28.00	34.00	NA	NA	29.00
Mode	32.00	29.00	28.00	NA	NA	NA	32.00
SD	3.91	3.19	2.31	4.16	NA	NA	3.74

The data were utilized to create a box-and-whisker plot (see Figure 18) for number of years in current position. The figure depicts seven series of data: one through five years in current position, six through 10 years in current position, 11-15 years in current position, 16-20 years in current position, 21-25 years in current position, 26+ years in current position, and the total number of years in current position.

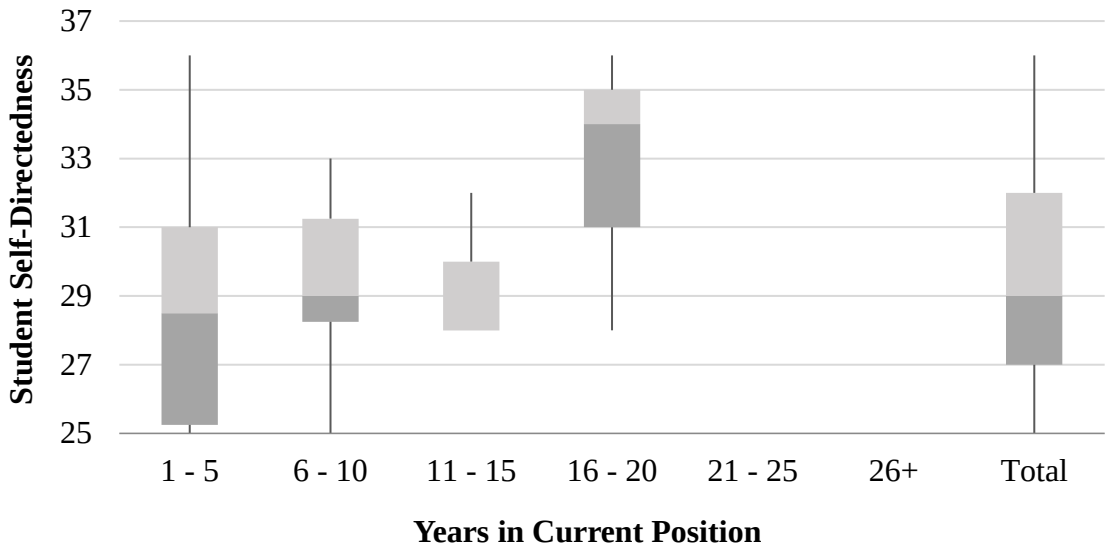

Figure 18. Student self-directedness for years in current position.

The number of years in current position demographics were as follows: 60% had taught one to five years in their current positions, 20% had five to 10 years of teaching experience in their current positions, 10% had 11-15 years of experience in their current positions, 10% had 16-20 years of experience in their current positions, 0% had 21-25 years of experience in their current positions, and 0% reported teaching 26 years or longer in their current positions.

In addition, data were organized and calculated in a five-number summary for total number of years taught (see Table 19). Student self-directedness quartiles for teachers teaching one through five total years were calculated as Quartile 1 = 26.5, Quartile 2 = 28.50, Quartile 3 = 31.25, and Quartile 4 = 32. The minimum was 20, and the maximum was 32. Student self-directedness quartiles for teachers teaching six through 10 total years were calculated as Quartile 1 = 27.50, Quartile 2 = 29.00, Quartile 3 = 29.5, and Quartile 4 = 36. The minimum was 24, and the maximum was 36.

Student self-directedness quartiles for teachers teaching 11 through 15 total years were calculated as Quartile 1 = 28, Quartile 2 = 28, Quartile 3 = 30.5, and Quartile 4 = 33. The minimum was 28, and the maximum was 33. Student self-directedness quartiles for teachers teaching 16 through 20 total years were calculated as Quartile 1 = 30, Quartile 2 = 33, Quartile 3 = 34.5, Quartile 4 = 36. The minimum was 24, and the maximum was 36.

Student self-directedness quartiles for teaching 21 through 25 years were calculated as Quartile 1 = 26.5, Quartile 2 = 28, Quartile 3 = 30, and Quartile 4 = 32. The minimum was 25, and the maximum was 32. Finally, the totals for the subgroup were calculated as Quartile 1 = 27, Quartile 2 = 29, Quartile 3 = 32, and Quartile 4 = 36. The minimum was 20, and the maximum was 36.

Table 19

Student Self-Directedness for Number of Years Taught

Values	1-5 Years	6-10 Years	11-15 Years	16-20 Years	21-25 Years	26+ Years	Total
Percentage of Sample	40	27	10	13	10	0	100
Five-Number Summary							
Minimum	20.00	24.00	28.00	24.00	25.00	NA	20.00
Quartile 1	26.50	27.50	28.00	30.00	26.50	NA	27.00
Quartile 2	28.50	29.00	28.00	33.00	28.00	NA	29.00
Quartile 3	31.25	29.50	30.50	34.50	30.00	NA	32.00
Maximum	32.00	36.00	33.00	36.00	32.00	NA	36.00
Measures of Central Tendency							
M	28.17	29.00	29.67	31.50	28.33	NA	29.00
MD	28.50	29.00	28.00	33.00	28.00	NA	29.00
Mode	32.00	29.00	28.00	NA	NA	NA	32.00
SD	3.79	3.55	2.89	5.26	3.51	NA	3.74

The data were utilized to create a box-and-whisker plot (see Figure 19) for number of years taught. The figure depicts seven series of data: one through five years of teaching, six through 10 years of teaching, 11-15 years of teaching, 16-20 years of teaching, 21-25 years of teaching, 26+ years of teaching, and the total number of years of teaching.

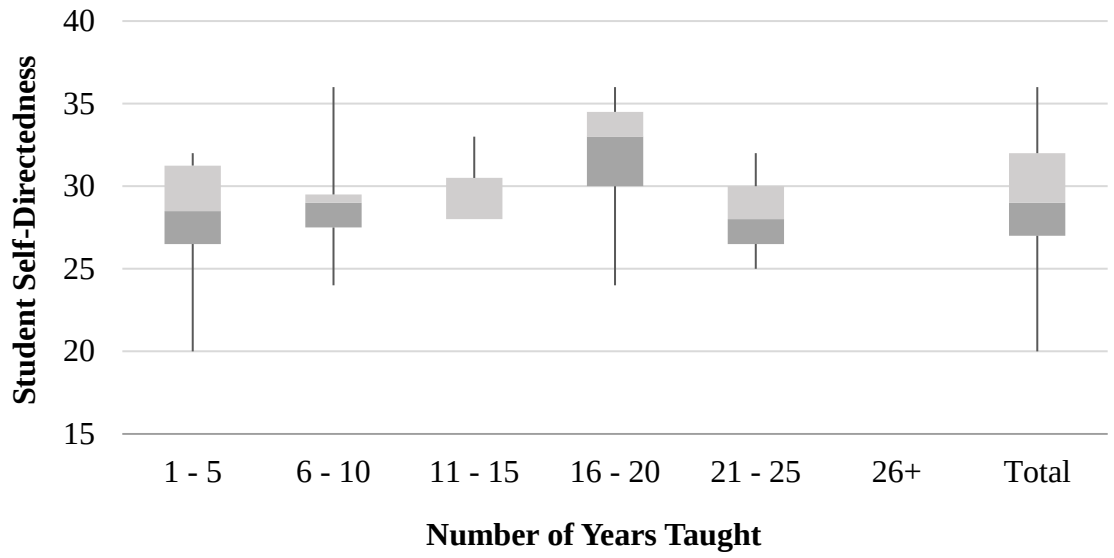

Figure 19. Student self-directedness for number of years taught.

The number of years taught were as follows: 40% of participants had taught one to five years, 27% had five to 10 years of teaching experience, 10% had 11-15 years of experience, 13% had 16-20 years of experience, 10% had 21-25 years of experience, and 0% of the sample reported teaching 26 years or longer.

Finally, data were organized and calculated in a five-number summary for highest level of education (see Table 20). Student self-directedness quartiles for teachers whose highest level of education was a bachelor's degree were calculated as Quartile 1 = 27, Quartile 2 = 29, Quartile 3 = 31, and Quartile 4 = 36. The minimum was 24, and the maximum was 36. Student self-directedness quartiles for teachers who completed a master's degree were calculated as Quartile 1 = 26.5, Quartile 2 = 28.50, Quartile 3 = 32, and Quartile 4 = 32. The minimum was 20, and the maximum was 32. Student self-directedness quartiles for teachers whose highest degree was a specialist degree were calculated as Quartile 1 = 34, Quartile 2 = 34, Quartile 3 = 34, and Quartile 4 = 34. The

minimum was 34, and the maximum was 34. There were no responses from participants with doctorate degrees; therefore, no quartiles were calculated. Finally, totals for this subgroup were calculated as Quartile 1 = 27, Quartile 2 = 29, Quartile 3 = 32, and Quartile 4 = 36. The minimum was 20, and the maximum was 36.

Table 20

Student Self-Directedness for Highest Level of Education

Values	Bachelor's Degree	Master's Degree	Specialist Degree	Doctorate Degree	Total
Percentage of Sample	44	53	3	0	100
Five-Number Summary					
Minimum	24.00	20.00	34.00	NA	20.00
Quartile 1	27.00	26.50	34.00	NA	27.00
Quartile 2	29.00	28.50	34.00	NA	29.00
Quartile 3	31.00	32.00	34.00	NA	32.00
Maximum	36.00	32.00	34.00	NA	36.00
Measures of Central Tendency					
M	29.28	28.38	34.00	NA	29.80
MD	29.00	28.50	34.00	NA	30.00
Mode	28.00	32.00	NA	NA	32.00
SD	3.93	3.54	NA	NA	3.24

The data were utilized to create a box-and-whisker plot (see Figure 19). The figure depicts five series of data: bachelor's degree, master's degree, specialist degree, doctorate degree, and the total.

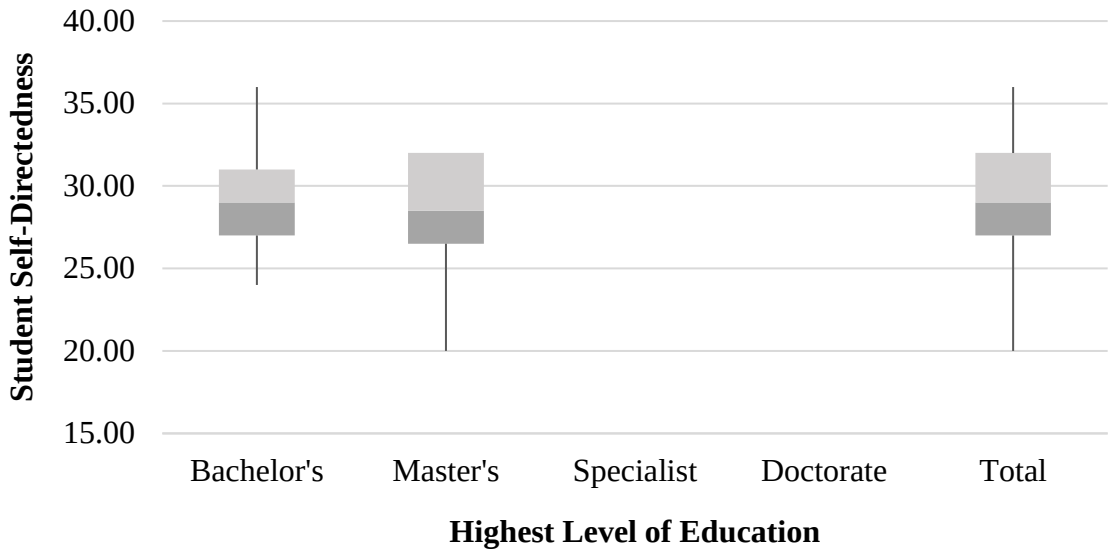

Figure 20. Student self-directedness for highest level of education.

Demographic data were analyzed to create a representation of the sample. The highest level of education was as follows: 44% of participants earned the highest degree of a bachelor's, 53% earned a master's degree, 3% earned a specialist degree, and 0% indicated completing a doctorate degree (see Table 21)

First, data were organized and calculated in a five-number summary for gap between espoused theories of collaboration and collaborative theories in use and each current grade level taught. Collaborative theories in use quartiles for first-grade teachers were calculated as Quartile 1 = 7.25, Quartile 2 = 8.5, Quartile 3 = 9.75, and Quartile 4 = 13. The minimum was 5, and the maximum was 13. Second-grade gap between espoused theories of collaboration and collaborative theories in use quartiles were Quartile 1 = 7, Quartile 2 = 9, Quartile 3 = 10, and Quartile 4 = 7.75. The minimum was 4, and the maximum was 12.

Gaps between espoused theories of collaboration and collaborative theories in use for third-grade teachers were Quartile 1 = 4.5, Quartile 2 = 6, Quartile 3 = 7.75, and Quartile 4 = 10. The minimum was 3, and the maximum was 10. Quartiles for fourth-grade gap between espoused theories of collaboration and collaborative theories in use were Quartile 1 = 5.5, Quartile 2 = 8, Quartile 3 = 11.5, and Quartile 4 = 16. The minimum was 4, and the maximum was 16. Totals for teacher gap between espoused theories of collaboration and collaborative theories in use for first- through fourth-grade teachers were Quartile 1 = 5.25, Quartile 2 = 8, Quartile 3 = 10, and Quartile 4 = 16. The minimum was 3, and the maximum was 16.

Table 21

Gap for Grade Level Taught

Values	First Grade	Second Grade	Third Grade	Fourth Grade	Total
Percentage of Sample	20	30	13	37	100
Five-Number Summary					
Minimum	5.00	4.00	3.00	4.00	3.00
Quartile 1	7.25	7.00	4.50	5.50	5.25
Quartile 2	8.50	9.00	6.00	8.00	8.00
Quartile 3	9.75	10.00	7.75	11.50	10.00
Maximum	13.00	12.00	10.00	16.00	16.00
Measures of Central Tendency					
M	8.67	8.33	6.25	8.55	8.20
MD	8.50	9.00	6.00	8.00	8.00
Mode	NA	9.00	NA	8.00	10.00
SD	2.73	2.65	2.99	4.18	3.28

The data were utilized to create a box-and-whisker plot (see Figure 21). The figure represents five series of data for current grade taught: first-grade teachers, second-grade teachers, third-grade teachers, fourth-grade teachers, and total teachers.

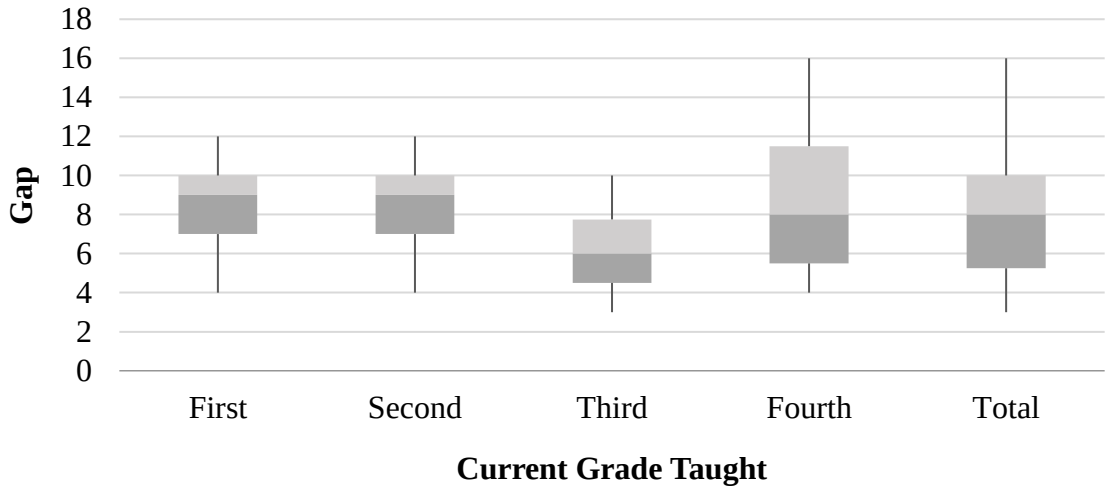

Figure 21. Gap for grade level taught.

In addition, demographic data were analyzed to create a representation of the sample. The arithmetic mean (*M)*, median (*MD*), mode, and standard deviation (*SD*) (see Table 22) were calculated for grade-level demographics. The first- through fourth-grade teacher demographics were as follows: 20% of the teachers taught first grade, 30% taught second grade, 13% taught third grade, and 37% taught fourth grade.

Then, data were organized and calculated in a five-number summary for the number of classroom teachers per grade level within the building. Zero percent reported having one teacher per grade level in the building; therefore, the data were recorded as not applicable (NA). Gap between espoused theories of collaboration and collaborative

theories in use quartiles for buildings with two or three teachers per grade level were Quartile 1 = 6, Quartile 2 = 7, Quartile 3 = 9, and Quartile 4 = 13. The minimum was 4, and the maximum was calculated as 13.

Gap between espoused theories of collaboration and collaborative theories in use quartiles for buildings with four, five, or six teachers per grade level were calculated as Quartile 1 = 4.75, Quartile 2 = 7.5, Quartile 3 = 8.5, and Quartile 4 = 10. The minimum was 3, and the maximum was 10. Gap between espoused theories of collaboration and collaborative theories in use quartiles for seven, eight, or nine teachers per grade level were Quartile 1 = 6.50, Quartile 2 = 9, Quartile 3 = 12.5, and Quartile 4 = 16. The minimum was 4, and the maximum was 16.

Gap between espoused theories of collaboration and collaborative theories in use quartiles for buildings with more than 10 teachers were calculated as Quartile 1 = 6.25, Quartile 2 = 7.50, Quartile 3 = 8.75, and Quartile 4 = 10. The minimum was 5, and the maximum as 10. Finally, quartiles were calculated for the entire subgroup as Quartile 1 = 5.25, Quartile 2 = 8, Quartile 3 = 10, and Quartile 4 = 16. The minimum was 3, and the maximum was 16.

Table 22

Gap for Teachers per Grade Level

Values	1 Teacher	2-3 Teachers	4-6 Teachers	7-9 Teachers	10+ Teachers	Total
Percentage of Sample	0	30	27	36	7	100
Five-Number Summary						
Minimum	NA	4.00	3.00	4.00	5.00	3.00
Quartile 1	NA	6.00	4.75	6.50	6.25	5.25
Quartile 2	NA	7.00	7.50	9.00	7.50	8.00
Quartile 3	NA	9.00	8.50	12.50	8.75	10.00
Maximum	NA	13.00	10.00	16.00	10.00	16.00
Measures of Central Tendency						
M	NA	7.89	6.88	9.55	7.50	8.20
MD	NA	7.00	7.50	9.00	7.50	8.00
Mode	NA	9.00	8.00	5.00	NA	10.00
SD	NA	2.67	2.64	3.98	3.54	3.28

The data were utilized to create a box-and-whisker plot (see Figure 22). The figure represents six series of data: one teacher, two or three teachers, four through six teachers, seven through nine teachers, more than 10 teachers, and the total number of teachers.

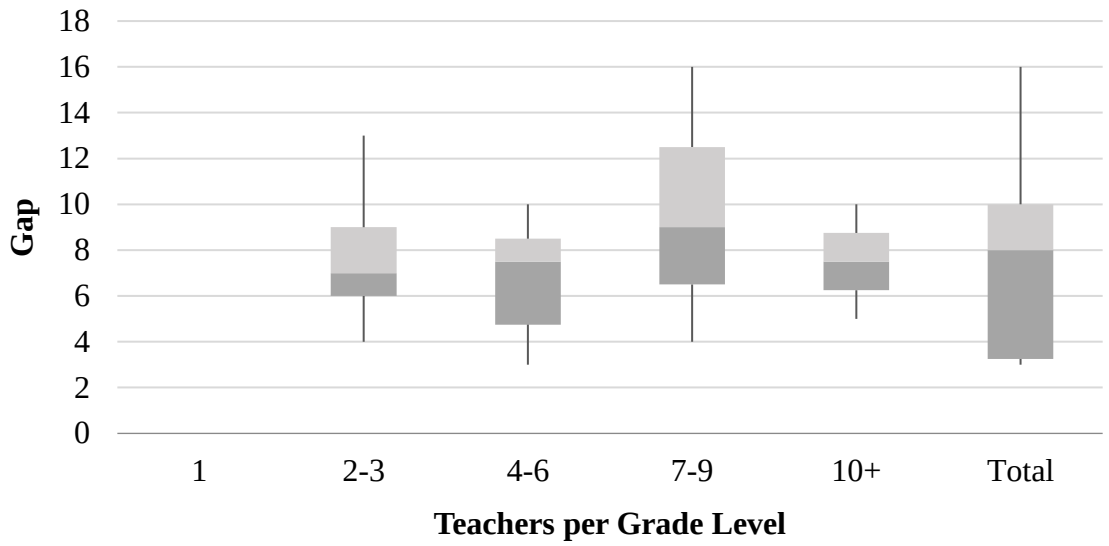

Figure 22. Gap for teachers per grade level.

The number of grade-level teachers in each building were as follows: 0% of the buildings had one teacher per grade level; 30% had two or three teachers per grade level; 27% had four through six teachers per grade level; 36% had seven, eight, or nine teachers per grade level; and 7% had more than 10 teachers in the building per grade level.

Next, data were organized and calculated in a five-number summary for number of years in current position (see Table 23). The gap between espoused theories of collaboration and collaborative theories in use quartiles for one through five years in current position was calculated as Quartile 1 = 7, Quartile 2 = 8, Quartile 3 = 9.75, and Quartile 4 = 13.00. The minimum was 4, and the maximum was 13. The gap between espoused theories of collaboration and collaborative theories in use quartiles for teachers teaching in current position six through 10 years was Quartile 1 = 4.25, Quartile 2 = 9, Quartile 3 = 13.75, and Quartile 4 = 16. The minimum was 3, and the maximum was 16.

The gap between espoused theories of collaboration and collaborative theories in use quartiles for teachers teaching in current position 11 through 15 years was Quartile 1 = 6.50, Quartile 2 = 8, Quartile 3 = 9, and Quartile 4 = 10. The minimum was 5, and the maximum was 10. The gap between espoused theories of collaboration and collaborative theories in use quartiles for teachers teaching in current position 16 through 20 years was Quartile 1 = 5, Quartile 2 = 6, Quartile 3 = 8, and Quartile 4 = 10. The minimum was 4, and the maximum was 10. Data were not reported for any teacher who had been teaching in the current position for more than 20 years; therefore, the data were reported as not applicable (NA). Finally, quartiles for the total subgroup were calculated as Quartile 1 = 5.25, Quartile 2 = 8, Quartile 3 = 10, and Quartile 4 = 16. The minimum was 3, and the maximum was 16.

Table 23

Gap for Years in Current Position

Values	1-5 Years	6-10 Years	11-15 Years	16-20 Years	21-25 Years	26+ Years	Total
Percentage of Sample	60	20	10	10	0	0	100
Five-Number Summary							
Minimum	4.00	3.00	5.00	4.00	NA	NA	3.00
Quartile 1	7.00	4.25	6.50	5.00	NA	NA	5.25
Quartile 2	8.00	9.00	8.00	6.00	NA	NA	8.00
Quartile 3	9.75	13.75	9.00	8.00	NA	NA	10.00
Maximum	13.00	16.00	10.00	10.00	NA	NA	16.00
Measures of Central Tendency							
M	8.22	9.17	7.67	6.67	NA	NA	8.20
MD	8.00	9.00	8.00	6.00	NA	NA	10.00
Mode	9.00	NA	NA	NA	NA	NA	8.00
SD	2.44	5.78	2.52	3.06	NA	NA	3.28

The data were utilized to create a box-and-whisker plot (see Figure 21) for number of years in current position. The figure depicts seven series of data: one through five years in current position, six through 10 years in current position, 11-15 years in current position, 16-20 years in current position, 21-25 years in current position, 26+ years in current position, and the total number of years in current position.

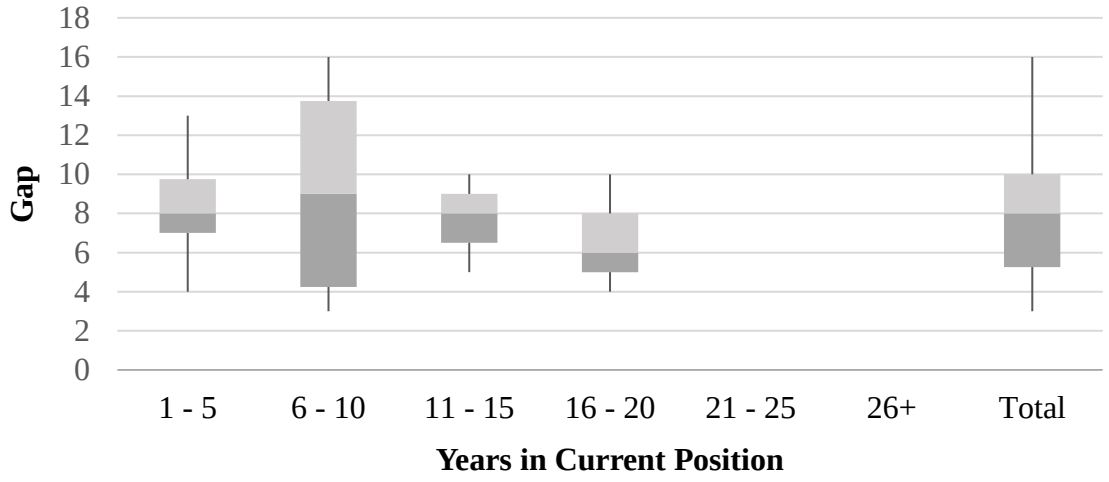

Figure 23. Gap for years in current position.

The number of years in current position demographics were as follows: 60% had taught one to five years in their current positions, 20% had five to 10 years of teaching experience in their current positions, 10% had 11-15 years of experience in their current positions, 10% had 16-20 years of experience in their current positions, 0% had 21-25 years of experience in their current positions, and 0% of the population reported teaching 26 years or longer in their current positions.

In addition, data were organized and calculated in a five-number summary for total number of years taught (see Table 24). The gap between espoused theories of collaboration and collaborative theories in use quartiles for teachers teaching one through five total years was calculated as Quartile 1 = 7, Quartile 2 = 8, Quartile 3 = 9.25, and Quartile 4 = 12. The minimum was 4, and the maximum was 12. The gap between espoused theories of collaboration and collaborative theories in use quartiles for teachers teaching six through 10 total years was calculated as Quartile 1 = 5.75, Quartile 2 = 9.00,

Quartile 3 = 13, and Quartile 4 = 14. The minimum was 5, and the maximum was 14.

The gap between espoused theories of collaboration and collaborative theories in use quartiles for teachers teaching 11 through 15 total years was calculated as Quartile 1 = 4, Quartile 2 = 5, Quartile 3 = 7.5, and Quartile 4 = 10. The minimum was 3, and the maximum was 10. The gap between espoused theories of collaboration and collaborative theories in use quartiles for teachers teaching 16 through 20 total years was calculated as Quartile 1 = 4, Quartile 2 = 7, Quartile 3 = 11.5, and Quartile 4 = 16. The minimum was 4, and the maximum was 16.

The gap between espoused theories of collaboration and collaborative theories in use quartiles for teaching 21 through 25 years was Quartile 1 = 7, Quartile 2 = 8, Quartile 3 = 8.5, and Quartile 4 = 9. The minimum was 6, and the maximum was 9. Finally, the totals for the subgroup were calculated as Quartile 1 = 5.25, Quartile 2 = 8, Quartile 3 = 10, and Quartile 4 = 16. The minimum was 3, and the maximum was 16.

Table 24

Gap for Number of Years Taught

Values	1-5 Years	6-10 Years	11-15 Years	16-20 Years	21-25 Years	26+ Years	Total
Percentage of Sample	40	27	10	13	10	0	100
Five-Number Summary							
Minimum	4.00	5.00	3.00	4.00	6.00	NA	3.00
Quartile 1	7.00	5.75	4.00	4.00	7.00	NA	5.25
Quartile 2	8.50	9.00	5.00	7.00	8.00	NA	8.00
Quartile 3	9.25	13.00	7.50	11.50	8.50	NA	10.00
Maximum	12.00	14.00	10.00	16.00	9.00	NA	16.00
Measures of Central Tendency							
M	8.08	9.25	6.00	8.50	7.67	NA	8.20
MD	8.00	9.00	5.00	7.00	8.00	NA	8.00
Mode	7.00	13.00	NA	4.00	NA	NA	10.00
SD	2.32	3.77	3.61	5.74	1.53	NA	3.28

The data were utilized to create a box-and-whisker plot (see Figure 24) for number of years taught. The figure depicts seven series of data: one through five years of teaching, six through 10 years of teaching, 11-15 years of teaching, 16-20 years of teaching, 21-25 years of teaching, 26+ years of teaching, and the total number of years of teaching.

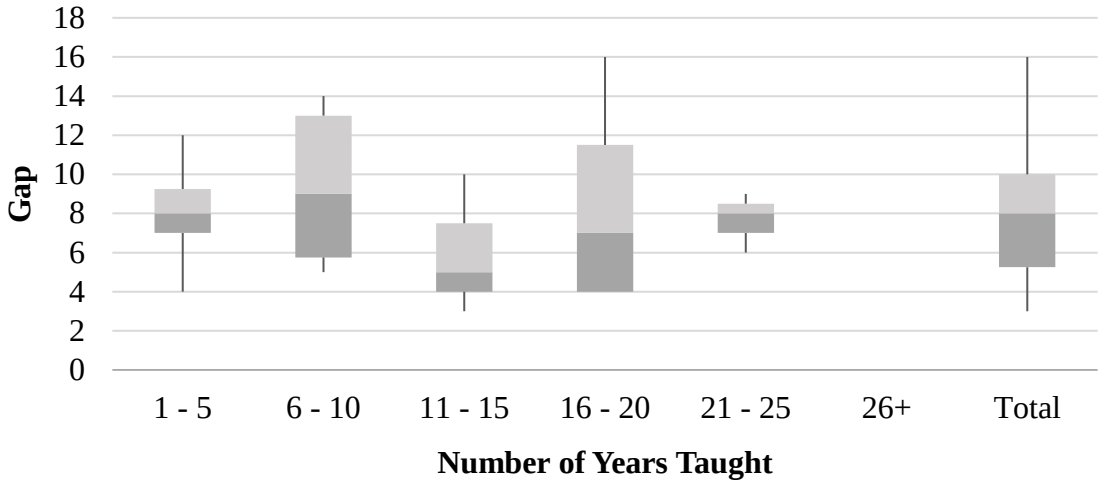

Figure 24. Gap for number of years taught.

Participant years of teaching experience were as follows: 40% of participants had taught one to five years, 27% had five to 10 years of teaching experience, 10% had 11-15 years of experience, 13% had 16-20 years of experience, 10% had 21-25 years of experience, and 0% of the population reported teaching 26 years or longer.

Finally, data were organized and calculated in a five-number summary for highest level of education (see Table 25). The gap between espoused theories of collaboration and collaborative theories in use quartiles for teachers whose highest level of education was a bachelor's degree was calculated as Quartile 1 = 5, Quartile 2 = 8, Quartile 3 = 10, and Quartile 4 = 13. The minimum was 3, and the maximum was 13. The gap between espoused theories of collaboration and collaborative theories in use quartiles for teachers whose highest level of education was a master's degree was calculated as Quartile 1 = 5.75, Quartile 2 = 7.5, Quartile 3 = 9.5, and Quartile 4 = 16. The minimum was 4, and the maximum was 16. The gap between espoused theories of collaboration and

collaborative theories in use quartiles for teachers whose highest degree was a specialist degree was calculated as Quartile 1 = 10, Quartile 2 = 10, Quartile 3 = 10, and Quartile 4 = 10. The minimum was 10, and the maximum was 10. There were no responses from participants with doctorate degrees; therefore, no quartiles were calculated. Finally, totals for this subgroup were calculated as Quartile 1 = 5.25, Quartile 2 = 8, Quartile 3 = 10, and Quartile 4 = 16. The minimum was 3, and the maximum was 16.

Table 25

Gap for Highest Level of Education

Values	Bachelor's Degree	Master's Degree	Specialist Degree	Doctorate Degree	Total
Percentage of Sample	44	53	3	0	100
Five-Number Summary					
Minimum	3.00	4.00	10.00	NA	3.00
Quartile 1	5.00	5.75	10.00	NA	5.25
Quartile 2	8.00	7.50	10.00	NA	8.00
Quartile 3	10.00	9.50	10.00	NA	10.00
Maximum	13.00	16.00	10.00	NA	16.00
Measures of Central Tendency					
M	7.92	8.31	10.00	NA	8.20
MD	8.00	7.50	10.00	NA	8.00
Mode	10.00	7.00	NA	NA	10.00
SD	3.12	3.57	NA	NA	3.28

The data were utilized to create a box-and-whisker plot (see Figure 25). The figure depicts five series of data: bachelor's degree, master's degree, specialist degree, doctorate degree, and the total.

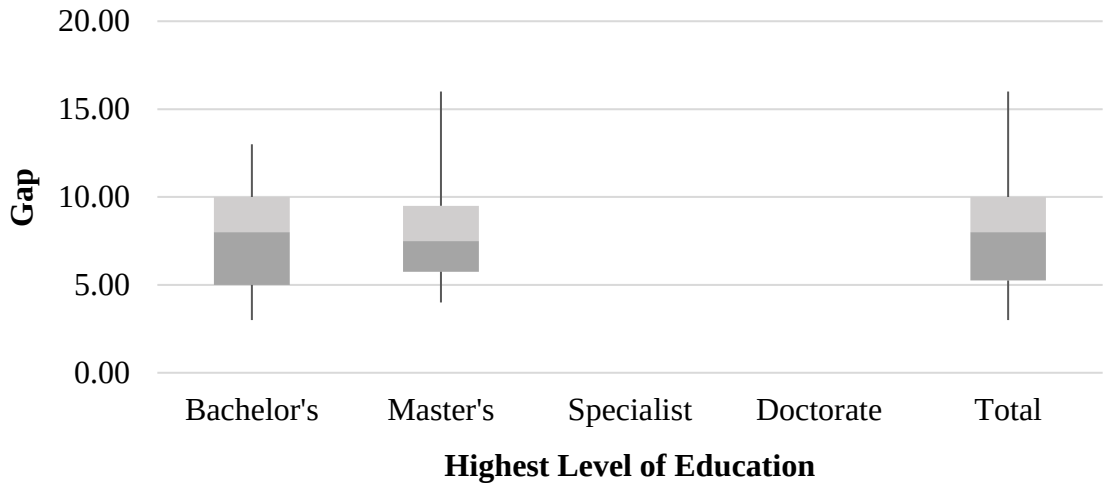

Figure 25. Gap for highest level of education.

Demographic data were analyzed to create a representation of the sample. The highest level of education was as follows: 44% of participants had earned the highest degree of a bachelor's degree, 53% had earned a master's degree, 3% had earned a specialist degree, and 0% indicated completing a doctorate degree.

Inferential Statistics

Finally, an inferential analysis of the data was completed using the Pearson Product-Moment Correlation Coefficient (PPMC). The PPMC was used to determine if a significant relationship existed between the independent variable and dependent variable. Mertler and Reinhart (2016) explained, "If two variables in question are not related, a

coefficient at or near zero will be obtained. If they are highly related, a coefficient near +1.00 or -1.00 will be obtained" (p. 9).

Siegle (2016) stated to better understand and construct meaning beyond descriptive data, a scatterplot should be used to help visualize the relationship between the two variables. Therefore, a scatterplot was used to provide a visual representation of the data between the variables of teacher collective efficacy and espoused theories of collaboration (see Figure 26). The scatterplot includes a line of best fit. Bluman (2018) indicated, "Best fit means that the sum of the squares of the vertical distances from each point to the line is at a minimum" (p. 564).

Furthermore, Bluman (2018) explained quantitative data are analyzed to determine the linear relationship of the variables. Bluman (2018) indicated, "The range of the correlation coefficient is between -1 and +1. When the value of *r* is near +1 or –1, there is a strong linear relationship. When the value of *r* is near 0, the linear relationship is weak or nonexistent" (p. 556).

A PPMC was used to determine the correlation between teacher collective efficacy and teacher-espoused theories of collaboration. After calculating the correlation coefficient for teacher collective efficacy and teacher-espoused theories of collaboration, the value of *r* was determined to be 0.109. This value was less than the critical value of 0.361, with an alpha level equal to 0.05. According to Explorable (2020), when $r = 0.109$, the strength of the relationship is considered weak. The positive value 0.109 was less than the critical value 0.361; therefore, the null hypothesis was not rejected. There was no statistically significant relationship between teacher collective efficacy and teacher-espoused theories of collaboration.

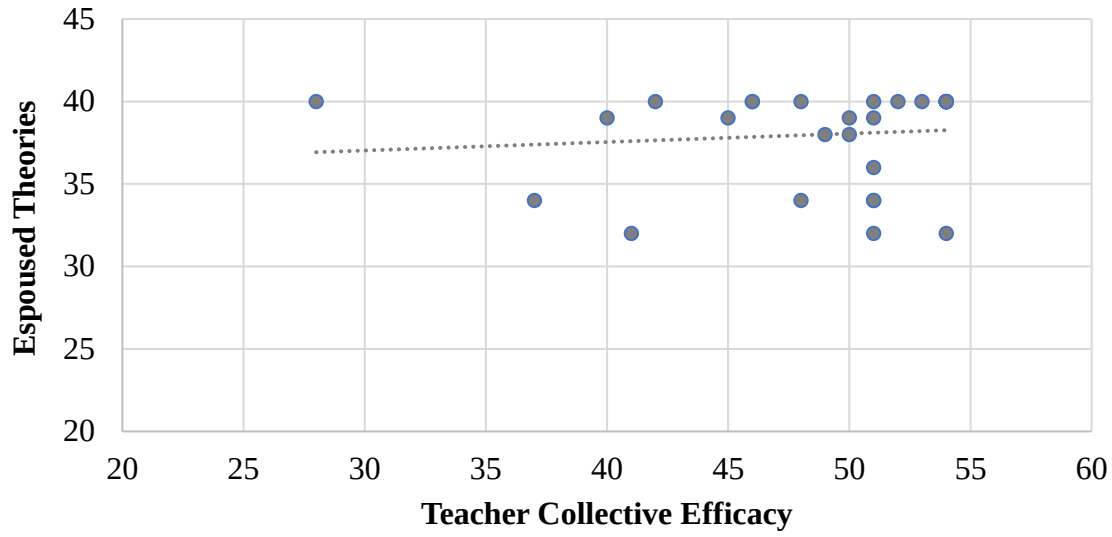

Figure 26. Teacher collective efficacy and espoused theories of collaboration.

The relationship between the variables of teacher collective efficacy and teacher self-reported demonstration of collaborative theories in use was depicted in a scatterplot (see Figure 27). A PPMC was used to determine the correlation between teacher collective efficacy and collaborative theories in use. After calculating the correlation coefficient for teacher collective efficacy and collaborative theories in use, the value of r was determined to be 0.247. When $r = 0.247$, the strength of the relationship is considered weak (Explorable, 2020). The positive value 0.247 was less than the critical value 0.361; therefore, the null hypothesis was not rejected. There was no statistically significant relationship between teacher collective efficacy and teacher self-reported demonstration of collaborative theories in use.

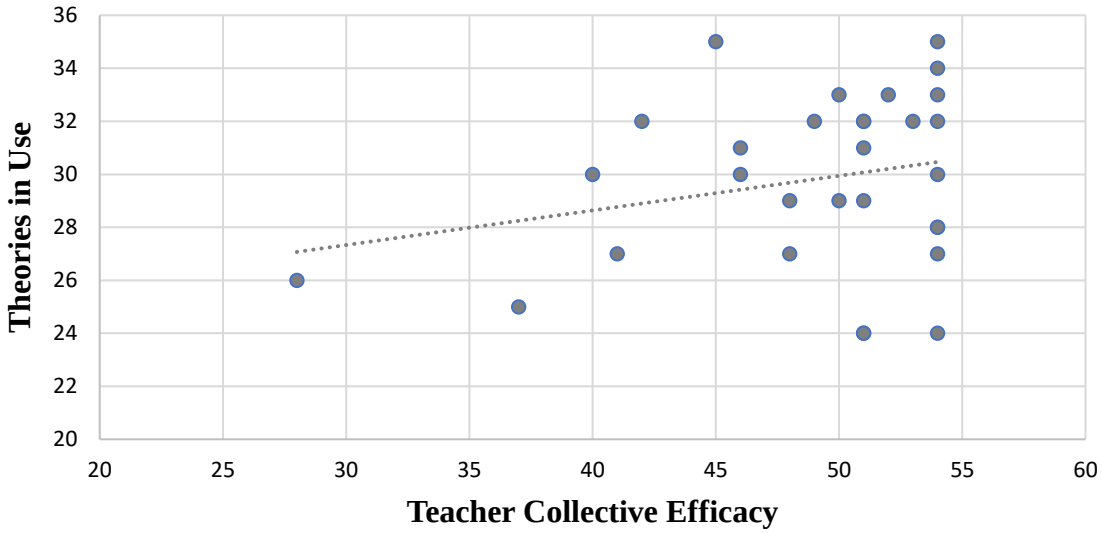

Figure 27. Teacher collective efficacy and collaborative theories in use.

A scatterplot was used to provide a visual representation of the data between the variables of teacher collective efficacy and the gap between espoused theories of collaboration and subsequent collaborative theories in use (see Figure 28). A PPMC was used to determine the correlation between collective teacher efficacy and the gap between espoused theories of collaboration and collaborative theories in use. After calculating the correlation coefficient for teacher collective efficacy and the gap, the value of *r* was determined to be -0.148. Pearson Product-Moment Correlation (2020) explained when *r* = -0.148, the strength of the relationship is considered weak. The negative value -0.148 was less than the critical value 0.361; therefore, the null hypothesis was not rejected (Bluman, 2018; Statistics How To, 2020).

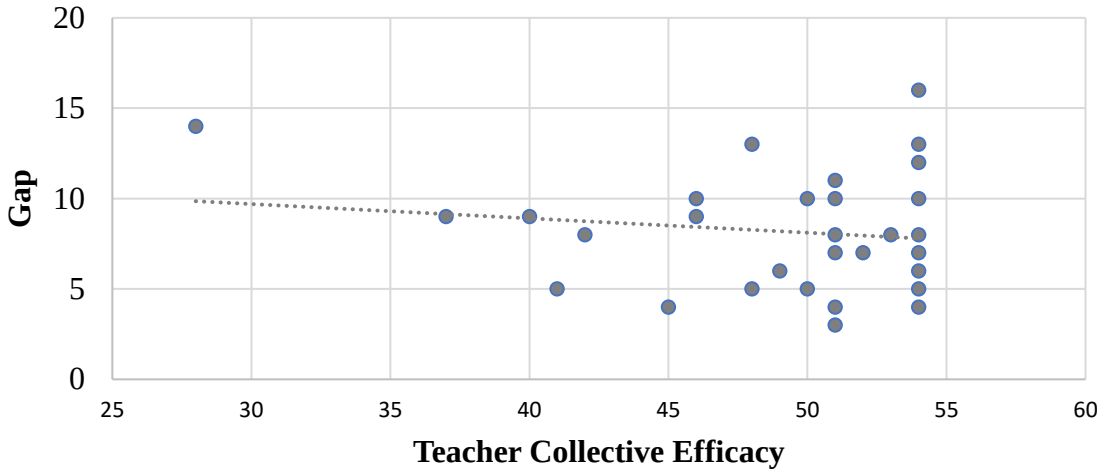

Figure 28. Teacher collective efficacy and gap.

Additionally, a scatterplot was used to provide a visual representation of the data between the variables of teacher collective efficacy and elementary student self-directedness (see Figure 29). A PPMC was used to determine the correlation between teacher collective efficacy and elementary student self-directedness. After calculating the correlation coefficient for teacher collective efficacy and elementary student self-directedness, the value of *r* was determined to be 0.227. According to Explorable (2020), when $r = 0.227$, the strength of the relationship is considered weak. The positive value 0.227 was less than the critical value 0.361; therefore, the null hypothesis was not rejected (Bluman, 2018; Statistics How To, 2020).

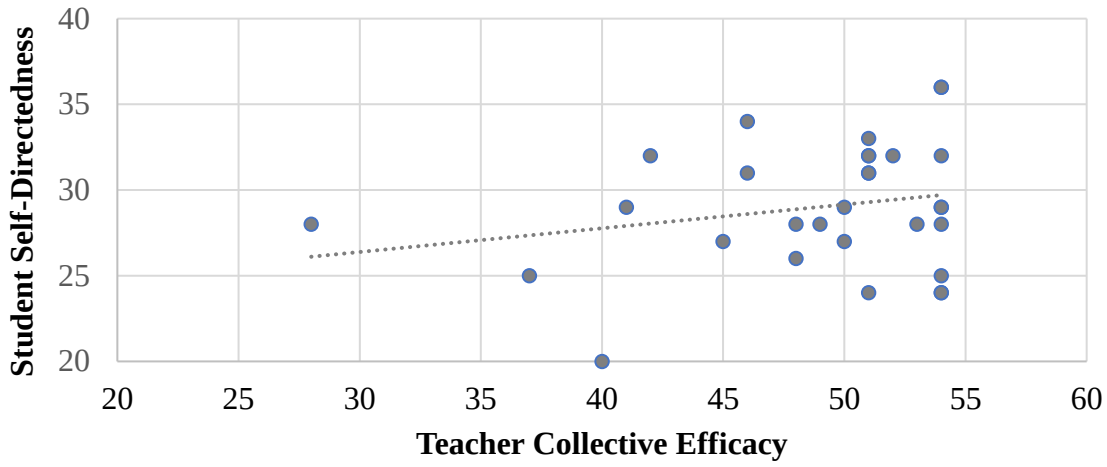

Figure 29. Teacher collective efficacy and student self-directedness.

A scatterplot was used to provide a visual representation of the data between the variables of teacher-espoused theories of collaboration and level of elementary student self-directedness (see Figure 30). A PPMC was used to determine the correlation between espoused theories of collaboration and student self-directedness. After calculating the correlation coefficient for teacher collective efficacy and teacher-espoused theories of collaboration, the value of *r* was determined to be -0.070. According to Explorable (2020), when *r* = -0.070, the strength of the relationship is considered weak. The negative value -0.070 is less than the critical value 0.361; therefore, the null hypothesis was not rejected (Bluman, 2018; Statistics How To, 2020).

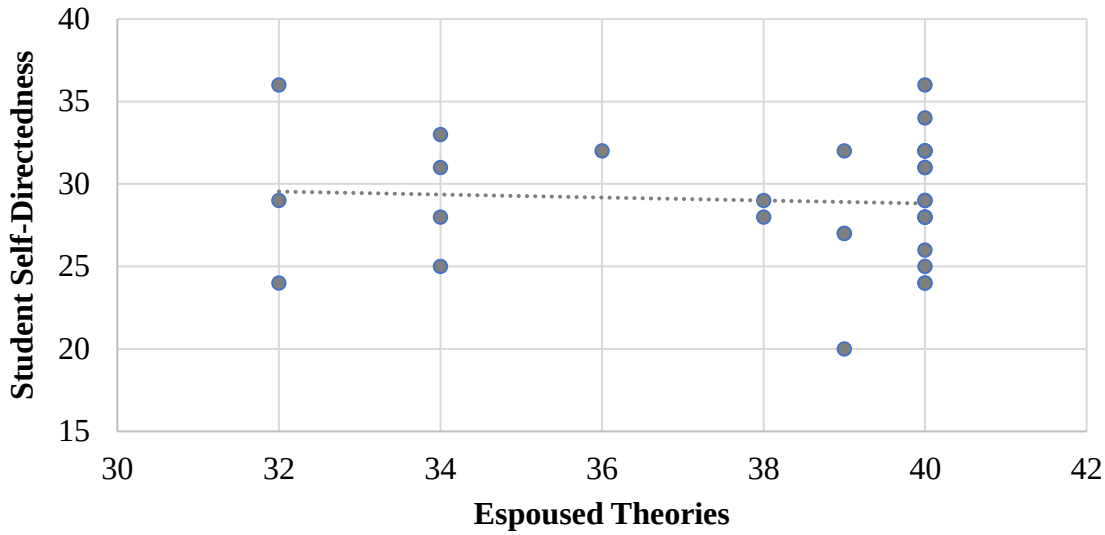

Figure 30. Espoused theories of collaboration and student self-directedness.

A scatterplot was used to provide a visual representation of the data between the variables of collaborative theories in use and student self-directedness (see Figure 31). A PPMC was used to determine the correlation between collaborative theories in use and student self-directedness. After calculating the correlation coefficient for collaborative theories in use and student self-directedness, the value of *r* was determined to be 0.338. As stated by Explorable (2020), when $r = 0.338$, the strength of the relationship is considered moderate. The positive value 0.338 was less than the critical value 0.361 therefore, the null hypothesis was not rejected (Bluman, 2018; Statistics How To, 2020).

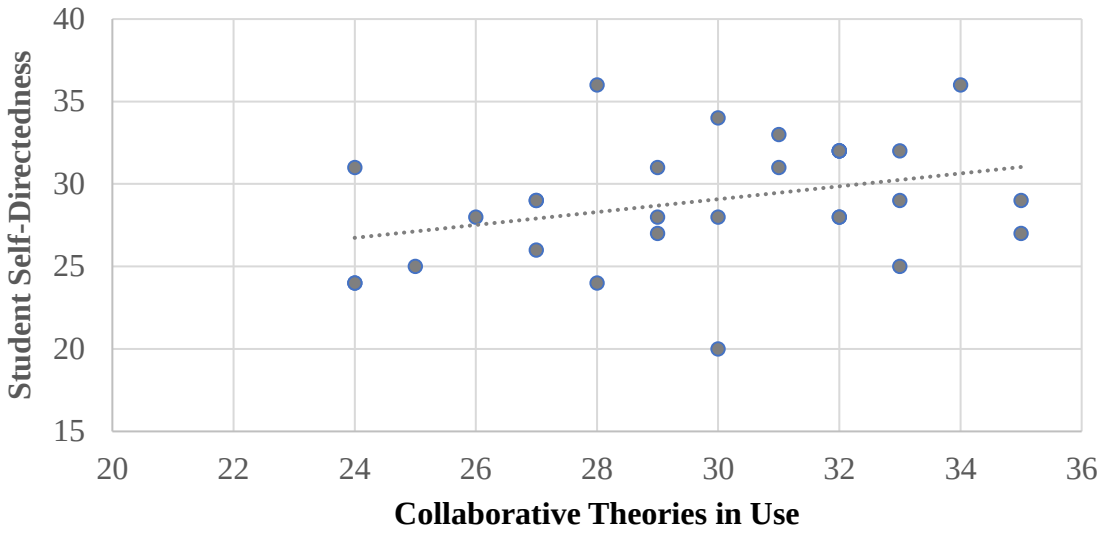

Figure 31. Collaborative theories in use and student self-directedness.

Finally, a scatterplot was used to provide a visual representation of the data between the gap between theories of action and student self-directedness (see Figure 32). A PPMC was used to determine the correlation between the gap and student self-directedness. After calculating the correlation coefficient for the gap and student self-directedness, the value of *r* was determined to be -0.396. When *r* = -0.396, the strength of the relationship is considered strong (Explorable, 2020). The absolute value -0.396 was greater than the critical value 0.361; therefore, the null hypothesis was rejected (Bluman, 2018; Statistics How To, 2020). The alternative hypothesis was supported, which indicated there is a statistically significant relationship between the gap between theories of action and the level of elementary student self-directness.

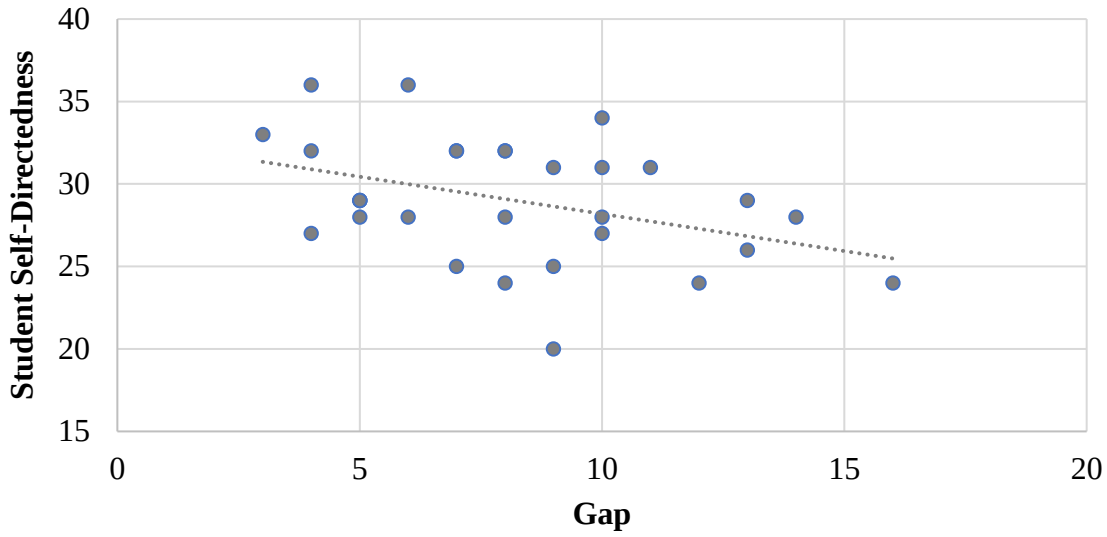

Figure 32. Gap and student self-directedness.

Summary

Presented in this chapter were the data obtained from the responses of 30 first- through fourth-grade teachers. The data were analyzed and presented as survey instrument design, collection of data, survey data, data analysis, descriptive statistics, and inferential statistics. Tables and figures were provided to provide a visual representation of the data.

In Chapter Five, the findings and conclusions are discussed. First, an overview and analysis of data are presented. Additionally, findings of descriptive statistics and inferential statistics, research questions, conclusions, implications for practice, and recommendations for future study are shared.

Chapter Five: Summary and Conclusions

While there is still a need to understand the relationship of collective efficacy and the leadership theories of action which contribute to efficacy, Donohoo (2017) concluded, "Helping educators understand how their efficacy beliefs come to fruition through their actions will increase self-awareness and the likelihood that educators will be more reflective about their practice" (p. 92). Donohoo and Katz (2019) further indicated teams who experience success raise their expectations, and their belief of future success increases significantly. When this happens, teachers become highly motivated to continue working together for greater accomplishment (Donohoo & Katz, 2019).

Educators must develop behaviors to support the development of self-directed dispositions among students (Frey, Fisher et al., 2018; Frey, Hattie et al., 2018). Kallick and Zmuda (2017b) added classroom instruction should help students become more independent. Costa and Kallick (2014) expressed the need for students to learn self-directed skills to develop the qualities of productive citizens. By transferring the decision-making process to students and allowing them the opportunity to think, students are better-prepared for their futures (Kittle & Gallagher, 2020), which according to Frey, Hattie et al. (2018), is "critical for school success" (p. 2).

Overview

The purpose of this quantitative study was to investigate the relationships among teacher collective efficacy, espoused theories of collaboration, collaborative theories in use, the gap between these theories, and student self-directedness. Costa and Kallick (2014) and Tough (2016) suggested student success is more than just academic. Frey, Hattie et al. (2018) declared student success is achieved when students develop a self-

directed disposition. Based on the work of Argyris et al. (1987), establishing the difference between espoused theories and theories in use, espoused theories of collaboration, collaborative theories in use, and the gap between these theories of action were investigated.

Analysis of Data

Data were examined to assist in understanding the research findings (Roberts & Hyatt, 2019). This quantitative study involved use of the PPMC to identify the significance of relationships between research variables (Bluman, 2018; Ly et al., 2017). With a return rate of 30 and an alpha level equal to 0.05, the critical value was 0.361 (Bluman, 2018; Statistics How To, 2020). Bluman (2018) further indicated the PPMC measures the linear relationship strength of the sample data between the two variables. Bluman (2018) also quantified:

> The range of the linear correlation coefficient is from -1 to +1. If there is a *strong positive linear relationship* between the variables, the value of *r* will be close to +1. If there is a strong *negative linear relationship* between the variables, the value of *r* will be close to -1. When there is no linear relationship between the variables or only a weak relationship, the value of *r* will be close to 0. (p. 552)

The relationships among the variables of collective teacher efficacy, espoused theories of collaboration, collaborative theories in use, student self-directedness, and the gap between the theories of action were explored in this study.

Findings

The findings of this study were centered around data collected from the answers to the survey instrument. The data were analyzed in two stages. To begin, the data were

analyzed using descriptive statistics. Demographic data for each variable were evaluated to provide meaning concerning the research questions. Next, data were evaluated using inferential statistics to create a better understanding of the relationships among the research variables.

In addition, the values of *r* were organized (see Table 26) to provide a summary of the correlation coefficients for the research variables: Teacher Collective Efficacy (TCE), Espoused Theories of Education (ET), Collaborative Theories in Use (TIU), Student Self-Directedness (SSD), and the Gap.

Table 26

Summary of PPMC Values

Variable	TCE	ET	TIU	SSD	Gap
Gap	-0.148	0.456	-0.605	-0.396	
Student Self-Directedness	0.227	-0.070	0.338		-0.396
Theories in Use	0.247	0.433		0.338	-0.605
Espoused Theories	0.109		0.433	-0.070	0.456
Teacher Collective Efficacy		0.109	0.247	0.227	-0.148

Descriptive Statistics

The demographic subgroups investigated for each research variable included current grade level taught, number of classroom teachers per grade level, number of years in current position, total number of years taught, and highest level of education. Hargreaves and O'Connor (2018) explained educators believe their impact will be greater when they work together, solve problems, and share achievements with other teachers. Therefore, it is important to understand the demographics of teachers and the collaborative groups with whom they work.

The demographic information was evaluated for each research variable. Regarding collective efficacy, the means for teachers with 11 to 15 and 16 to 20 years in their current positions were greater than the means of the other subgroups. The mean for 11 to 15 years in current position was 52, and the mean for 16 to 20 years was 49.67, while the other subgroups were 48.33 and 48.67. The mean for 11 to 15 years taught was 51, and the mean for 16 to 20 years was 51.25, while the other subgroups were 48.25, 48.75, and 46.67.

While the findings of this research indicated teachers with one to five years of experience had a higher mean and a standard deviation with a smaller variance for espoused theories of collaboration and collaborative theories in use, data calculated for the gap between theories of action indicated teachers with six to 10 years of experience had a higher mean. This pattern indicated teachers with six to 10 years of experience held an inflated perspective of who they were as collaborators. Furthermore, the less-experienced teachers held beliefs and considered collaborative actions to be aligned to

these beliefs; however, the gap between these beliefs and actions was greater when compared to teachers with more experience.

A smaller difference in the espoused theories of collaboration and collaborative theories in use by experienced teachers with higher levels of efficacy was found. Experienced teachers held a greater confidence and common belief about their ability to overcome obstacles as a group. These teachers may have experienced opportunities to develop their collective expertise and therefore developed greater confidence in the power of collective efficacy. So, collective efficacy and an increased awareness of who they were as collaborators came with experience and opportunities to collaborate with peers. Although a leader should be mindful of the balance between experienced and non-experienced teachers when establishing collaborative teams, most importantly, a leader should establish opportunities for teachers to collaborate with peers.

In addition, the findings of this research indicated classroom teachers in buildings with two or three teachers per grade level had a higher mean for student self-directedness when compared to buildings with more than three teachers per grade level. Classroom teachers in buildings with two or three teachers per grade level also had a lower standard deviation compared to the other groups for student self-directedness. Teachers who collaborated in groups of two or three indicated their students were more likely to set goals, tell others what they learned, identify strategies to solve problems, understand mistakes are an opportunity to get better at something, support peers, and seek feedback to inform learning. Teachers who collaborated in groups of two or three had a greater awareness of student self-directedness. Leaders should create time and space for teachers to collaborate in groups of two or three, and therefore, promote greater student success.

Inferential Statistics

Inferential statistics were used answer seven research questions. The relationship of the variables relative to each research question were compared: collective efficacy, teacher-espoused theories of collaboration, collaborative theories in use, student self-directedness, and the gap between the theories of action. A Pearson Product-Moment Correlation Coefficient (PPMC) was calculated to investigate relationships among the variables. The PPMC utilizes quartiles to measure the strength of the relationship between the dependent variable and the independent variable (Batanero & Borovcnik, 2016). The following is a review of the data and findings.

Research Question One

What is the relationship between teacher collective efficacy and teacher-espoused theories of collaboration?

The correlation coefficient for teacher collective efficacy and teacher-espoused theories of collaboration was calculated to be $r = 0.109$. The null hypothesis, indicating there is no statistically significant relationship between teacher collective efficacy and teacher espoused theories of collaboration, was not rejected.

Research Question Two

What is the relationship between teacher collective efficacy and teacher self-reported demonstration of collaborative theories in use?

The correlation coefficient for teacher collective efficacy and collaborative theories in use was calculated to be $r = 0.247$. The null hypothesis, indicating there is no statistically significant relationship between teacher collective efficacy and teacher self-reported demonstration of collaborative theories in use, was not rejected.

Research Question Three

What is the relationship between teacher collective efficacy and the gap between the theories of action?

The correlation coefficient for teacher collective efficacy and the gap between the theories of action was calculated to be $r = -0.148$. The null hypothesis, indicating there is no statistically significant relationship between teacher collective efficacy and the gap between the theories of action, was not rejected.

Research Question Four

What is the relationship between teacher collective efficacy and the level of elementary student self-directedness?

The correlation coefficient for teacher collective efficacy and student self-directedness was calculated to be $r = 0.227$. The null hypothesis, indicating there is no statistically significant relationship between teacher collective efficacy and the level of elementary student self-directedness, was not rejected.

Research Question Five

What is the relationship between teacher-espoused theories of collaboration and the level of elementary student self-directedness?

The correlation coefficient for teacher-espoused theories of collaboration and the level of elementary student self-directedness was calculated to be $r = -0.07$. The null hypothesis, indicating there is no statistically significant relationship between teacher-espoused theories of collaboration and the level of elementary student self-directedness, was not rejected.

Research Question Six

What is the relationship between teacher self-reported demonstration of collaborative theories in use and the level of elementary student self-directedness?

The correlation coefficient for teacher self-reported demonstration of collaborative theories in use and elementary student self-directedness was calculated to be $r = 0.338$. The null hypothesis, indicating there is no statistically significant relationship between teacher self-reported demonstration of collaborative theories in use and the level of elementary student self-directedness, was not rejected.

Research Question Seven

What is the relationship between the gap between the theories of action and the level of elementary student self-directedness?

The correlation coefficient for the gap between the theories of action and level of elementary student self-directedness was calculated to be $r = -0.396$. The null hypothesis was rejected and the alternative hypothesis was supported, indicating a statistically significant relationship between the gap between the theories of action and the level of elementary student self-directedness.

Furthermore, the results suggest a moderate inverse relationship between theories of action and level of elementary student self-directedness. In similar terms, when the gap between the collaborative actions a group of teachers claim to follow and subsequent theories in use increase, the level of student self-directedness decreases. This finding supports the research of Donohoo and Velasco (2016), who indicated the importance of congruency between theories of action.

Conclusions

The purpose of this study was to investigate the relationships among teacher collective efficacy, espoused theories of collaboration, collaborative theories in use, the gap between these theories, and student self-directedness. The survey instrument was designed to gather demographic information as well as information to answer the research questions. Data were organized in two phases. First, data were organized and analyzed using descriptive statistics. Next, data were organized using inferential statistics to answer the research questions and to understand the variance of the responses.

As a result of the findings, the following conclusions were drawn:

- A statistically significant relationship did not exist between teacher collective efficacy and teacher-espoused theories of collaboration.
- A statistically significant relationship did not exist between teacher collective efficacy and teacher self-reported demonstration of collaborative theories in use.
- A statistically significant relationship did not exist between teacher collective efficacy and the gap between these theories of action.
- A statistically significant relationship did not exist between teacher collective efficacy and the level of elementary student self-directedness.
- A statistically significant relationship did not exist between teacher-espoused theories of collaboration and the level of elementary student self-directedness.

- A statistically significant relationship did not exist between teacher self-reported demonstration of collaborative theories in use and the level of elementary student self-directedness.
- A statistically significant inverse relationship did exist between the gap in theories of action and the level of elementary student self-directedness.

Demographic statistics from this research indicated experienced teachers have greater efficacy and a more accurate perspective of who they are as collaborators. Inferential statistics also indicated the students of teachers who have a more accurate perspective of who they are as collaborators are more self-directed. Leaders must develop a structure to increase teacher awareness concerning who they are as collaborators.

Implications for Practice

The review of literature, findings, and conclusions of this research suggest the significance of teachers' awareness of who they are as collaborators. As a result of the analysis of the data, suggestions were organized to help leaders foster collective efficacy and collaboration among teachers. In addition to creating a collaborative environment, suggestions are provided to help develop a greater sense of self-awareness of who teachers are as collaborators, therefore closing the gap between collaborative theories of action.

Hall (2016) stated one of the priorities of a principal should be to create a collaborative culture. A leader should create opportunities for teachers to develop self-awareness of who they are as collaborators. Spiller and Power (2019) explained without collaboration, educators may not be doing everything necessary to help students become self-directed learners. The awareness a teacher has about collaboration can have an

impact on student success in the classroom. Leaders should develop time within building schedules to foster collaboration. In addition, leaders should create an environment of collaborative inquiry and should support reflection of collaborative actions, reducing the gap between theories of action.

Aligned with Garmston and Wellman's (2016) norms of collaboration, the behaviors of theories in use evaluated in this research may influence the development of this awareness. Leaders should provide opportunities to collaborate and a structure of reflection around normative behaviors including the following: pausing, paraphrasing, posing questions, offering ideas to the group, offering data without judgment, monitoring what is said and how others perceive what is said, and presuming positive intentions of others within the group. The relationship among espoused theories of use, collaborative theories in use, and the gap between these variables indicates the value in developing an awareness among teachers of who they are as collaborators.

Donohoo and Velasco (2016) stated the value of reflecting on "the incongruence between espoused theories of action and theories-in-use" to develop learning of a teacher team (p. 10). Reflection should be rooted in the collaborative research of Garmston and Wellman (2016), Hargreaves and O'Connor (2018), and Hattie and Zierer (2018), including pausing, paraphrasing, posing questions, offering ideas to the group, offering data without judgment, monitoring what is said and how others perceive what is said, and presuming positive intentions of others within the group.

Besides providing opportunities to collaborate, leaders should be aware of the balance between experienced and less-experienced teachers within groups. Since experienced teachers have greater efficacy and inexperienced teachers have an inflated

perspective of who they are as collaborators, it is important for leaders to provide opportunities for inexperienced teachers to collaborate with experienced teachers. Experienced teachers can share previous successes and challenges with inexperienced teachers, which will help develop collective teacher efficacy among the group. This belief in the ability to face challenges influences student success (Eells, 2011).

Finally, to help teachers flourish as they collaborate together, leaders should promote teacher self-directedness by motivating and empowering them to develop collaborative skills. Much like developing self-directedness within students, leaders should help teachers develop confidence as they collaborate and learn together. Ryan and Deci (2017) indicated that this development of self-directedness provides a sense of belonging.

Recommendations for Future Research

Despite this research on collective efficacy, theories of action, and student self-directedness, and the plethora of quality research on these topics, much work is still needed to understand the complicated relationships among collective efficacy, collaborative theories, and student success. The following recommendations for future research were identified:

1. Investigate collaborative theories of action beyond first through fourth grades. This study was limited to first- through fourth-grade teachers. It would be of interest to investigate the similarities and differences at additional grade levels; therefore, this study could be replicated in middle and high school.

2. Replicate this study comparing teacher collective efficacy, theories of action, and student self-directedness with a sample beyond first- through fourth-grade teachers

within member districts of the Southwest Center for Educational Excellence. It would be of interest to investigate the opinions of first- through fourth-grade teachers from other parts of the state or country to identify similarities and differences. It would also be of interest to investigate opinions of teachers within urban, rural, and suburban districts.

3. Investigate the relationship among teacher collective efficacy, collaborative theories of action, and student success in the university setting. Although this research indicated a need to develop an awareness of who educators are as collaborators, it would be of interest to identify relationships among teacher collaborative theories of action, faculty collaborative theories of action in university settings, and student success. Identifying these relationships may provide insight into the development of effective teacher education programs and beginning teacher programs.

4. Extend this research through investigation of the relationships among collaborative theories of action, value and quality of work, and student success. Although the findings of this research indicated a need for teachers to become self-aware of their collaborative behaviors, Berg (2020) concluded, “It is entirely possible to engage in dialogue about student work and data, collaboratively plan lessons, or discuss individual students, and yet still not add value to the quality of each other’s work” (p. 84). Therefore, there is a need to further research on the collaborative behaviors which most impact the effectiveness of teacher teams and collaborative theories of action.

5. Explore more thoroughly the relationship between collective teacher efficacy and years of experience. Garmston and Zimmerman (2013) stated, “The learning of all complex behaviors requires time, patience, practice, and reflection” (p. 13). Collective teacher efficacy is supported by the research of Tschannen-Moran and Barr (2004), and

yet years of experience and collaborative theories in use have yet to be explored. This study elicited data on years in current position and years of experience to provide information on experience within a group. Additional research is needed to support the complexity of the time needed for a group to develop coherency and to establish strong collective efficacy. As teacher shortages increase and teacher retention decreases, additional information is needed concerning years of experience and collective teacher efficacy. This information would be key in identifying ways to recruit new teachers into the field of education and retain them as teachers.

6. Investigate the optimal number of teachers in collaborative groups. The findings from this study indicated teachers who work in groups of two or three reported a greater score of student self-directedness. Investigating optimal collaborative group size may provide guidance for leaders who establish collaborative groups. Optimal group size could lead to greater awareness, collective efficacy, and student success.

7. Explore the relationship between espoused theories of collaboration and collaborative theories in use. A significant relationship of 0.433 was noted among the variables in the Summary of PPMC Values. Additional research is needed to better understand and describe theories teachers espouse about collaboration in relationship to their subsequent collaborative actions. In addition, there is a need to expand research on espoused theories of collaboration, collaborative theories in use, and the gap between these variables. A significant relationship of 0.456 was found between espoused theories of collaboration and the gap. A significant inverse relationship of -0.605 was found between collaborative theories in use and the gap.

8. Explore collaborative theories in action through a qualitative study. It would be helpful to observe collaborative theories in action among collaborative groups as it relates to student and teacher self-directedness. Observations would provide insight into leadership styles among effective collaborative groups and collaborative awareness practices of groups who achieve student success.

9. Increase the number of research participants by following a more efficient procedure: obtain permission from superintendents, notify principals, generate a list of teacher contacts, and email the letter of participation and consent form directly to the teachers within each building. The methodology of this study included obtaining permission to conduct research from superintendents within randomly selected member districts of the Southwest Center for Educational Excellence. Once permission was obtained from each superintendent, the teacher letter of participation and consent form were emailed to building principals, and each principal was asked to forward the information to their teachers. If an email is overlooked or not forwarded by the principal, a group of teachers would be eliminated from the sample without receiving the survey.

10. Consider the best timeline for distributing the survey instrument to participants. Educators have specific times of the year that seem to bring greater stress or workload. Consider optimal timeframes for distribution of the survey instrument to avoid timeframes which may not be beneficial in obtaining maximum participation.

Summary

Chapter One included the background, conceptual framework, statement of the problem, purpose of the study, research questions and hypotheses, and the significance of the study. The definition of key terms, delimitations, limitations, and assumptions were

provided. Chapter Two included a review of historical and current literature regarding the research topics and served to examine the connections among the variables. Described in Chapter Three were the methodology for the study, which included the problem and purpose, research questions and hypotheses, research design, population and sample, instrumentation, data collection, data analysis, and ethical considerations.

An analysis of data was presented in Chapter Four. The survey instrument design, collection of data, survey data, and data analysis were included. The data were organized using descriptive and inferential statistics.

A summary and conclusion were specified in Chapter Five. The chapter included an overview, analysis of data, and findings. Additionally, the chapter included a summary of descriptive statistics, inferential statistics, and research questions one through seven. Conclusions, implications for practice, and recommendations for future research completed Chapter Five.

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Appendix A

Permission to Use Collective Teacher Beliefs Scale

William & Mary
School of Education

MEGAN TSCHANNEN-MORAN, PHD
PROFESSOR OF EDUCATIONAL LEADERSHIP

January 12, 2019

Melissa,

You have my permission to use the Collective Teacher Beliefs Scale in your research. The best citation to use is:

> Tschannen-Moran, M., & Barr, M. (2004). Fostering Student Learning: The Relationship of Collective Teacher Efficacy and Student Achievement. *Leadership and Policy in Schools*, 3(3), 189-209.

You can find a copy of this measure and scoring directions on my web site at http://wmpeople.wm.edu/site/page/mxtsch . I will also attach directions you can follow to access my password protected web site, where you can find the supporting references for these measures as well as other articles I have written on this and related topics.

All the best,

Megan Tschannen-Moran
William & Mary School of Education

P.O. Box 8795 • Williamsburg, VA 23187-8795 • (757) 221-2317 • mxtsch@wm.edu

Appendix B

Survey Items

Part A – Demographic Information

For the purpose of this study, a classroom teacher is one whose main assignment is to teach a first-, second-, third-, or fourth-grade classroom.

Directions: Choose the response which applies to you.

1. What grade level do you currently teach?

1 2 3 4 I am not a grade 1-4 classroom teacher.

2. Within your building, how many classroom teachers do you have at your grade level?

1 2-3 4-6 7-9 10+

3. How many years have you been in your current position?

1-5 years 6-10 years 11-15 years 16-20 years 21-25 years 26+

4. How many years have you taught?

1-5 years 6-10 years 11-15 years 16-20 years 21-25 years 26+

5. Mark your highest level of education.

Bachelors Masters Specialist Doctorate

Survey Part B – Collective Teacher Efficacy

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 achieve each of the following.

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

Adapted from Tschannen-Moran (2004).

Part C – Espoused Theory of Collaboration

Directions: Choose the response which best indicates your beliefs regarding each statement when collaborating with colleagues by marking any one of the five columns ranging from *Strongly Disagree* to *Strongly Agree*.

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
12. I believe it is important to understand the perspectives of other teachers.					
13. I believe it is important to construct thoughtful responses.					
14. I believe it is important to clarify what others are thinking.					
15. I believe it is important to share ideas and perspectives.					
16. I believe it is important to trust the intentions of others are positive.					
17. I believe it is important to seek contributions from all group members.					
18. I believe it is important to monitor what our collaborative team says and how we say it.					
19. I believe it is important to look at data without judgments.					

Part D – Theory in Use

Directions: Choose the response which best indicates the behaviors you exhibit when working within a group during the current school year by marking any one of the five columns ranging from *Never* to *Always*.

	Never	Seldom	Sometimes	Usually	Always
20. I pause throughout conversations to construct thoughtful responses or form questions.					
21. I paraphrase during conversations to acknowledge or organize thinking.					
22. I pose questions to elicit or clarify the thinking of others.					
23. I offer ideas and opinions to the group.					
24. I offer multiple types of data without judgments or opinions.					
25. I monitor the balance of group participation.					
26. I monitor what is said and how others perceive what is said.					
27. I presume the intentions of others in a positive way.					

Part E – Student Self-directedness

Directions: Please indicate your opinion about each of the statements below which apply to your students during this school year by marking any one of the five columns ranging from *Never* to *Always*.

	Never	Seldom	Sometimes	Usually	Always
28. Students can tell others what they are learning and why they are learning it.					
29. Students seek challenges and can describe what they need to do when confronted with a challenge or problem.					
30. Students are able to determine what strategies would be best for themselves to use when learning new things.					
31. Students set goals and seek mastery of these goals.					
32. Students see mistakes as opportunities to improve and are comfortable telling others when they don't understand or need help.					
33. Students positively support each other in the learning process.					
34. Students know how to figure out what to do when they do not initially know what to do.					
35. Students seek feedback to inform their learning.					

Appendix C

Jul 11, 2019 2:32 PM CDT

RE:

IRB-19-252: Initial - A Quantitative Study of Collaborative Theories of Action, Teacher Collective Efficacy and the Behaviors of Student Self-directedness

Dear Melissa Huff,

The study, A Quantitative Study of Collaborative Theories of Action, Teacher Collective Efficacy and the Behaviors of Student Self-directedness, has been approved as Exempt.

Category: Category 1. Research, conducted in established or commonly accepted educational settings, that specifically involves normal educational practices that are not likely to adversely impact students' opportunity to learn required educational content or the assessment of educators who provide instruction. This includes most research on regular and special education instructional strategies, and research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

The submission was approved on July 11, 2019.

Here are the findings:

This study has been determined to be minimal risk because the research is not obtaining data considered sensitive information or performing interventions posing harm greater than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.

Sincerely,

Lindenwood University Institutional Review Board

Appendix D

Recruitment Letter for Superintendent

Date:

RE: Permission to Conduct Research

Dear _____,

As a graduate student in the Webb City, Missouri, cohort of Lindenwood University, I am conducting research as part of the requirements for a doctoral degree. The purpose of my dissertation is to investigate the relationships among theories of action relative to collective efficacy, the gap among theories of action, and student demonstration of behaviors consistent with self-directed learners. I would like to request your permission to conduct research in _____ (name of building).

If approval is granted, the building principal will receive an email with a request to forward a Letter of Participation for Teachers and a Survey Consent Form with a link to the survey to teachers within the building for completion on a voluntary basis. Participants will be asked to complete a 35-item electronic survey. The identities of the teachers and the school district will not be divulged at any time in the publication of this study.

Thank you for considering my request to conduct a study in your district. If the details described meet your approval, please provide consent by reply email to mh927@lindenwood.edu.

Sincerely,

Melissa Huff

Lindenwood University Doctoral Student

Appendix E

Letter of Participation for Principal

Date:

Dear Principal,

As a graduate student in the Webb City, Missouri, cohort of Lindenwood University, I am conducting research as part of the requirements for a doctoral degree. Permission has been obtained from _____ (name of district superintendent). Please forward the Letter of Participation for Teachers and the Survey Consent Form (which contains a link to the survey) to the teachers in your building. Thank you for your help in this process.

Sincerely,

Melissa Huff

Lindenwood University Doctoral Student

Appendix F

Letter of Participation for Teachers

Date:

Dear Teacher,

As a graduate student in the Webb City, Missouri, cohort of Lindenwood University, I am conducting research about teacher collective efficacy, theories of action, and student self -directedness. I invite your participation in this study. You will find a link to a survey containing 35 items included with this email. The survey should take less than 10 minutes to complete. Your identity will remain anonymous and unidentifiable.

Thank you in advance for taking the time to complete the survey to help me with my educational efforts. A consent form is included in this email, which includes information about the scope of the study and confidentiality and anonymity assurances. Completion of the survey instrument will indicate your willingness to participate in the study. If you require additional information or have questions, please contact me at mh927@lindenwood.edu.

Sincerely,

Melissa Huff

Lindenwood University Doctoral Student

Appendix G

Consent Form

LINDENWOOD

Survey Research Information Sheet

You are being asked to participate in a survey conducted by Melissa Huff and Dr. Sherry DeVore at Lindenwood University. We are conducting this study to explore the relationship among collaborative theories of action, teacher collective efficacy, and the behaviors of student self-directedness.

The survey includes questions about teacher demographics and Likert-type statements concerning theories of action relative to collective teacher efficacy and student behaviors consistent with self-directed learners. It will take about 10 minutes to complete this survey.

Your participation is voluntary. You may choose not to participate or withdraw at any time by simply not completing the survey or closing the browser window.

There are no risks from participating in this project. We will not collect any information that may identify you. There are no direct benefits for you participating in this study.

WHO CAN I CONTACT WITH QUESTIONS?

If you have concerns or complaints about this project, please use the following contact information:

Melissa Huff: mh927@lindenwood.edu

Dr. Sherry DeVore: sdevore@lindenwood.edu

If you have questions about your rights as a participant or concerns about the project and wish to talk to someone outside the research team, you can contact Michael Leary (Director - Institutional Review Board) at 636-949-4730 or mleary@lindenwood.edu.

By clicking the link below, I confirm that I have read this form and have decided that I will participate in the project described above. I understand the purpose of the study, what I will be required to do, and the risks involved. I understand that I can discontinue participation at any time by closing the survey browser.

You can withdraw from this study at any time by simply closing the browser window. Please feel free to print a copy of this information sheet.

https://lindenwood.az1.qualtrics.com/jfe/form/SV_5zM6kM8TMS03BiZ

Vita

Melissa Huff has served the Webb City School District in Webb City, Missouri, in several capacities during the past eight years. Huff was previously a fourth-grade teacher, Title teacher, and district instructional coach, and is currently an assistant principal at Webb City Middle School. Prior to joining the team in Webb City, Huff was a teacher and principal in the Fairview School District in West Plains, Missouri. Huff has served as a curriculum specialist and has facilitated professional development for local and national organizations in the areas of curriculum development, early childhood, new teacher trainings, student-led conferences, and technology. Prior to working on her doctoral dissertation with Lindenwood University, Huff received a Bachelor of Science in Elementary Education from Southwest Baptist University in Bolivar, Missouri. She also earned a Master of Science in Educational Leadership from Missouri State University in Springfield, Missouri, and an Educational Specialist degree from William Woods University.