HIGH SCHOOL TEACHER PERCEPTIONS OF COLLABORATIVE PROFESSIONAL LEARNING

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HIGH SCHOOL TEACHER PERCEPTIONS OF COLLABORATIVE PROFESSIONAL LEARNING

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HIGH SCHOOL TEACHER PERCEPTIONS OF COLLABORATIVE PROFESSIONAL LEARNING

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By

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ABSTRACT

This quantitative study was designed to examine the perceptions of high school teachers related to the professional learning within their respective school systems and to determine if there are differences in the perceptions of those individuals who identify as collaborative versus those individuals who identify as non-collaborative. The study was based on four areas of research, each focused on an aspect of professional learning. The research of Peter Senge (2006, 2012) included systems thinking and learning; the seven standards for professional learning created by Learning Forward (Learning Forward, 2017i) focused on the components of effective collaborative professional learning; research on collaboration and collaborative practices in domestic and international systems (Cohen & Hill, 2000; Barker, Elliot, & Uchiyama, 2002; Darling-Hammond et al., 2017; Darling-Hammond et al., 2009; Schwarz, 2013); and the impact of growth mindset on professional learning and collaboration (Dweck & Leggett, 1988; Dweck, 2000). A synthesis of these sources around the lens of collaboration provided the theoretical framework for this study. The findings of this study support that effective collaborative professional learning programs should be cooperatively developed, implemented, and evaluated. Professional learning should have a clear connection to previous professional learning, the work currently being done by teachers, and to student learning outcomes and achievement. School leaders should ensure that a collaborative culture exists to support professional learning through distributed leadership and the utilization of feedback to ensure professional learning is a top priority in schools.

CHAPTER ONE

INTRODUCTION

Linda Darling-Hammond et al. (2017) stated: "collaboration is at the heart of effective schools" (p. 111). Despite this bold assertion, and the emergence of data collected from research and from international school systems, traditional models for professional learning remain prevalent in many learning organizations. High school teachers reported they receive less professional development than their elementary peers. Teachers reported the professional development they do receive is not useful and that they, unlike many of their counterparts in international systems, bear the cost burden of professional development. Teachers in the United States also reported they felt they had little influence in the decision making processes related to professional learning (Desimone, Porter, Garet, & Yoon, 2002; Blank & de la Alas, 2009; Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009; Bayar, 2014; Jensen, Sonnemann, Roberts-Hull, & Hunter, 2016). In the United States of America, a method of education dating back to the days of the one-room schoolhouse emphasized the attributes of individual teachers working in isolation under the direction of managers who were expected to direct the instructional efforts. Teachers in these systems needed only to know more than their students. Throughout the 20th century, this system worked well. The United States was considered a model of industrial education (Darling-Hammond et al., 2017).

As the 20th century drew to a close, the demands of the global education community and the global economy shifted. Students from developing countries, educated in the traditional industrial model, flooded the job market willing to work for less than their similarly educated peers from the United States of America and other

industrialized nations. Providing educational opportunities lifted millions out of poverty, but it also created competition for individuals who possessed only the basic education provided by the traditional systems of education utilized nearly ubiquitously around the globe. The new paradigm required a new way of thinking about education in which teachers needed to be viewed as more than cogs in an educational machine. Students emerging from modern educational systems needed to have skill sets commensurate with the intellectual elite of previous generations. The traditional model of teacher work and training were not sufficient to the demands of the new mindset. Teachers needed to be selected from among the best graduates of educational institutions, possessing not only a background of strong academic performance but also a passion for the work of professional teaching and learning (Elmore, 2000; Desimone et al., 2002; Darling-Hammond et al., 2009; Darling-Hammond et al., 2017)

Teaching in the modern system required a teacher to do more than implement the ideas of researchers or to echo the words of instructors from their formal training. Instead, teaching in high performing systems had become viewed as a truly professional career path afforded status and compensation accordingly. In such an environment the work of a teacher was that of a change agent. Teachers were expected to work collaboratively with their peers and with administrators to improve instruction, schools, and school systems (Darling-Hammond et al., 2017).

Darling-Hammond et al. (2017) noted that in high performing international systems teaching was considered a group activity, as opposed to the traditional model in which teachers operated in isolation. Teachers were expected to plan, implement, and reflect on their instructional practices and outcomes with their professional peers.

Collaboration was an articulated part of the standards for professional practice. Collaboration in those systems often extended beyond the natural boundaries of the school or school system to networks of schools and professional learners actively engaged in the sharing of best practices (Darling-Hammond et al., 2017). Bayar (2014) posited, "continuing professional development has become one of the most common central concerns in educational studies over the past several decades" (p. 321).

Problem Statement

Many schools have release time for professional learning, but this allocation of the precious resource may not be leveraging the type of improved professional practice and student learning expected due to ineffective collaboration structures, processes, and behaviors. Research has documented the professional learning practices of high-performing international school systems (OECD, 2014; Darling-Hammond et al., 2017). Within those systems, collaboration is the rule rather than the exception. The effectiveness of professional learning programs specifically related to collaboration in some United States school systems is questionable. American teachers spend more time teaching and less time planning and learning together than their international counterparts (Darling-Hammond et al., 2017). High school teachers reported they receive less professional development than their elementary peers. Teachers reported the professional development they do receive is not useful and that they felt they had little influence in the decision-making processes related to professional learning. Teachers in the United States also reported minimal professional collaboration in the design of curriculum and that collaboration, overall, was lacking (Desimone et al., 2002; Blank & de la Alas, 2009;

Darling-Hammond et al., 2009; Bayar, 2014; Jensen et al., 2016). Limited research exists on collaboration and professional learning in the state of Missouri at this time.

Elmore (2003) noted that existing structures within schools promoted isolation and inhibited collaborative behaviors. Abrams (1997) identified traditional tasks and configurations of high-schools as a contributing factor in teacher isolation . Learning Forward (2017) created seven standards for professional learning. The seven standards were designed to allow districts to plan and implement a professional learning program based upon research and best practices (Garet et al., 2001; Croft et al., 2010; Darling-Hammond et al., 2017; Learning Forward, 2017i). The amount of leverage realized by a country, state, or district from these standards may be connected to the professional educators' skills and training around high-quality collaboration.

The willingness of teachers to open their professional practice for feedback and engage in dialogue is vital to the success of professional learning programs. Professional learning with a correlation to established practices and goals is more likely to yield positive outcomes for teachers and students. Measuring and understanding perceptions of teachers on the subject of collaborative professional learning programs aids in ensuring those opportunities are successful. This study analyzed those measures and compare the perceptions of secondary teachers defined as collaborators versus those noted as non-collaborators to help identify if collaboration opportunities do indeed improve professional learning results.

Purpose of the Study

This quantitative study was designed to examine the perceptions of high school teachers related to the professional learning within their respective school systems and to

determine if there are differences in the perceptions of those individuals who identify as collaborative versus those individuals who identify as non-collaborative. Collaboration in service of professional learning has been recognized as a practice of high-performing international school systems (Darling-Hammond et al., 2017). The Standards Assessment Inventory was utilized as a survey instrument to determine the perceptions of professional educators about professional learning activities in their respective school systems. The data regarding perceptions was disaggregated by those individuals as participating in a collaborative professional learning environment versus those who were determined not to be working in a collaborative professional learning environment, who were identified by means of score analysis of the Learning Communities section of the Standards Assessment Inventory survey instrument to determine differences in perception of professional learning.

Rationale of the Study

The value of collaboration was highlighted in international studies. An analysis of the Organisation for Economic Co-operation and Development (OECD) Teaching and Learning International Survey (TALIS) showed professional learning activities utilizing collaborative learning were associated with innovative instructional practices (OECD, 2014). Additional analysis of the TALIS survey results showed collaboration by professional learners was positively associated with the confidence of teachers, as well as with their job satisfaction. Individual efficacy and enjoyment of teaching have been identified as having a positive association with consistent, multiple opportunities for peer observation and collaborative professional learning opportunities (OECD, 2014).

Professional learning is a costly endeavor. High-performing international systems have elected to allocate their resources into providing job-embedded training as an ongoing part of their daily professional responsibilities. This model varies from the traditional delivery system in the United States of sending teachers to professional development opportunities or expending resources to secure the services of nationally recognized educational experts (Darling-Hammond et al, 2009; Bayar, 2014; Darling-Hammond et al., 2017),

This study was designed to examine Missouri secondary teachers' perceived relationship between professional collaboration and professional learning practices. Foundational literature for this study included an overview of systems thinking, an analysis of the standards for professional learning from Learning Forward a national organization focused on improving teacher practice, a review of professional learning practices demonstrated by high performing educational systems, and a summary of how mindset affects professional learners.

Research Questions

The following research questions were addressed within the context of this study:

1. What if any are the differences between Missouri high school teachers' perception regarding the effectiveness of their professional learning opportunities when research-based collaboration practices are utilized compared to when research-based collaborative practices are not utilized?
2. What are the perceptual differences of high school teachers in Missouri about the seven standards for professional learning: learning communities, leadership, resources, data, learning design, implementation, and outcomes when research-

based collaboration practices are utilized compared to no utilization of research-based collaboration practices?

Null-Hypotheses

The null hypotheses utilized for the study were as follow:

H_1 There is no significant difference in the perception of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the learning communities' standard?

H_2. There is no significant difference in the perception of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the leadership standard?

H_3. There is no significant difference in the perception of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the resources standard?

H_4. There is no significant difference in the perception of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the data standard?

H_5. There is no significant difference in the perception of high school teachers in Missouri when research-based collaboration practices are utilized in their professional

learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the learning designs standard?

H_6. There is no significant difference in the perception of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the implementation standard?

H_7. There is no significant difference in the perception of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the outcomes standard?

Theoretical Framework

The study was based on four areas of research, each focused on an aspect of professional learning. The four focus areas developed by Peter Senge (2006, 2012) included systems thinking and learning; the seven standards for professional learning as established by Learning Forward (Learning Forward, 2017b); research on collaboration and collaborative practices in domestic and international systems (Cohen & Hill, 2000; Barker, Elliot, & Uchiyama, 2002; Darling-Hammond et al., 2017; Darling-Hammond et al., 2009; Schwarz, 2013); and the impact of growth mindset on professional learning and collaboration (Dweck & Leggett, 1988; Dweck, 2000). A synthesis of these sources around the lens of collaboration provided the theoretical framework for this study.

Peter Senge – systems thinking. The work of Peter Senge (2006, 2012) described the way organizations learn and the disciplines utilized, individually and collectively, to support systemic learning. Senge, considered to be the first theorist to

name the idea of a learning organization, identified five disciplines necessary to create this type of culture. The first four were *personal mastery*, *mental models*, *shared vision*, and *team learning*. The first four disciplines promoted the application of the fifth discipline of *systems thinking* to create an effective learning organization. Personal mastery focused on establishing a vision for individuals within the organization. Mental models related to the multivariate ways individuals identify and interpret data regarding current reality. Shared vision provided a clear outcome for the work. Team learning allowed the opportunity to engage in problem-solving to meet needs collaboratively. Finally, systems thinking combined the previous four disciplines to enable individuals to perceive the work and the challenges not as isolated factors, but instead as a part of a more extensive, more collaborative, complex system (Senge, 2006; Senge, 2012; Bolman & Deal, 2017). A professional learning organization culture as noted by Senge creates the structure essential for building the capacity of employees and emphasizes processes and standards necessary to ensure the abilities of individuals is developed to the highest level (Senge, 2006, 2012). Systems thinking, as presented by Senge (2006) established the framework for organizational learning. The seven standards for professional learning created by Learning Forward (Learning Forward, 2017i) apply organizational learning to professional learning practices.

Standards for professional learning. The seven standards for professional learning as presented by Learning Forward represent the third iteration of professional learning standards outlining the attributes of professional learning leading to improved student learning outcomes, effective teaching practices, and enhanced leadership practices designed to facilitate professional learning. The seven identified standards were

leadership, data, learning designs, outcomes, implementation, resources, and learning communities. The purpose of professional learning is "for educators to develop the knowledge, skills, practices, and dispositions they need to help students perform at higher levels (Learning Forward, 2017i)." The standards for professional learning were not intended to address all the difficulties associated with educational systems. Instead, they focused on the work of professional learning and the impact this practice has on student learning outcomes and teacher professional practices. The nomenclature of the standards shifted away from professional development to continuous professional learning based on the need for educators. Utilization of the standards was indicative of a commitment to effective professional learning and increased educator efficacy (Learning Forward, 2017i). A theme throughout these professional standards references the need for teachers to work collectively and not in isolation. This information was foundational in determining the third theme for the theoretical framework being tied to both national and international research around effective collaborative practices.

Research on Collaboration and Collaborative Practices. Darling-Hammond et al. (2017) noted that high performing international school systems empowered teachers to enhance their professional skill set through an ongoing cycle of collaborative improvement. Those same systems also provided opportunities for educators to apply their improved professional practices within the classrooms. Jensen et al. (2016) noted common elements in high performing systems including embedded teacher learning opportunities, site-focused professional learning, shared responsibility among stakeholders, and the implementation of systems to promote professional learning outcomes. Teachers in high performing international schools spend more time engaged in

collaborative work and less time working directly with students than their counterparts in the United States of America (OECD, 2014; Darling-Hammond et al., 2017).

Collaboration was found to be an outcome of policy and procedure within high functioning educational systems. Professional collaborative work was an expectation of professional learners within those high performing systems. Teachers working within those systems met regularly to plan, review student work, and to conduct and evaluate the results of research. High performing international school systems were found to focus on the facilitation of collaborative behaviors in teachers with intentionality (Darling-Hammond et al., 2017). The research of Mark Schwarz (2013) noted practices of collaborative teams and strategies utilized to promote growth mindset.

Schwarz (2013) created an eight-step framework to identify mutual learning behaviors promoting high levels of collaborative behaviors. He asserted a traditional unilateral mindset, in which the work and the efficacy of group were determined by the knowledge and skill of the leader, limits the ability of groups to solve complex problems efficiently. The processes identified by Schwarz aligned with the research of Richard Elmore (2000), who asserted the demands of collaborative groups exceed the ability of single leaders operating from traditional mindsets to meet adequately.

Growth mindset. Carol Dweck (2000) identified mindset as a potential barrier to the efforts of collaborative learning teams. Research on mindset and the motivation of learners, at all levels, has provided insight into the way individuals learn and how mindset impacts this ability. Individuals operating from a fixed mindset often realize a helpless-oriented response when encountering a task at which success is not assured. Individuals operating from a fixed mindset perspective are reluctant to engage in

unfamiliar practices. Conversely, individuals operating with a growth mindset view challenges, and even failures, as opportunities to learn and to grow. The work of collaborative teams requires participants to engage in learning activities outside the boundaries of traditional teacher roles. A growth mindset is a vital attribute requisite to professional learning and collaborative work (Dweck, 2000).

Limitations, Delimitations and Assumptions

Limitations. The limitations of this study were relative to geographical area and designs utilized by the researcher and are as follows:

1. The number of respondents to the survey.
2. The willingness of school superintendents to distribute the online survey and their interest in participating in the research study.

Delimitations. The delimitations that may exist in this research study are as follows:

1. This study did not include charter, private, or parochial schools, based on their diverse funding mechanisms and the impact on professional learning.
2. This study was limited geographically to the state of Missouri as the researcher sent the questionnaire to all current public-school high school teachers serving in High Schools in Missouri.

Assumptions. The assumptions for the research study were as follows:

1. It was assumed that the list of Missouri public school superintendents utilized to distribute the survey, as found on the website for the Missouri Department of Elementary and Secondary Education, was correct and up-to-date.

2. It was assumed that participants who received invitations to participate in the study took the survey personally.
3. It was assumed that participants were truthful in their responses and understood the survey items as intended.

Design Controls

This quantitative study utilizes a descriptive research design. Descriptive research is used to summarize or describe a set of observations on current characteristics of given populations (Pelham, 2013). This research design often involves utilization of survey questionnaires.

> Survey research can be used to gather information about a group's beliefs attitudes, behaviors, and demographic compositions. Survey data are collected by asking members of a population a set of questions, which can be administered in a questionnaire that is mailed or emailed or in an interview over the phone or in person. (Airasian & Gary, 2009, p. 176)

Descriptive statistics were utilized to interpret potentially large sets of observational data regarding a few representative numbers. This study also used inferential statistics. Inferential statistics, through the utilization of null hypotheses, allowed the researcher to draw conclusions from the results of the survey in an impartial, rational manner (Pelham, 2013).

Another control of descriptive research is the protection of all participants involved. A cover letter was provided to all participants explaining the purpose of the study, its significance, and commitment to share results with participants upon request. Within the letter, the anonymity of participants was addressed. The cover letter to

participating teachers stated a commitment that all responses were to remain anonymous. "The promise of anonymity or confidentiality will increase the truthfulness of responses as well as the percentage of returns" (Airasian & Gary, 2009, p. 184).

This quantitative study was designed to examine the perceptions of high school teachers related to professional learning within their respective school systems and to determine if there were differences in the perceptions of those individuals who identify as collaborative versus those individuals who identify as non-collaborative. Collaboration, in service of professional learning, has been identified as a practice of high-performing international school systems (Darling-Hammond et al., 2017). The Standards Assessment Inventory was utilized as a survey instrument to determine the perceptions of professional educators about professional learning activities in their respective school systems. Data gathered from survey responses were analyzed with IBM Statistical Package for Social Sciences Statistics (SPSS) program to collect descriptive statistics means and standard deviations for each of the seven Learning Forward Professional Learning Standards as addressed in the Standards Assessment Inventory. An ANOVA was utilized to compare the mean scores of the identified population groups of collaborators and non-collaborators. Application of the ANOVA was one with the assumption that the data would fall on a normal distribution, and that the individual scores used to determine the mean were independent of each other (Wall, 2017). The ANOVA also "has the assumption that the groups being compared have similar variances or spreads in their scores (this is called homoscedasticity)" (Wall, 2017, p. 194).

Definition of Key Terms:

Professional Development - Skills and knowledge attained for both personal development and career advancement.

Professional Learning – when educators reflect on professional practice, collaborate and share ideas, and strive to improve student outcomes on a daily basis.

Summary

Chapter One introduced the researcher's topic to define professional development practices that will increase educator effectiveness and leadership capacity. Chapter Two is an overview of theorists and theories on collaborative learning. It outlines Peter Senge's work on system thinking. It provides a theoretical framework for effective professional development activities based on the Learning Forward standards. An overview of collaborative practices from high-performing international schools is presented. Finally, behaviors associated with collaborative professional learning are examined including reviews of Dweck's research on growth mindset and the work of Schwarz (2013) related to the practices of collaborative teams. Chapter Three will outline the methodology for the study. The methodology for the study and will provide a synopsis of the research design, validity and reliability of the study, and statistical treatment of the data. In Chapter Four, the researcher will present the findings of the study. Chapter Five will summarize conclusions from data analysis as well as provide recommendations for future study in the area of professional learning and collaborative practices.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

Collaborative professional learning is essential to effective schools and educational professionals. It is imperative that effective professional learning occurs in every school (Hargreaves & Shirley, 2009). Educators should be actively engaged in collaborative professional learning throughout all phases of their professional careers (Fullan, Rincón-Gallardo, & Hargreaves, 2015). Darling-Hammond et al. (2009) noted the gap between the expectations of teachers for professional learning and the quality of implemented professional learning programs. Policymakers, and often the general public, perceive teachers as individuals who, through training and innate knowledge, craft innovative educational environments while operating in isolation. However, the evidence demonstrates that the most effective environment for professional learning is a collaborative environment in which teachers have the opportunity to work collaboratively with their peers. Elmore (2003) noted that privacy of practice inhibited innovation. Collaboration can only occur with the proper systems, frameworks, practices, and mindset (Senge, 2006; Schwarz, 2013; Darling-Hammond et al., 2017).

The review of the literature is divided into three areas of research: systems thinking, standards for quality professional learning, and advanced professional learning by focusing on collaboration. Each area of research builds on the previous, beginning with learning organizations and systemic learning, progressing to the standards for quality professional learning, and culminating in the advancement of professional learning by focusing on collaboration. The first area of research, systems thinking, is

based upon the work of Peter Senge (2006, 2012) who described learning organizations and defined the disciplines utilized to engage in systemic learning throughout organizations. Senge's work focused on the application of the five disciplines to facilitate an in-depth learning cycle within. The five disciplines establish a framework for developing core learning capabilities. The second area of research utilizes the seven standards for professional learning created by Learning Forward (Learning Forward, 2017i). The seven standards provide leaders tools to evaluate professional learning programs for effect and efficacy. The final area addressed in the research is advanced professional learning, including collaborative practices from high-performing international school systems, and research on behaviors promoting effective collaborative practices.

Learning Organizations and Systems Thinking

Professional learning requires organizations to engage in collaborative work to determine the objectives for learning activities and to frame the work within the context of broader goals. The research of Peter Senge (2006) identified four disciplines: *personal mastery*, *mental models*, *shared vision*, and *team learning*. These four disciplines, used in combination, lead to the fifth discipline of systems thinking. Peter Senge (2012), writing on organizational learning, noted three elements that can be put in place to facilitate a cycle of deep learning. Senge noted such cycles could be challenging to initiate, as they require fundamental shifts in thinking about the work we do, and they are the byproducts of growth and change over long periods of time. An understanding and the application of the three elements of organizational learning aid in establishing the requisite foundations necessary for systemic learning (Senge, 2012).

The first element identified by Senge (2012) centered on the guiding ideas utilized by an effective organization. Guiding ideas are the intentionally stated, big-picture statements that provide the motivation and establish the case for organizational change. Senge asserted there were significant opportunities for leaders to establish leverage for change by clearly articulating a vision for the direction a school will take in the future. Simon Sinek (2012) recognized a parallel idea, advocating for leaders to identify the "why" of a collaborative group, in this case meaning the establishment of a base concept for why the organization exists (Senge, 2012; Sinek, 2012).

The second element identified by Senge (2012) was innovation in infrastructure. Senge noted that just as communities had a physical infrastructure made up of sidewalks, roads, and utilities, our organizations had infrastructures made up of procedures and established organizational practices that had a determining influence on behaviors. Senge posited that all of these established procedures and protocols might be redesigned to allow for greater flexibility through innovation. The result of redesigning the infrastructure should be streamlined infrastructure in which participants are the beneficiaries of increased levels of autonomy to determine how best to solve problems (Senge, 2012).

The third element identified by Senge (2012) was related to the methods, tools, and theories of leading organizational change. Leaders can spend most of their time on managerial tasks, all of which are urgent and worthy of time, but miss the broader perspective by not correctly identifying the intricacies and subtleties of the overall system. Leaders should be intentional in the desire to view the learning organization from different perspectives, so that when they are, inevitably, immersed in the daily activities

of leadership, they retain the perspective and vision necessary to ensure decisions are made from the vantage of the acquired perspective (Heifetz, 1994; Senge, 2012; Bolman & Deal, 2017).

Senge (2006, 2012) asserted that supporting the three elements of effective organizations were four disciplines which collectively created a fifth discipline, referred to as a "system." The systems-thinking approach was identified as essential for growth, change, and adaption to an ever-changing context. It is vital to have an understanding of Senge's original work as a broader context for the application and interpretation of the five disciplines. The five disciplines outlined by Senge (2006) were personal mastery, mental models, building shared visions, team learning, and systems thinking. These disciplines are the foundation of his work on organizational learning theory. Senge posited that learning organizations depicted a culture where there was a focus on building the capacity of participants through opportunities for engagement in collaborative learning, intentionally designed to improve their knowledge and skills for deep learning and the betterment of the group. Senge suggested that individual disciplines comprised a collection of theories and techniques that should be studied and applied in an ongoing cycle of continuous learning and improvement (Senge, 2006, 2012).

Personal mastery. The first discipline identified by Senge (2006, 2012) was personal mastery. This concept refers to a set of practices focusing on a vision, while simultaneously building recognition of current reality, relative to the vision of where the organization could be. Personal mastery is described relative to the gap between current reality and where the organization wants to be. Senge defined the inevitable tension between shared vision and current reality as "creative tension." Creative tension, by

nature, will resolve as vision and reality move closer together. Senge asserted that as people held the vision of the desired reality firmly within their minds, they became aware of possibilities to advance their goal they may have previously overlooked, formed affinities with others with whom they shared a common goal, and looked at obstacles from a dispassionate standpoint, finding resolutions that allowed them to continue moving toward the desired outcome. Mastery of creative tension alters the strategies utilized to address failure within an organization. Failure is presented as evidence of the continued existence of a gap between the desired vision and current reality. Failure, therefore, is an opportunity to revise the perspective of the current reality, acknowledge strategies that were not successful, and reinforce clarity of the established shared vision (Senge, 2006, 2012).

Senge (2006) noted that established goals and desired vision might falter when confronted with creative or emotional tension. When tension is recognized and allowed to operate, and the vision remains intact the vision subsequently becomes a catalyst for change. The energy created by the tension of reality versus the desired shared vision facilitates the change and learning processes. Leaders should, therefore, create an environment in which the principles of personal mastery are woven into daily activities. Organizations committed to personal mastery will foster environments supporting personal vision, defining current reality, and address the gap between vision and reality (Senge, 2006, 2012). Leaders committed to personal mastery strive to build the capacity of individuals to achieve high levels of personal mastery. A critical aspect of building personal capacity involves effective professional learning opportunities (Senge, 2006, 2012).

Professional learning should enable participants to acquire new knowledge and skills and subsequently to apply that knowledge to their professional practice, facilitating personal mastery. Additionally, participants should build their capacity as learners, working to meet identified goals and increase efficiency in service of personal mastery. The ideal way to accomplish an increased capacity for learning is to tailor the outcomes and learning activities to the specific needs of the participating individuals. Collaborative professional learning should be based on the needs of individuals to promote personal professional growth (Joyce & Showers, 2003; Penuel et al., 2007; Darling-Hammond et al., 2017).

Mental models. Senge (2006, 2012) asserted that mental models were personal perspectives and images of how the world worked. These images circumscribe the way individuals interpret the world and perceive learning and change. Mental models exist below the level of awareness because they are tacit. Consequently, they are invisible until intentionally sought out. Variances between mental models account for individuals witnessing the same event but describing it differently. The central focus of this discipline is to facilitate the process of identifying mental models so they may be discussed productively. Unexamined mental models may limit an individual's ability to implement change. Senge asserted that working with mental models would make people aware of their perspectives and enable the creation of new mental models (Senge, 2006, 2012).

Carol Dweck (2000) supported the importance of mental models in creating an effective learning organization with her work related to the growth mindset. Her research indicated individuals should possess a feeling of efficacy, and that feeling of efficacy

made a difference in the work being planned and implemented. If adult learners understand the importance of professional learning and are cognizant of the applicability of the subject matter, it will facilitate a growth mindset and team learning (Bransford, Brown, & Cocking, 1999; Dweck, 2000; Croft, Coggshall, Dolan, & Powers, 2010). Schwarz (2013) built on the concept of mindset, extending it to the mindset of collaborative groups related to professional learning practices. He asserted professional learners needed to shift their mindset to assume ownership and leadership roles in professional learning environments (Schwarz, 2013).

Senge (2012) stated we live in a world of beliefs that remain mostly untested. People embrace those beliefs because they are based on assumptions inferred from observations and prior experiences. Assumptions, therefore, occlude the ability of an individual to perceive the truth. Perspective defines truth, and people define their perspectives by assuming their beliefs are correct, that truth is evident, that data inform their perspectives, and that the data they elect to utilize to inform their perspectives are accurate. All of these assumptions are problematic to disprove. Leaders should cultivate awareness of existing mental models and examine them to ensure they are aligned with the shared vision. Facilitation of this process allows participants to establish a culture promoting collective inquiry into deeply ingrained assumptions (Senge, 2006, 2012). Schwarz (2013) identified the need for members of a collaborative team to be cognizant of their assumptions and noted the importance of agreed-upon common definitions for essential words. He asserted teams needed to test their assumptions and inferences, develop an awareness of the processes and thoughts behind personal and team mental models. Schwarz noted individuals observe situations and select data to interpret to make

meaning of the situations before choosing how to respond. All of these steps are based on mental models, assumptions, and inferences. Schwarz advanced a process for leaders to establish a shared pool of meaning regarding words or phrases among stakeholders to ensure the collaborative process was based on mutually understood and agreed upon definitions (Schwarz, 2013).

The discipline of mental models impacts professional learning because it influences the way individuals take in information and how they react to that information. Mental models provide the framework for understanding our underlying assumptions about the work done by learning teams and the environment in which the work is done. Awareness of mental models will help learning organizations engage in genuine dialogue to establish a shared vision (Senge, 2006; Schwarz, 2013; Darling-Hammond et al., 2017).

Shared vision. Senge (2006, 2012) stated shared vision was an essential component for learning organizations and was the catalyst required for learning. Many other theorists have supported the importance of having a shared vision. Kotter (1996) indicated it was important for leaders to have a guiding coalition of individuals who believed in the organization's vision to move change forward. Lee Bolman and Terrence Deal (2017) noted one way for leaders to interpret experience was by refining and propagating a vision. A vision allows the core values of an institution to evolve into an image of the future (Bolman & Deal, 2017). Newmann and Wehlage (1995) noted the most successful schools in their research study had teachers who shared a vision for student learning, engaged in collaborative learning, and accepted collective responsibility . Senge (2012) asserted that adaptive learning was possible without a shared vision, but

generative learning could only occur when individuals were working towards a common goal, reflecting a deeply held value for the individuals and the larger group. Through collaborative work, the participants develop a shared vision by generating images of the future they want to create together. The shared vision should be congruent with the fundamental purpose of the learning organization and build on a shared sense of purpose. A shared vision is not genuinely shared until it has endured over the course of time, continuing to define a purpose and facilitating reflection, learning, and actions. Senge asserted a shared vision was effectual when it incorporated the three elements of tension from personal mastery: a defined perspective of current reality, a cogent statement of the desired outcome, and collective consensus regarding how to move forward (Senge, 2006, 2012).

Senge (2012) established five stages of building a shared vision within a learning organization. He asserted that the vision strategies should be developmental, facilitating the growth and leadership capacity of participants. Each step is based on collective capacity, beginning with directives requiring little capacity and progressing to a collaborative culmination requiring a significant amount of active participation on the part of all participants. The author asserted that at the collaborative end of the spectrum, administrators became facilitators of the process, rather than the architects of the solution. The outcome for each of the methods is the establishment of a shared vision to facilitate growth and learning (Senge, 2012).

Stage one of Senge's (2012) sequence is the telling stage, in which authority figures deliver directives and subordinates follow those directives. The stage is most often appropriate in crisis situations where everyone is cognizant of the need for timely

directive action to address a specific circumstance. Some learning organizations are only ever responsive to the telling method, regardless of the circumstances. These are systems in which the leader may have so wholly established the direction over an extended period that the will of those who might oppose the direction has waned. In this environment, the appearance of collaboration might be present, but ultimately the vision will be one that is dictated. Senge asserted that a vision in this category was better than not having a vision at all, but the effectiveness of the vision would be limited. Learning organizations setting their vision at the telling stage may do so because the leaders may not have the ability to do otherwise (Senge, 2012).

Senge (2012) stated that in stage two, the selling stage, leaders would attempt to enroll members into subscribing to a new vision, recruiting participants and establishing commitment as part of the selling process. Selling is a beneficial strategy for leaders in an authoritarian system, as it establishes the need for moving beyond compliance to commitment. Mastering the selling stage requires open channels of communication to solicit responses. Speeches should be followed with work sessions to determine the number of participants who have been convinced. Senge noted that selling, done well, was not manipulative. It should be viewed instead as enrollment, in which participants are given an opportunity to choose to follow the presented vision (Senge, 2012).

Senge (2012) stated that in stage three, the testing stage, leaders would present a vision for consideration, or testing, by the group not just to establish whether it would be supported, but also to establish a baseline for the level of support the vision had and what aspects resonated with the participants. The outcome of the feedback process would present an opportunity to improve and restructure the vision. The testing process may

facilitate conversation about the vision, but the process should be earnest. Individuals who participate in the process by providing feedback to the leader should feel that their input is heeded. Leaders may improve the quality of responses received by providing as much detail about the vision as possible. The test should be open and unbiased, providing participants with unprejudiced information to promote learning (Senge, 2012).

Senge (2012) identified stage four, the consulting stage, as the desired stage for teachers and administrators who were cognizant of their ability to have the answers to every question. Leaders utilize the consulting stage to facilitate communication between stakeholders at every level to fashion a shared vision. During this stage, leaders pose open-ended questions, as opposed to soliciting feedback on a specific set of options. The stakeholders in this stage may extend beyond natural boundaries to include a broader spectrum of participants to facilitate in-depth learning. Senge suggested mastery of the consulting stage was realized when small teams were established to canvass larger groups and report back. Anonymous feedback should be solicited from participants, ensuring contributions are garnered from those individuals who may be reluctant to voice their opinions in more traditional settings (Kotter, 1996; Senge, 2012; Bolman & Deal, 2017)

The fifth stage identified by Senge (2012) was the co-creating process that placed all participants in an orientation where every individual made choices about the desired outcome. Learning of this type requires significant participation and capacity from the participants. Elmore (2000) noted that leadership, when distributed, was reflective of the needs of the organization and the involvement of stakeholders. Mastery of the fifth stage begins with an articulated vision from a leader. Bolman and Deal (2017) noted distillation and dissemination as a powerful tool for interpreting the past experiences, and for

creating a convincing and optimistic image for the future. Members should be given ample time to reflect upon the personal vision of the leader and how it juxtaposes with their vision. Leaders should seek alignment of personal visions to organizational visions, not an agreement between the two. Participants in the co-creation process require freedom to make their thoughts known. Leaders should embrace disparate opinions, resisting the temptation to rush towards swift resolution, talking openly about mental models occluding the process of creating a shared vision. (Senge, 2012). Schwarz (2013 noted the need for dialogue and transparency when working collaboratively with teams. The establishment of dialogue by allowing participants to add to a shared pool of meaning will assist the leader in the process of co-creation by establishing systems to provide feedback (Kotter, 1996; Elmore, 2000; Senge, 2012; Schwarz, 2013; Bolman & Deal, 2017).

Leaders should establish a shared vision to advance the work of professional learning and improve student outcomes. DuFour, DuFour, and Eaker (2009) noted that successful schools that were functioning as communities of professional learners shared a defined vision of ensuring that all students were learning at high levels. They engaged in collaborative work to realize that shared vision, which created collective responsibility for the learning outcomes of all students. To competently service the shared vision, participants should engage in team learning, growing collective capacity and efficacy for the group (DuFour, DuFour, & Eaker, 2009).

Team learning. Senge (2006) presented the idea of team learning as a discipline of practices designed over time to get the people on a team thinking and acting together. This shared pool of meaning increased the ability to learn together. He elaborated on his

earlier thoughts in a later volume asserting that the core of team learning was found in groups willing to meet regularly to work together and communicate continuously with intentionality about issues requiring resolution and thoughtful consideration. Unaligned teams are characterized by individuals without shared visions that work hard, but their effort is not translated efficiently to the progress of the group. Conversely, aligned teams share a mutual direction, vision, and understanding of how the work of the individual complements the desired outcome. Senge asserted that team alignment was requisite to moving forward, as empowered individuals lacking alignment with the group would create confusion (Senge, 2006). Schwarz (2013) identified a mindset of unilateral control as having a detrimental impact on team learning. He defined unilateral control as a traditional mindset comprised of assumptions and core values based on traditional models of leadership. He asserted that people traditionally perceived the leader as the individual with the most authority. In service of that perception, individuals cede responsibility and decision-making authority to the one leader in the room. Senge (2006) and Schwarz (2013) both affirmed collaborative team learning in which participants are mutually accountable to each other (Senge, 2006; Schwarz, 2013).

Schwarz (2013) stated that a shift in mindset would be required to reshape the methodology utilized to solve problems and expertly engage in collaborative learning as a group. He suggested that leadership came from every participant of a learning team and that the behaviors of team members needed to change to accommodate this shift in mindset. Dweck (2000) noted in her work on mindset the variances between a fixed and a growth mindset. A fixed mindset lends itself to a traditional model of leadership and team in learning in which the leader is expected to identify problems and provide solutions.

Utilization of a growth mindset will facilitate the perspective developed by Schwarz (2013) in which team members view themselves as empowered, mutually responsible, and jointly accountable for the learning of the team (Dweck, 2006; Senge, 2006; Schwarz, 2013).

Systems thinking. Senge (2012) stated that the discipline of systems thinking was a study the structures of systems with the goal of changing the perspective of participants. Systems thinking allowed them to perceive both problems and goals not as isolated outcomes but rather as components of a system made up of less visible structures that collectively functioned as a system. Within a school, the system is made up of multiple connected components including budget, policy, procedure, facilities, personnel, and politics. When leaders are aware of the multifaceted nature of the system and understand how the components function relative to each other and the system as a whole, they can act more efficiently for the benefit of the systemic learning (Senge, 2012).

Senge (2006) presented systems thinking as his fifth, and final, discipline, noting that systems thinking incorporated the previous four disciplines, catalyzing the disciplines of personal mastery, mental models, shared vision, and team learning into a cohesive model. Utilized independently of the other disciplines, any of the five established disciplines are less effective. Personal mastery cultivates individual motivation to engage in a continuous cycle of professional learning to understand how the actions of the individual impact the organization. Mental models assist in the evaluation of current realities. Shared vision builds commitment to long-term goals. Team learning creates collaborative opportunities that aid in developing the requisite expertise to close the gap between the long-term goals and the current reality. Systems

thinking, in the end, provides the tools for participants to be cognizant of the multifaceted nature of the learning organization (Senge, 2006).

Senge (2006) asserted that learning organizations were possible because at the core of every individual was a learner. Learning is inherent to the nature of individuals. It is how individuals interact and interpret the world. Collectively, individuals within an organization are engaged in daily learning about potential as individuals and about the capabilities of the organizations being collaboratively built. For learning organizations to thrive, they should be adept at continually adjusting to meet the ever-changing needs of participants at every level. Mastery of the five disciplines will aid leaders in establishing and sustaining a culture focused on learning, dedicated to becoming better through systems thinking and focused professional learning (Senge, 2006).

Standards for Quality Professional Learning

Senge (2006) noted the importance of high-performing organizations to be adaptable to ongoing change. His systems thinking approach exemplified the need for leaders to create learning organizations that effectively used the five disciplines to ensure high levels of performance. The work of Senge helped inform educators of the connection between professional learning and increased demonstration of individual personal mastery, mental models, and team learning. Senge's approach identified the need for promoting high levels of personal mastery, unpacking mental models to ensure educators had a clear understanding of their mindset (Dweck, 2000; Schwarz, 2013) and the importance of collaboration and team learning in creating a context for high levels of professional learning. These three tenets of Senge's systems thinking are only achieved

when members have the fourth tenet, a shared vision, as an essential driver of their daily work (Senge, 2006).

Professional learning is an essential element in high-performing systems. Professional learning is comprised of learning activities that assist in the development of both the knowledge and the skills of professional educators in support of student achievement (Chambers, Lam, & Mahitivnichcha, 2008; Learning Forward, 2017i). Opportunities for high-quality, job-embedded professional learning have been tied to the practices of high-performing school systems. Opportunities are realized in these systems by providing time for teachers to engage in collaborative learning with their colleagues and to conduct research in service of improving instructional practice and learning outcomes for their students. Professional collaborative work is incentivized through the structures of the respective systems, some requiring documented hours of professional learning as an essential component of licensure, and others linking monetary compensation to professional learning (Darling-Hammond et al., 2017).

Improvement of professional practice requires learning on an ongoing basis. Elmore (2000) noted that learning was both an individual and a social activity. Collaborative learning, consequently, requires an environment that is directive regarding the acquisition of new knowledge and skills related to the professional practices of educators. Elmore asserted that our traditional school environments encouraged teachers to work in isolation — an idea echoed throughout the literature on professional learning communities (Elmore, 2000, 2003, 2004; Bolam et al., 2005; Pfeffer & Sutton, 2006). School leaders should cultivate collaborative learning environments, valuing and promoting the learning of the group. Individuals working in collaborative learning

communities should expect their ideas and professional practices to be subjected to the evaluation of their peers, in service of collective accountability and learning (Bolam, et al., 2005; Pfeffer & Sutton, 2006; Schwarz, 2013). Elmore (2003) states, “Privacy of practice produces isolation; isolation is the enemy of improvement” (p. 20).

In support of their definition of professional learning, Learning Forward developed seven standards for improving schools by increasing the skills and knowledge base of educators. Learning Forward, created in 1969 as the National Staff Development Council (NSDC), asserts that professional learning is a vital part of strategies for providing professional educators with the expertise and knowledge required to empower students to succeed in meeting their personal learning goals and the established standards (Learning Forward, 2017i).

Learning Forward, founded as the NSDC, is an influential non-profit institution that exists to promote and advance the cause of professional learning. Learning Forward has noted that professional learning is a continuous, rigorous, job-embedded, collaborative activity in which professional educators work to increase their efficacy in meeting the needs of their students by acquiring new knowledge related to content knowledge, instructional practices, research methodology, and student learning (Learning Forward, 2017b).

Learning Forward created seven essential standards that should be prevalent in a school to promote and leverage professional learning. Each of the standards represents a broad area of research and recommendations from Learning Forward related to professional learning. Application of the standards to a developing or established program will aid in ensuring that research-based practices for effective professional

learning are in place. Several other bodies of research support the seven standards. The standards serve as a benchmark for school district leaders to measure the effectiveness of their professional learning programs and activities (Learning Forward, 2017i). The seven standards define the elements of "professional learning the lead to effective teaching practices, supportive leadership, and improved student results" (Mizell, Hord, Killion, & Hirsh, 2011). Professional learning based on the seven standards increases educator effectiveness and student learning outcomes (Mizell, Hord, Killion, & Hirsh, 2011). These seven standards are leadership, data, learning designs, outcomes, implementation, resources, and learning communities (Learning Forward, 2017i)

Leadership. School leaders in the pre-kindergarten through 12th grade (preK-12) environment should be cognizant of professional learning as an essential strategy for implementing and supporting improvements in schools and resulting in increased achievement for students. Leaders within the preK-12 environment are charged with developing the capacity of, being advocates for, and creating the systems to support professional learning. Leaders must prioritize learning for all participants at the district, building, and classroom levels. Leaders are expected to communicate the link between the learning of professional educators and the learning of students (Learning Forward, 2017d). Cunningham and Cordeiro (2000) wrote, "leadership has to do with guiding improvement and infusing an organization with meaning and purpose" (p. 4).

Leadership is a critical component in creating a culture that promotes professional learning, but it cannot be provided only by school leaders. Richard Elmore (2000) indicated:

> in a knowledge-intensive enterprise like teaching and learning, there is no way to perform complex tasks without widely distributing the responsibility for leadership (with guidance and direction) among roles in the organization, and without working hard at creating a common culture, or set of values, symbols, and rituals. Distributed leadership, then, means multiple sources of guidance and direction, following the contours of expertise in an organization, made coherent through a common culture. (p. 15)

Schwarz (2013) asserted that leadership needed to be found in every seat at the table, holding participants accountable for the outcomes of the group and holding members of the group mutually accountable to each other

Elmore (2000) delineated five foundational precepts in support of his ideas on distributed leadership. The first of the five principles is that the improvement of instructional practice and performance is the purpose of school leaders. In the institutional model of leadership, school leaders are viewed as being a buffer between the school and their patrons to preclude disruptions or hindrances to the educational process. In political theories of leadership, the work of establishing coalitions and negotiation is emphasized. Managerial theories of leadership focus on the role of leaders as overseers of tasks and organizers. Cultural theories of leadership center on the vision and rallying components of leadership. None of these theories encompass the full nature of educational leadership, as they do not establish a relationship between the work done by a school administrator and the primary purpose of educational institutions. A leader may be skillful at one, or all, of the aspects of leadership but still not be successful at advancing the primary goals of the learning system (Elmore, 2000).

Improvement in instruction requires the leader to create opportunities for learning to take place on an ongoing basis. Elmore (2000) stated that learning was both an individual and a social activity. Collective learning, consequently, requires an environment that is directive regarding the acquisition of new knowledge and skills related to professional practices as educators. Elmore argued that our established school environments encourage teachers to work in isolation, an idea echoed throughout the literature on professional learning communities (Elmore, 2000, 2003, 2004; Bolam et al., 2005; Pfeffer & Sutton, 2006).

Elmore (2000) elucidated his third principle of distributed leadership as the need for leaders to model learning by demonstrating the actions and standards representing the collective good. Leadership theory based on roles assumes that leaders who are invested with authority require or request others to engage in work that they are unwilling to undertake. If learning is the primary goal, then leaders should participate in actively modeling the individual and collective learning expected of others. Leaders should be seen to be engaged in the work others are expected to do. Leaders should also expect to be subject to similar scrutiny that is commensurate with what is appropriate for others in the group (Elmore, 2000).

Service as a function of the leadership role was identified by Greenleaf (2002) in his seminal work on servant leadership. Leaders have an obligation to those being led. By positional authority, leaders can force compliance. By actively participating in the work of solving problems and engaging in a continuous cycle of self-reflection and learning, leaders build the collaborative capacity of individuals to learn and to solve problems (Elmore, 2000; Greenleaf, 2002; Bolman & Deal, 2017; Senge, 2002).

Bass and Avolio (1993) discussed a related concept in their work on transformational leadership, noting the reciprocal nature of leadership. They asserted that culture was determined, in part, by leadership, but that culture also affected the development of leadership. Leaders who model and prioritize learning function as transformational leaders who change the culture by first understanding, and then realigning, the culture with shared vision and goals (Bass & Avolio, 1993).

The fourth foundational principle of distributed leadership identified by Elmore (2000) centers on the idea that the responsibilities and functions of leadership are driven by the needs of learners within the system, as opposed to positional authority. Leaders are tasked with creating a collaborative environment amid a diverse group of individuals with varying levels of expertise and professional responsibilities. Learning derives from variances in our expertise rather than as a product of positional authority. If collaborative learning for all participants is the desired outcome, it should be built on a foundation of established knowledge or skill, which, when joined together with the group, will facilitate collective learning. Researchers Jensen et al. (2016) echoed this idea in their research when they identified that one of the standard factors in high-performing international systems was professional learning activities with a strong association to the established goals for the school (Elmore, 2000; Jensen et al., 2016).

The fifth foundational principle of distributed leadership is that all accountability relationships require reciprocity (Elmore, 2000). Educational institutions are driven by policy requirements in which a person in a position of authority sometimes has to require individuals to engage in behaviors out of compliance. Distributed leadership emphasizes the reciprocal nature of relationships. The authority to require actions of an individual is

directly tied to the responsibility of the leader to provide the opportunity for individuals to learn and to inform leaders about the learning process (Elmore, 2000; Greenleaf, 2002; Senge, 2002).

Crowther, Ferguson, and Hann (2009) described the responsibilities of teacher leaders as communicating a vision about a better world; endeavoring for authentic learning, instruction, and assessment practices; organizing learners into communities by utilizing processes addressing multiple levels; confronting obstacles in the structures and culture of the school; facilitating action from ideas; and building a culture of success .

Multiple factors influence the ability of teachers to assume the responsibility of teacher leadership roles. These factors include outstanding pedagogical skills, an established individual philosophy of education, having sufficient experience to be able to offer help to others, being interested in growing other teachers, and having the time and personal resources to be available and willing to assume leadership responsibilities (Barr-York & Duke, 2004; Katzenmeyer & Moller, 2009).

School leaders should lead by cultivating environments valuing learning by both individuals as well as the collective. Individuals working in collaborative learning communities should expect their ideas and professional practices to be subjected to the evaluation of their peers, in service of collective accountability and learning (Bolam et al., 2005; Pfeffer & Sutton, 2006). Elmore (2000) stated, “Privacy of practice produces isolation; isolation is the enemy of improvement” (p. 20).

Leaders should ensure that professional learning activities are focused on the right work. Professional learning activities based on relevance to the daily activities of teachers have added value for participants. Individual professional learning activities are more

likely to produce the intended outcomes when they are aligned to and build upon previous professional learning. The allocation of diverse resources for professional learning has a significant impact on the outcomes of professional learning activities. (Garet et al., 2001; Penuel et al., 2007; Croft et al., 2010; Hargreaves, Boyle, & Harris, 2014).

Resources. Professional learning activities require an investment of diverse resources. The allocation of resources can determine the level of quality and the outcomes for both professional learners and students. Resources include time, personnel, materials, technology, and financial obligations. When making decisions regarding the allocation of resources for professional learning, leaders should be cognizant of both student and teacher learning needs and should possess a commitment to ensuring equity in the distribution of available resources. Consideration of priorities for impacting student learning outcomes should factor prominently in allocation decisions. Job-embedded time to engage in professional learning activities emphasizes the importance of ongoing professional learning activities, while simultaneously mitigating financial burdens (Learning Forward, 2017h; Croft et al., 2010; Oden, Archibald, Fermanich, & Gallagher, 2002).

Allocation of resources for professional learning activities appears in different places within budgets and is not always clearly defined. For instance, budgets do not identify the amount of time spent in professional learning activities. Identification is consequentially complicated, and it is difficult to determine an inclusive total investment in learning activities. Odden et al. (2002) established four core categories of resource allocation related to professional learning: the time of education professionals involved in

learning activities; administrative cost; instructional materials; and the cost associated with the use of physical assets in the form of facilities. The authors also included two optional categorizations of expenditures: anticipated salary expenditures for future professional learning activities, and the cost associated with researching and developing professional learning programs (Archibald & Gallagher, 2002; Oden, Archibald, Fermanich, & Gallagher, 2002; Chambers, Lam, & Mahitivnichcha, 2008).

Expenditure amounts and priorities, considered per district and teacher, are inconsistent throughout the existing literature on resource allocation. Archibald and Gallagher (2002) found, of the professional development resources allocated to the high school that was the subject of their study, that the balance had been spent on distributions for coaching, training, and the time of the participating teachers. Fermanich (2002) identified disparities in funding for professional learning relative to the school's availability of funds, the performance of the school, and the inclination of the teachers (Archibald & Gallagher, 2002; Fermanich, 2002; Miles, Odden, & Fermanich, 2004; OCED, 2011).

The utilization of technology in service of professional learning goals was seen as a corollary to the allocation of resources. Funding for the acquisition, maintenance, and replacement of devices and implementation systems is key to the utilization of technology for collaborative professional learning. Leaders should be cognizant of emerging trends in available technology to augment professional learning (Learning Forward, 2017h).

Innovative instructional practices are built upon collaborative professional learning opportunities. Elmore (2000) noted that traditional educational environments

inhibit innovation and restrict the ability of teachers to collaborate.The allocation of resources sufficient to the needs of professional learning programs may be a key component in the success of those programs. When allocating resources administrators may utilize current and historical data to aid in making allocation decisions (Elmore, 2000; Learning Forward, 2017h).

Data. The next Learning Forward standard relates to data. According to Learning Forward, multiple sources of data aid leaders in making decisions about professional learning which lead to higher levels of achievement for students. Data are available from numerous sources and in a variety of formats. Leaders utilize both qualitative and quantitative data. Utilization of various data sources allows leaders a balanced and more inclusive perspective when analyzing systemic performance data, as opposed to reliance on a singular source of data. Detailed analysis and consistent utilization are requisite for data to inform decisions regarding professional learning (Learning Forward, 2017a; Hargreaves, Boyle, & Harris, 2014).

Data from multiple sources are valuable in defining goals for schools, school systems, teachers, and individual learners. Informed questioning of the collected data guides analysis in determining the place of individual learners within the school system regarding the established curricular standards, allowing educators to focus instructional efforts. Educators should be encouraged and endowed with the ability to identify problems at the building level and consider how reforms may assist in finding solutions to those issues (Learning Forward, 2017a; Hargreaves, 1996).

Hargreaves, Boyle, and Harris (2014) discussed how leaders utilized data to advance the goals of individuals and an organization in ways that are meaningful and

applicable to the individuals who utilize the data. The further noted that data was of value to an organization when it was found to be connected to the central mission and activities of the organization; timely in terms of implementation and utility; integrated with qualified decision-making, and embedded in collaborative connections with stakeholders. Data should not thoughtlessly compel stakeholders, but alternatively should be utilized in a significant and constructive manner.

In recent years educational practitioners have seen increased attention given to the practice of data-driven decision-making (DDDM). In education, DDDM allows professional educators the opportunity to collect and analyze data from a multitude of sources, to guide the decision-making process to improve the learning outcomes of individual students as well as schools (Marsh, Pane, & Hamilton, 2006).

At the state and federal levels, achievement data have played a prominent role in accountability and evaluation policies related to the accreditation of schools and school districts. The far-reaching implementation of the No Child Left Behind Act (NCLB) created new opportunities, incentives, and repercussions for the usage and application of data in education. The NCLB required, by statute, states to implement high-stakes assessments, with the prospect of significant consequences for schools as a consequence of inadequate performance (Dee & Jacob, 2011).

Reeves and Flach (2011), addressing the standards for professional learning established by Learning Forward, offered three essentials for leaders related to the utilization of data. First, they stated the need for leaders to close the implementation gap for professional learning standards. They asserted that a gap existed between the objectives of the Learning Forward standards and the reality of our current learning

organizations in the United States of America. Leaders, they said, should be accountable for the implementation of the established standards. Second, they asserted the need for a change in the evaluation systems utilized by schools. They recommended a transition away from an evaluation system based on punishment and rewards to a system based on professional learning. Third, they suggested a shift in the way schools utilized their data. They recommended shifting resources away from devices and data warehouses to strategies investing those resources internally in building the capacity of the participants within schools to effectively conduct data analysis and make instructional decisions based upon those analyses (Reeves & Flach, 2011).

School leaders utilize data to inform the decision-making process when implementing a program of professional learning. When designing a professional learning program, the needs of the adult learners in the system and the desired learning outcomes for student learners should be contributing factors in the selection of learning activities. Collaborative, job-embedded, professional learning opportunities, designed around documented needs and backed by existing data, will allow professional learners the opportunity to increase efficacy and positively impact student learning outcomes (Learning Forward, 2017a).

Educators engaged in detailed and authentic analysis of data around the needs and issues within their respective schools, improve probability for improved professional learning and reform strategies that address their specific situations. Additionally, before engaging in professional learning, teachers should be cognizant of external restraints such as funding for the implementation of professional learning or reform strategies (Datnow, 1999).

Professional development for educators, if specific and delivered correctly, can improve teacher practices, thereby assisting students in meeting demanding performance criteria in core subjects such as reading (Garet et al., 2001; McCutchen et al., 2002). Authentic analysis of relevant data is essential to learning designs in which professional learners utilize data to inform decisions about professional learning activities and to ensure that those activities are aligned and relevant to the daily work of participants (Learning Forward, 2017a; Garet, Porter, Desimone, Birman, & Yoon, 2001).

Learning Designs. Adults learn best when they are adding to prior knowledge, learning in a self-directed environment, and are fully aware of the importance and applicability of the subject matter. Professional learning is the product of multiple interactions, both formal and informal, among educational professionals within a school (Bransford, Brown, & Cocking, 1999; Croft et al., 2010). Learning Forward noted that learning designs are influenced by multiple factors, including the goals of the learning process, the previous experiences and learning of the participants, the comfort of the learners with the process and with their peers, prior knowledge of the content of the learning activity, the extent of the expected change as an outcome of the professional learning activity, the culture, and the available resources to support the learning activity. Effectively designed professional learning programs are designed to move educators forward in their professional practice and support of student learning outcomes (Penuel, Fishman, Ryoko, & Gallagher, 2007; Darling-Hammond et al., 2017; Learning Forward, 2017f).

Teachers as professional learners, like students of any kind, benefit from numerous opportunities to engage in learning activities. When those learning activities

are embedded within contractual obligations as part of the established working environment for educators, opportunities for job-embedded professional learning opportunities become possible. School leaders create the environment for job-embedded professional learning through manipulation of the systemic variables (Croft et al., 2010; Hawley & Valli, 1999).

The existing culture of a school has the potential to affect the opportunity for teachers to engage in job-embedded professional learning activities. School leaders should establish and nurture a culture embracing opportunities for professional learning through the establishment of protected time, procedures for the observation of other instructors, professional learning communities, and an expectation of continuous professional learning (Penuel et al., 2007; Blank & de la Alas, 2009; Darling-Hammond et al., 2009).

Garet et al. (2001), identified three structures and three core features of professional development activities that may be utilized to determine implementation strategies and gauge the effectiveness of professional learning activities. The three structures identified in their work are the form of the activity, particularly if the professional learning activity is traditional in nature or falls into what the authors categorize as a reform activity in which participants are actively involved in the learning activity; the duration of the activity, in this context referring to the overall amount of time required from participants, as well as the total duration of the activity; and the amount of collective participation required of groups from common locations, as opposed to the involvement of individual participants from disparate locations (Garet et al., 2001; Learning Forward, 2017f).

Garet et al. (2001) also wrote about the three essential facets of professional development activities. The three identified features are the content focus of the professional learning activity, related to the improvement of specific content knowledge; the opportunity for participants to engage in active learning, such as the potential for teachers to participate in work such as the review of authentic student work or to receive feedback on pedagogical practices; and the coherence of the learning activity as it relates to the incorporation of opportunities to expand on the established goals of the participants and established standards, or to facilitate opportunities for communication with other professional educators (Garet et al., 2001).

When collaborative teams engage in the process of determining the design of professional learning, joint decision-making may aid leaders and teachers in establishing a transparent and question-driven design for professional learning activities. If the design is something done *with* teachers, rather than *to* teachers, it increases the potential for participants to exhibit high levels of commitment to the professional learning activity (Schwarz, 2013). Teachers in high-performing international school systems are encouraged or required to work collaboratively to analyze professional practice and student learning outcomes. Action research is also a component of collaborative work. It provided teachers with the opportunity to evaluate student learning outcomes as they relate to instructional practices and to the professional learning activities of the group or system (Darling-Hammond et al., 2017). Action research and the review of associated data provide opportunities for teachers to celebrate the achievement-established goals for students, teachers, and the learning organization. Kotter (1996) noted the need to celebrate short-term wins. Conscientious, intentional evaluation of professional practices

and the associated student learning outcomes will facilitate opportunities for celebration (Kotter, 1996).

Technology is noted in the research as a significant component in the design of professional learning programs. Kathryn Tallerico (2013) noted in her report for Learning Forward that technology allowed teachers to easily differentiate for the learning needs of students, as well as the professional learning of adults. Opportunities for collaboration were created through the application of technology, allowing teachers to engage in collaborative work outside the boundaries of the traditional classroom setting (Tallerico, 2013). Current research documents a lack of technical proficiency in teachers, preventing them from developing innovative teaching practices (Koehler, Mishra, Kereluik, Shin, & Graham, 2014; USEIN SCHOOLS, 2016).

Drexler (2010) noted that connectivism extends the principles of social construction and communities of practice. The learning theory of connectivism addressed learning in complex social and network environments. Hirsch (2009) posited that online professional learning networks satisfy many of the established standards for effective professional learning (Siemens, 2005; Hirsh, 2009; Drexler, 2010).

In 2008 the NSDC, now Learning Forward, published Powerful Designs for Professional learning, a guide for designing professional learning programs. The guide presented 23 strategies for creating professional learning programs, supported by research and step-by-step instructions for both the design and implementation of professional learning programs. The Powerful Design principles provide school leaders a guide for creating highly collaborative, meaningful professional learning designs. Lois Brown Easton (2008) noted school systems could not wait until the setting for professional

learning is perfect. Once an assessment of the conditions for professional learning has been made, schools should press forward with a design and implement professional learning with the understanding that the context will be altered by professional learning (Easton, 2008).

Professional learning programs designed with input from teachers, based on the established learning needs of the teachers and the organization, have a higher chance of realizing the desired outcomes (Learning Forward, 2017f). Collaborative teams were advanced as a recommended design in the work of Jon Katzenbach and Douglas Smith (2015) as well as Bolman and Deal (2017). Katzenbach and Smith (2015) created five definitions of teams: working groups, pseudo teams, potential teams, real teams, and high-performing teams. These definitions are defined relative to the capacity of the group to engage in meaningful work and produce desired outcomes. A working group was made up of team members who share information but have no mutual purpose or defined outcome. A pseudo team was described as being comprised of individuals who believed they were on a team but were unwilling to commit to mutual accountability or shared purpose. A potential team was defined as being made up of team members moving towards a common goal and a collaborative approach to achieving that goal. A real team was described as a small group of people who shared a common purpose and vision for achieving that purpose. A high-performing team differed from a real team because of the relationship between team members. Members of high-performing teams were found to be committed to the personal growth and development of other team members (Katzenbach & Smith, 2015). The size of collaborative teams was noted to be a small

group of people “somewhere between two and twenty-five people” (Bolman & Deal, 2017, p. 111).

The design of professional learning programs affects the implementation and the effectiveness of the program. Utilization of collaborative groups to design learning programs will ensure the programs are aligned with the needs of the organization and the needs of individual members of the group. Learning programs closely aligned with established goals will ensure active participation and promote change in the professional practices of educators and in the learning outcomes for students through the implementation of professional learning activities (Garet et al., 2001; Joyce & Showers, 2003; Croft et al., 2010; Katzenbach & Smith, 2015; Bolman & Deal, 2017; Learning Forward, 2017f).

Implementation. The desired outcome of professional learning activities manifests in changes in the professional practices of educators and increases in student learning outcomes. Implementation of professional learning programs requires integrated systems for providing feedback and reflective strategies to ensure improvement on an ongoing basis. Leaders create these systems of support by utilizing extant research on best practices for the implementation of professional learning programs. To close the gap between research-based best practices and current instructional and learning activities, time must be allocated in sufficient quantities to allow for both initial implementations as well as adjustments to address difficulties encountered during implementation. Constructive feedback throughout the process will establish expectations and reinforce the desired pedagogical outcomes to benefit student learning (Garet et al., 2001; Desimone et al., 2002; Blank, de las Alas, & Smith, 2007; Learning Forward, 2017c).

The goal of feedback is to decrease the gap between where learners should be regarding knowledge and practices and where they are currently operating. Efficacious feedback, delivered by instructors who have a solid grasp of the current levels of those participating in the learning activities, has been found to lead to increased efficacy on the part of learners (Sadler, 1989; Hattie, 2012; Hattie & Timperley, 2007). Hattie (2012) posited that the goal of feedback should be to provide learners with information at the right moment, relative to the learning process of the individual. Carless (2006) noted that most feedback offered by instructors was delivered to large groups and was consequently not received by the individuals who needed it as the feedback was not perceived to be about the individual .

The goal of the implementation of any professional learning program should be to impact the professional practices of educators. According to Fullan and Langworthy (2013), studies from multiple locations have documented a lack of engagement from high school students and dissatisfaction from professional educators. According to Fullan and Langworthy, students and teachers are failing to thrive in the current, traditional, educational environment. Educational organizations need to revisit the goals for learning as well as their strategies for change. Fullan and Langworthy found that the implementation of deep learning goals and innovative pedagogical practices and technology would aid learners in meeting learning objectives as well as impacting instructional practices (Fullan & Langworthy, 2013).

Fullan and Langworthy (2013) suggested the concept of "deep learning" as a plan for the implementation of learning activities. They defined deep learning as a blending of skills aimed at creating learners that were inventive, collaborative in nature, solution-

oriented, happy individuals who contributed to society. In developing their deep learning work, the authors defined six skills which they suggested were deep learning skills: character education, centered on the well-being of the individual; citizenship, addressing societal and environmental factors; communication, aimed at promoting useful communication skills; critical thinking and problem solving, focused on solving problems utilizing a variety of resources; collaboration, centered on working in teams to facilitate learning for the individual and the group; and creativity and imagination, focused on societal and fiscal entrepreneurialism (Fullan & Langworthy, 2013).

The implementation of professional learning activities, when entered into collaboratively as a partnership between leaders and teachers, increases opportunities for ownership of the process by all stakeholders (Schwarz, 2013). In some high-performing international schools, implementation of professional learning activities is embedded as an integral component of the school system and seen as a vital part of the education process (Darling-Hammond et al., 2017), Ingersol and Strong (2011) found opportunities for collaborative learning and peer learning activities were factors in retaining teachers in the profession. Additional research by Kini and Podolsky (2016) found that teachers' efficacy increased as a result of experience and that teacher retention had a positive association with increased teacher effectiveness. Senge (2006) noted that systems aligned to a shared vision were more efficient in their pursuit of established goals. A collaboratively-implemented professional learning program has the potential to impact the professional practices of educators.

The implementation of collaboratively-designed, carefully-aligned professional learning programs can impact the outcomes of the activities associated with those

learning programs. Job-embedded professional learning activities aligned to a shared vision can promote positive student and professional learning outcomes (Cohen & Hill, 1997; Senge, 2006; Fullan & Langworthy, 2013; Learning Forward, 2017c).

Outcomes. The outcomes for professional learning are defined regarding learning, changes in the curriculum, and changes in the professional practices of educators (Learning Forward, 2017g). Cohen and Hill (2000) found the amount of time spent engaging in professional learning activities had a direct correlation with the implementation of innovative instructional outcomes in the classroom. The expectation in our school systems is one of achievement at high levels for all students. Professional educators are held responsible for the implementation of instructional strategies to facilitate student learning. The standards for professional learning, as established by Learning Forward, focus on the delivery of effective and equitable education for all students. Recent systems of accountability at the federal level rely heavily on the utilization of student learning outcomes as measured by the end-of-year standardized testing (DuFour, DuFour, & Eaker, 2009; Dee & Jacob, 2011; Mathis & Trujillo, 2016; Learning Forward, 2017g).

Coherence, as it relates to the outcomes for professional learning activities, necessitates scaffolding on previously established knowledge and skills and focuses on outcomes and instructional practices aligned with established assessments and curricula at all levels. Individual professional learning activities are more likely to produce the intended outcomes when aligned to and built upon previous professional learning. Additionally, subsequent activities should build upon the established base and advance learning through a logical and intentional progression of training opportunities designed

to improve the performance of professional educators and students (Garet et al., 2001; Penuel et al., 2007; Learning Forward, 2017g).

In a 2007 report prepared for the Council of Chief State School Officers, authors Rolf Blank, Nina de las Alas, and Carlise Smith identified four evaluation targets mutual to many professional learning programs: the caliber of execution in delivering the professional development activities; increases in the professional educator knowledge base; application, resulting in a change in pedagogical practices within the classroom; and increases in achievement by students. The accountability requirements of federal programs make a systematic evaluation of professional learning activities to determine efficacy, a part of the professional learning process. (Blank, de las Alas, & Smith, 2007; Dee & Jacob, 2011; Mathis & Trujillo, 2016).

Blank et al. (2007) noted five themes in the extant research which may be utilized to determine the outcomes and efficacy of a professional learning program, specifically to differentiate programs having a positive effect in altering the instructional practices of professional educators. The first of the five criteria is the content focus, specifically the applicability of professional learning activities as they relate to the content focus of the intended audience. The second identified factor is related to the engagement of the learners and refers to professional development activities that allow teachers the opportunity to increase their specific knowledge or skillset as it relates to the day-to-day activities of the intended audience. The third identified factor is the coherence of the professional development, related to the applicability of the professional development activity to the curriculum implemented in the classroom or the school. A professional development program aligned with the current policies and practices of a school will

create a system of support and long-term sustainability for the professional learning program. The fourth area identified is the collective participation of the participants. Professional learning is intended to impact professional practice. The fifth factor identified in the research is sufficient time. Professional learning activities sustained over time have documented benefit (Blank, de las Alas, & Smith, 2007).

Researchers Cohen and Hill (2000) wrote, "the content of teachers' professional development makes a difference in their practice" (p. 309). According to the research conducted by Cohen and Hill, the additional time spent in professional learning activities resulted in an increase in innovative practices and a decrease in conventional instructional practices. Additionally, they found that both the time and content specificity of the professional learning activity influenced the outcome of the professional learning program. Furthermore, when learning opportunities were presented within a context consistent with current practices, established expectations, and in compliance with policy, the researchers noted a consistent relationship. Professional learning activities implemented consistently over time and focused on learning outcomes for students were impactful in facilitating constructive policy (Garet et al., 2001; Desimone et al., 2002; Chambers, Lam, & Mahitivnichcha, 2008; Blank & de la Alas, 2009).

Professional learning should enable participants to acquire new knowledge and skills, and subsequently to apply that knowledge to their professional practice. Additionally, participants should build their capacity as learners. The ideal way to realize an increased capacity for learning is to tailor the outcomes and the associated learning activities to the specific needs of the participating individuals. Some outcomes are less challenging to achieve than others because they are aligned closely to the existing

practices of educators, while other outcomes are more complex and require additional planning on the part of trainers (Joyce & Showers, 2003; Penuel et al., 2007).

Authors Joyce and Showers (2003) identified four potential outcomes from the implementation of professional learning: increased understanding of current theories and practices in education; changes in attitude resulting in a positive disposition towards the work being done, the diversity of those served, and the curriculum; enhancement of pedagogical expertise; and finally, the transfer of the professional learning activity into professional practice (Joyce & Showers, 2003).

A variety of factors determines the efficacy of professional learning activities. At the local level, the configuration of the teachers and their needs might determine the outcome of the learning activity. Professional learning should be specifically tailored to the needs of the program and delivered in a manner consistent with localized context, thereby increasing the potential for more significant impact on the professional practices of educators. The demands of the local program and the context of teacher needs should be considered as factors when implementing professional learning programs. There should be congruency between the needs of the learners and the material presented. Congruency is determined by the perceived value of the professional learning activity, but is also defined by the ability of the professional learning providers to meet the requirements of the teachers, as well as the determination of the teachers regarding the applicability of the learning activity to their own goals for both student learning and their own professional learning (Joyce & Showers, 2003; Penuel et al., 2007; Blank, de las Alas, & Smith, 2007).

For all students to learn at high levels, professional educators and professional learning opportunities should be of the highest quality. The relationship between professional learning and student outcomes should be explicitly stated and understood by participants, thereby increasing the probability for favorable student learning outcomes as a result of focused, collaboratively-developed professional learning programs. The demand for improved student performance drives the implementation of professional learning programs that change and enhance the professional practices of teachers (Learning Forward, 2017g).

Learning Communities. Professional learning that increases the effectiveness of professional educators and positively impacts learning outcomes for all students occurs in communities of professional learners steadfast in their commitment to a cycle of continuous improvement, accountability, and shared goals. Shared characteristics of learning communities include utilization of data to determine learning needs; identification of common goals; professional learning to build content-specific skills; utilization of research-based strategies; use of evidence to evaluate and make modifications to implementation; and evaluation of results. Learning communities assume collective responsibility for learning outcomes, involving everyone in the process (Bolam et al., 2005; Learning Forward, 2017e).

Shared values and vision are among the shared characteristics of professional learning communities identified by Bolam et al. (2005). A shared sense of purpose and a collective vision has been found to be of central importance in learning communities. In many cases, the shared purpose and vision is centered on student learning. Researchers have routinely referenced the significance of establishing a shared vision in the

improvement process as well as a foundational factor in the establishment of professional learning communities. Kotter (1996) described a vision as being indispensable to a successful change process. Senge (2006) noted a vision as a necessary component (Kotter, 1996; Bolam, et al., 2005; Fullan, 2007; Kouzes & Posner, 2008; DuFour, DuFour, & Eaker, 2009; Blanchard, 2010; Senge, 2012).

There is general agreement in the literature that members of learning communities assume collective responsibility for student learning. It is postulated that collective responsibility sustains commitment, serving as a vehicle for peer pressure and accountability for those members of the group who are not conforming to established expectations (Bolam, et al., 2005). Pfeffer and Sutton (2006), discussing collective responsibility, stated, "One of the most persistent and powerful social psychological processes is that of commitment – we are more likely to carry through on decisions we have made and are therefore committed to" (p. 199). The traditional format of schools actively encourages teachers to work in isolation and shields professional educators from accountability (Elmore, 2003). Elmore (2004) echoed his previous research on the subject, stating, "The design of work in schools is fundamentally incompatible with the practice of improvement" (p. 127).

In their 2007 study, researchers Goddard, Goddard, and Tschannen-Moran found higher student achievement levels in mathematics and reading for students who attended schools utilizing teacher collaboration as a model for school improvement. In another study, Jackson and Brugmann (2009) were able to measure gains in student learning associated with the collective efficacy of teacher teams. The most significant increases were attributed to those professional educators who were more experienced, better

qualified than their peers, and worked with the same team within their respective schools. Peer learning among groups of teachers was found to be an indicator of improved achievement by students over the course of time (Jackson & Bruegmann, 2009). A third study from Kraft and Papav (2014) found that teachers realized gains in efficacy by working in collaborative teams over the course of time.

Reflective professional inquiry, including dialogue of a reflective nature, has been found to be common in learning communities. This reflective inquiry includes professional conversation regarding best practices, joint planning, mutual observations, data analysis, development of curricula, and development of common assessments. Participants engaging in reflective professional inquiry apply new ideas to address the needs of students (Bolam, et al., 2005).

Collaboration is central to learning communities. Working in collaborative teams on developmental activities with shared accountability and shared consequences goes beyond merely helping one another. Instead, it moves teachers into professional practices in which they need their team to be effective educators (Bolam, et al., 2005). The organization of schools into collaborative teams to develop learning communities is a crucial way to ensure that students are taught by quality instructors (Author, 2003).

Advancing Professional Learning by Focusing on Collaboration

Collaborative professional learning is essential to effective schools and educational professionals. It is vital that effective professional learning occurs in every school (Hargreaves & Shirley, 2009). Educators should be actively engaged in collaborative professional learning throughout all phases of their professional careers (Fullan, Rincón-Gallardo, & Hargreaves, 2015). Darling-Hammond et al. (2009) noted

the gap between the expectations of teachers for professional learning and the quality of the implemented professional learning program. Policymakers, and often the general public, perceive teachers as individuals who, through training and innate knowledge, craft innovative educational environments while operating in isolation. However, the evidence demonstrates that the most effective environment for professional learning is a collaborative environment in which teachers have the opportunity to work with their peers (Darling-Hammond et al., 2017). Elmore (2000) noted that practice privacy inhibited innovation. Collaboration can only occur with the proper systems, frameworks, practices, and mindset (Senge, 2006, 2012; Schwarz, 2013; Darling-Hammond et al., 2017).

Collaboration Practices from High-Performing Countries. According to Darling-Hammond et al. (2017), high-performing school systems create opportunities and procedures empowering teachers to perfect their teaching tools, in an ongoing cycle of improvement resulting in increased efficacy. These systems also encourage professional learning by creating opportunities for individuals to apply their augmented skills to engage in new professional opportunities within the school system. These opportunities and practices take on different forms in the educational systems of different countries (Darling-Hammond et al., 2017).

Darling-Hammond et al. (2017) noted three shared elements in high-performing international school systems. The first identified element was a precise definition of what high-quality teaching should look like in the system. Statements defining high-quality teaching were often found embedded in established standards for professional practice. Leaders in educational systems aided their teachers by ensuring the standards addressed

teacher preparation, mentoring programs, professional learning, assessment procedures, and the feedback methodology. Established standards were a reflection of a shared vision and aided in ensuring individuals within the systems were operating from common mental models. Senge (2006) noted that mental models were often flawed, lacking feedback relationships, and focusing on variables that were not high leverage. Defining high-quality teaching allows participants in the systems to begin the teaching process with an articulated, mutually agreed on mental model. Schwarz (2013) also noted the need for collaborative teams to identify mutually agreed upon definitions to allow groups to recognize the current state of the organization (Senge, 2006, 2012; Schwarz, 2013; Darling-Hammond et al., 2017)

The second characteristic element identified by Darling Hammond et al. (2017) was that high-performing systems provided teachers opportunities to work collaboratively with their peers to improve professional practice by researching the effectiveness of innovative instructional practices. Collaboration is facilitated by allowing teachers time to observe one another's professional practices and by providing job-embedded time for collaborative activities. Teachers in high-performing systems are not in front of students continuously throughout the contracted days. Teachers in these systems are also encouraged to engage in research related to professional practice and in finding methods for disseminating and utilizing the results of research-based practices (Darling-Hammond et al., 2017).

The third identified commonality among high-performing systems related to the way individuals within the system were evaluated. Evaluation in high-performing systems is utilized to facilitate feedback to teachers, aiding them in improving

instructional practices. Teacher promotion is based on their willingness and evidence of supporting other teachers with less expertise. This collaborative expectation fundamentally differs from the traditional view of teacher evaluations, utilized historically to identify and subsequently remove weak teachers from the classroom (Darling-Hammond et al., 2017).

In a study of four high-performing school systems in Singapore, Shanghai, British Columbia, and Hong Kong, Jensen et al. (2016) identified common elements in policy facilitating professional learning, teacher development, and collaboration. Effectively implemented, these policies lead to the following outcomes: school improvement based on professional learning; embedded professional learning; emphasis on teacher development; shared responsibility for the professional learning of both the individual and the group; and the implementation of district or state-level strategies leading to professional learning outcomes. The features identified by Jensen et al. were consistent with other research in the area, documenting the increased efficacy of professional learning activities when the activities were collegial, ongoing, connected to the daily work of classroom teachers, and aligned with the shared vision for the learning system (Elmore & Burney, 1997; Joyce & Showers, 2003; Senge, 2006; Penuel, Fishman, Ryoko, & Gallagher, 2007; Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009; Darling-Hammond et al., 2017). These same features have been identified as contributing factors to the success of schools in the country of Finland. Finnish schools are committed to a culture of collegiality, collaboration, trust, and mutual accountability (Hargreaves & Shirley, 2009). Professional learning in Finland has been expanded in recent years based on evidence that the time teachers spent engaged in professional

learning activities varied significantly (Piesanen, Kiviniemi, & Valkonen, 2007). The government of Finland, in response, instituted a new program called Ossava, meaning capable or skillful, to promote professional learning. The program had five strategic goals: the promotion of equity in professional learning; allowing flexibility in the professional learning of educators; enhancing the adoption of innovative practices, improving collaboration and networking between educators; and promotion of best professional learning practices to mainstream utilization (Darling-Hammond et al., 2017).

A component of the high-performing learning systems studied by Darling-Hammond et al. (2017) was that professional learning was continuous and viewed as essential to improvement. Structures and processes were intentionally created that promoted a continuous improvement cycle based on analyzing student performance and teacher implementation data. This belief is realized in the expectations and requirements for professional learning within the respective organizations, requiring teachers to engage in embedded training within schools, as well as the establishment of revenue streams to create structures and processes that promote collaborative professional learning opportunities (Darling-Hammond et al., 2017).

The value of collaboration has been highlighted in international studies. An analysis of the Organisation for Economic Co-operation and Development (OECD) Teaching and Learning International Survey (TALIS) revealed that professional learning activities utilizing collaborative learning were associated with innovative instructional practices (OECD, 2014). Additional analysis of the TALIS survey results showed that collaboration by professional learners registered a positive association with teachers' confidence, as well as their job satisfaction. Individual efficacy and enjoyment of

teaching were identified as having a positive connection with consistent, multiple opportunities for peer observation and collaborative professional learning opportunities (OECD, 2014). Ingersol and Strong (2011) found opportunities for collaborative learning and peer learning activities specifically related to mentoring and induction were factors in retaining teachers in the profession. Additional research by Kini and Podolsky (2016) found that teachers demonstrated increased efficacy as a result of experience and that teacher retention had a positive association with increased teacher effectiveness (Clotfelter, Ladd, & Vigdor, 2006; Henry & Bastian, 2011; Darling-Hammond et al., 2017).

In high-performing countries, teachers spend more time engaging in collaborative learning activities with their peers compared with their counterparts in the United States. Collaborative and peer learning opportunities are made possible because in some of the countries the teachers spend less time on a daily basis working directly with students. Teachers in the United States spend roughly 27 hours per week interacting directly with students in teaching activities. That total is roughly double the amount of time spent by teachers when applying the international average of 19 hours per week. In Singapore, teachers spend an average of 17 hours per week working directly with students. In Shanghai, the average time spent interacting directly with students decreases to 15 hours per week. In Australia, novice teachers have extra time allocated for professional learning, and in New South Wales time is added for novice and veteran teachers alike. When teachers are not engaged directly with students in these high-performing international systems, they are often engaged in collaborative planning or action research to study professional practice and the associated outcomes of the instructional process.

Teachers in these high-performing systems have the time and the requisite structures to facilitate participation in professional learning activities in a variety of formats (OECD, 2014; Darling-Hammond et al., 2017).

Collaborative mindset behaviors. The success of many high-performing countries' educational systems appears to be connected to the professional learning practices, behaviors, and mindset of teachers. An essential practice utilized by teachers in these countries is effective collaboration. Collaboration in high-performing international systems is realized as an outcome of the policies, procedures, and implementation structures of those systems. Collaboration is noted as an expectation within the professional learning organization, often found embedded in the daily professional activities of professional educators. In some cases, the standards utilized to evaluate teachers for professional advancement are linked to levels of expertise that may be acquired using professional collaborative learning opportunities (Darling-Hammond et al., 2017). Darling-Hammond et al. (2017) noted that the professional learning of teachers needed to be developmental and ongoing. Standards for teaching in high-performing international systems outline clear goals for the knowledge and abilities teachers are expected to gain and subsequently demonstrate in professional practices. Novice teachers are not expected to be at commensurate levels of professional practice as veteran teachers, but the expectation is that educators will grow their personal and collective capacity while engaging in collaborative professional learning. Schools in high-performing international systems have embedded plans to ensure an emphasis on collaborative learning in service of personal, school, and systemic needs. Teachers in

high-performing systems meet regularly to plan, review student work, conduct research, and discuss the results of completed research.

Schwarz (2013) determined that specific mutual learning behaviors exhibited by teams could promote high levels of effective collaboration. These behaviors utilized collaborative learning for teams and leaders to move organizations forward. Collaboration and a culture of collegiality were noted as characteristics of high-performing international school systems in the research of Darling-Hammond et al. (2017). Eastwood and Seashore Louis (1992) indicated that increasing the capacity of schools to engage in cooperative problem-solving and conflict resolution was an essential factor. Fullan (2003) noted the primacy of collaboration in the learning process (Fullan, 2003). Interdependent work structures strengthen professional learning communities. When groups, rather than individuals, are recognized as the primary implementers, it changes the dynamics of an organization (Newmann & Wehlage, 1995). Schwarz (2013) identified eight mutual learning behaviors that could be utilized to advance the work and learning of groups or systems. Schwarz asserted that the traditional, unilateral control mindset inhibited the ability of teams to efficiently communicate, consequentially limiting the ability of the group to problem solve in an efficient manner.

The first behavior identified by Schwarz (2013) was that of stating views and asking genuine questions. He asserted that when individuals participating in a collaborative environment stated their views and asked open questions, they would be operating by default from a perspective of transparency and curiosity. Schwarz advocated for team members to express their opinions and points of view ardently while remaining genuinely curious about the perspectives of other members of the team. This curiosity

was realized in the form of genuine questions, designed to facilitate a deeper understanding of dissimilar perspectives. When the work of the group was focused on responding to, and providing feedback on, specific solutions to an identified problem, that work stayed focused on problem-solving. Additionally, participants in collaborative groups utilizing this behavior increased their capacity to understand the perspectives of co-collaborators. Dufour, Dufour, and Eaker (2009) noted that participants in professional learning communities must search for best strategies to help students learn. The search for best practices should move beyond offering opinions to the practice of asking genuine questions of their collaborative peers. Genuine questions, according to Schwarz, were designed to engage others in dialogue. If questions were not genuine, they inhibited opportunities for building a shared pool of meaning among the participants. Questions of a rhetorical nature were not considered genuine and were seen as inhibiting the establishment of dialogue (Schwarz, 2013; Patterson, 2002).

The second behavior Schwarz (2013) presented was that of sharing all relevant information. This behavior was focused on the transparency of dialogue, so all participants had a shared source of information to draw upon when making collaborative decisions. In challenging situations, individuals may not communicate everything they know or think about the discussion or problem facing the group. If members of the group are willing to share information that does not support their view, it builds credibility for the individual and promotes trust within the group. If individuals in the group withhold information to spare the feelings of other participants in the collaborative discussion, they prevent members of the group from accessing the requisite information for making an informed decision or changing their perspective. Senge (2006) also indicated in his

research the importance of transparent dialogue and discussion. He noted the need for learning teams to master movement between dialogue and discussion. Dialogue, according to Senge, was an exploration of complex issues without necessarily seeking a deeper understanding of issues rather than a resolution. Senge defined "discussion" as an analysis of relevant factors focused on solutions or a course of action. Senge asserted that dialogue was significant, as it helped to establish safe conditions for group learning to occur (Senge, 2006; Senge, 2012). Members of collaborative teams should also be willing to share their feelings to establish collective understanding of how antecedent behaviors or actions led to current emotional responses. Relevant information must be shared with the group promptly, as feedback is most effective when offered in relative chronological proximity to the antecedent behaviors (Patterson, 2002; Schwarz, 2013).

The third behavior identified by Schwarz (2013) was that of utilizing specific examples and agreeing upon what essential words meant. He asserted that a mutual understanding of words and phrases was key to the productivity of a collaborative group. Schwarz advocated for leaders to utilize specific names when creating a culture of accountability. He advised that leaders might opt not to engage in this behavior because they feared embarrassing individuals, but failing to do so undermined accountability to the group. Schwarz also called for leaders and team members to address questions in a precise manner, focusing on the exact desired outcome, thereby establishing a dynamic of compassion, curiosity, accountability, and transparency. The final aspect of this behavior delineated by Schwarz was to utilize examples to ensure agreement on what essential words meant. He advocated the use of examples to establish a shared definition for essential words among members of the group. This aspect of the behavior is compatible

with the work of Senge (2006) on mental models, in which the author stated that new ideas often failed to get put into practice because they were not congruent with established modes of action or thought. Leaders should cultivate awareness of existing mental models and examine them to ensure alignment with the shared vision for the collaborative group and the system. Facilitation of this process helps to ensure that participants in collaborative learning will have the necessary systems and culture to promote collective inquiry into deeply ingrained assumptions held by individuals and the group (Senge, 2006; Schwarz, 2013).

The fourth behavior advanced by Schwarz (2016) focused on the need for members of a collaborative team to engage in dialogue explaining the reasoning and intent behind opinions and ideas. Participants in dialogue should not have to guess at the meaning behind statements. Instead, members should voluntarily elucidate unspoken motivational factors to reduce the possibility of miscommunication within the group. Without clarification from the presenting source, members of the group would be left to discern meaning by filtering content through their mental models, often arriving at erroneous outcomes regarding motivational factors. Schwarz advocated for transparency of purpose and communication by members of collaborative teams. Cognizance of strategies utilized to control or manipulate a conversation allowed group members to be objective about personal motivations and the motivations of others (Patterson, 2002; Senge, 2006; Schwarz, 2013).

The fifth behavior presented by Schwarz (2013) focused on interests, not positions. Interests, as defined by Schwarz, were the needs of individuals or the organization, utilized to create their positions. Positions, as defined by Schwarz, were the

solutions identified by individuals within the group to address a specific issue. Schwarz asserted that difficulty might occur in groups when positions were the focus of the dialogue, as the particular position of an individual may conflict with the position of other members of the collaborative group. Bolman and Deal (2017) noted that individuals who feel threatened in a conversation might revert to protecting themselves. They asserted leaders should strive for high levels of advocacy and inquiry when engaging in dialogue (Bolman & Deal, 2017). Easton (2008) posited the result of dialogue is decision making. If individuals cling to personal interest rather than engaging in a genuine dialogue about positions, they may lose sight of the interests of other participants and the interests of the overall system (Easton, 2008; Schwarz, 2013).

Conversely, a focus on interests allowed for the identification of both personal and group interests and facilitating a transparent conversation with opportunities to explain the intent and rationale driving the interests of participants. When collaboratively working to address specific situations, groups should identify the interests of participants while maintaining awareness of the distinction between interest and position. As individuals reach consensus on the interests to consider in a specific circumstance, they would then be able to craft solutions to address the identified interests of the group. The group, working collaboratively, would then consider presented solutions by utilizing the previously identified interests as a rubric. The group would subsequently select a solution that both addresses the situation and satisfies the interests of the group (Easton, 2008; Schwarz, 2013; Bolman & Deal, 2017).

The sixth behavior identified by Schwarz (2013) tasked members of collaborative groups to evaluate assumptions and inferences when engaging in dialogue and problem-

solving. Assumptions were made when individuals took something for granted without attempting to secure any additional information. Inferences were made when individuals applied previously acquired knowledge to a new situation. Inferences were evaluated for validity by testing them with the person or people about whom the inference had been made. When testing inferences, individuals began by stating the observable behavior that had led to the inference and then determining whether the correct information was being considered (Schwarz, 2013). On the subject of inferences, Senge (2006, 2012) noted that individuals operated in domains of self-generated inferences that were mostly untested. The ability of a group to communicate and problem solve is inhibited by a lack of awareness of personal bias (Senge, 2006; Senge, 2012). Rick Ross (2014) built on the work of Senge when he elaborated on the ladder of inference. The ladder of inference is a defined as a series of mental constructs often leading to erroneous beliefs, potentially increasing generalization of thought for individuals working in collaborative groups (Ross, 2014).

The seventh behavior described by Schwarz (2013) related to designing the next steps in the problem-solving process collaboratively. When the next steps were designed jointly, they were designed *with* others and not *for* others. Engaging in this behavior required participants to abandon traditional, unilateral structures for meetings and problem-solving behaviors. Application of this behavior to meetings will present participants with the opportunity to agree on the purpose of the meeting and then the process for the meeting before engaging in the content of the meeting.

The purpose of meetings should be established early in the process. Schwarz noted the purpose of a meeting should not be confused with either the topic or the

agenda. Once the purpose had been established, a check for understanding within the group should be conducted to ensure that everyone was operating from a shared mental model. After agreeing on the purpose of the meeting, the next task was to achieve consensus on the process the team would utilize to conduct the meeting. The purpose of the meeting should be integral to the process for the meeting. Agendas should be collaboratively developed with opportunities for participants to provide input and feedback. The process for decision-making should be established and agreed upon before the work of the meeting begins. Groups should be willing to hold each other accountable for adhering to the established procedures and for engaging in authentic questioning of the relevance of off-agenda conversations arising organically as an extension of the discourse of the group. When team members disagree, the group should establish procedures to advance the established purpose of the meeting and not become entangled in an escalation of personal positions. Joint design does not mean that leaders surrender positional authority to make final decisions. Instead, the behavior provides tools for teams to utilize to take ownership of the process and develop a collaborative solution (Senge, 2006; Schwarz, 2013).

These practices align with the work of Elmore (2000), who noted that within schools the needs of the group exceeded the ability of a single leader to meet those needs effectively. Mutual accountability for a shared vision and a mutual understanding of anticipated outcomes will ensure learning teams are engaged in the work of improving student performance and instructional practice (Elmore, 2000; Schwarz, 2013).

Katzenbach and Smith (2015) noted the attributes of high-performing collaborative teams in their research. High-performing teams have a purpose shaped in

response to either an opportunity or a mandate from upper-level management. Teams with a clear understanding of the work to be done but that are allowed to pursue collaboratively-developed solutions have the potential to take ownership of solutions and apply creativity to the situation. Members of high-performing teams also translate a shared vision and mutual mental models into detailed, quantifiable outcomes. Katzenbach and Smith also noted that highly effective teams are collectively committed to the development of working relationships and that those relationships translate into collective accountability for the members of the collaborative team. Real team performance necessitates impact beyond the strengths of individual team members; it requires a collaborative blending of knowledge and skills that produce mutual accountability within the team (Senge, 2006; Katzenbach & Smith, 2015).

The eighth behavior described by Schwarz (2013) was discussing undiscussable issues. Schwarz asserted that this behavior encompassed the other seven identified behaviors and provided a vehicle for the application of those behaviors to address challenging situations. Undiscussable issues are defined as subjects relevant to the work of the collaborative team but that members of the group may be unwilling to address as a team. Individuals may avoid these problematic discussions to spare the feelings of team members, to prevent being perceived as uncaring, or to avoid conflict. Schwarz asserted that individuals might overestimate the risk of having an awkward conversation and underestimate the consequences of not having the dialogue. Undiscussable issues are created and flourish when members of a collaborative team do not apply the core principles of collaborative learning (Schwarz, 2013).

Senge (2006, 2012) identified team learning as one of five disciplines of a learning organization. He described team learning as a set of practices designed to align the thoughts and actions of team members. Undiscussable issues within a team would inhibit team learning and create confusion within the group (Senge 2006, 2012). Lencioni (2006) noted that teams without trust were not capable of engaging in crucial conversations. Fear of conflict within the group prevented genuine dialogue from taking place (Lencioni, 2006). Schwarz (2013) asserted that it was the responsibility of each member of a collaborative team to assume responsibility for broaching undiscussable issues. Issues cannot be ignored, nor should responsibility for initiating the conversation be passed to the leader (Schwarz, 2013).

Schwarz (2013) established the foundational behaviors for collaborative learning. He also wrote on designs for collaborative learning, emphasizing the importance of the design as well as the mindset of the designer. The design of collaborative teams is a reflection of the embedded values and assumptions of the mindset of the individual or individuals designing the collaborative learning environment.

Growth mindset. A key barrier to creating a collaborative professional learning culture is the lack of educators having a growth mindset. One essential behavior effective team members working in a collaborative culture often demonstrated is the ability to demonstrate a growth mindset. Research on mindset and the motivation of learners has provided insight into the manner in which learners develop the concepts of self-efficacy and competence as these relate to the learning process. The beliefs of an individual regarding the nature of intelligence impact motivation and achievement during the learning process. Dweck (2000) found in her work that some individuals considered

intelligence and other attributes as immutable traits, demonstrating a fixed mindset. This type of theorist advanced the idea that intelligence was a distinct attribute, separate from the individual, unchangeable, and fixed at birth. Conversely, those individuals who believed that intelligence was malleable and might be increased by effort were identified by Dweck as incremental theorists, or as operating from a growth mindset (Dweck, 2000).

These divergent perspectives on intelligence and the associated implications for learning should be taken into consideration when implementing professional and student learning activities. Entity theorists, or those espousing a fixed mindset, operate on the belief that intelligence is a fixed variable unable to be cultivated. These theorists suggested that self-image and esteem may limit the ability of individuals to find success in new challenges. New challenges or challenging situations are viewed as fraught with opportunities for errors and failure and are, therefore, avoided in favor of straightforward success (Dweck & Leggett, 1988; Dweck, 2000, 2006, 2007).

Individuals operating from an entity or fixed mindset are quickly disheartened when presented with challenging opportunities, often disengaging from the tasks rather than risking damage to their self-esteem. Researchers noted that despite finding initial success, individuals possessing a fixed mindset grew increasingly disinterested and demonstrated a lack of motivation. Individuals operating from a fixed mindset perspective would eschew learning opportunities if those opportunities were perceived to present the danger of failure (Dweck, 2000).

The failure of fixed mindset learners to solve challenging tasks results in a helpless-oriented response, noticeably limiting the motivation of the learners to engage in

the challenge. It should be noted that individuals operating from a fixed mindset are not less intelligent than other learners. Often individuals operating from a fixed mindset are knowledgeable and successful individuals. Research, however, indicates that those individuals will gravitate toward opportunities in which success may be considered a reasonable certainty (Dweck, 2000). Learners employing a fixed mindset do not only decide whether the task is too complicated based on objective measures, they also target their innate lack of ability as the cause of the difficulty and can become disturbed or unhappy. Dweck (2000) noted the response to failure had negative implications for the individual and impacted their ability to utilize their cognitive abilities effectively (Dweck, 2000).

Conversely, Dweck (2000) noted that incremental theorists, or those utilizing a growth mindset model, believed in the ability of the individual to increase intelligence through study and work. Incremental theorists do not view unsuccessful attempts at learning as failures, so the assignation of blame is not a behavior associated with the model. Faced with complex problems, incremental theorists will perceive the opportunity to find a solution. Individuals employing a growth mindset orientation seek mastery in the face of difficulty instead of adopting an attitude of helplessness, allowing them to continue learning in challenging situations (Dweck, 2006).

Instead of questioning ability or intelligence when presented with a difficult task, individuals employing a growth mindset formulate alternative pathways to success and improved performance. In contrast to individuals adhering to a fixed mindset, growth mindset adherents believe efficacy and industriousness can produce a positive outcome when applied with consistency. Moreover, individuals adhering to a growth mindset

develop proficiency-oriented learning goals. A belief in malleable attributes facilitates prioritization of learning outcomes and personal growth, allowing adherents to interpret setbacks as opportunities for growth and learning (Dweck, 2000, 2007).

Schwarz (2013) noted that mutual learning is an extension of mindset. For teams to engage in collaborative work, they should understand the expectations for the process and how it differs from a unilateral, leader driven, model for engagement in the work of professional learning. Participants unaccustomed to working within a mutual learning environment may need to have the process and the anticipated outcomes explained. Participants in mutual learning should have an understanding that every individual has a unique perspective that drives the decision-making process and the interpretation of information. Some individuals are unaware of their mindset, as it is a default lens through which the world is viewed. Mindsets lead to behaviors, and behaviors lead to the actions and results. There are two mindsets: unilateral control and mutual learning. In challenging situations, many individuals will default to the traditional unilateral mindset resulting in the specific outcomes the organization is trying to avoid by promoting collaboration and mutual learning mindsets (Schwarz, 2013).

Teachers working in high performing international systems are expected to work collaboratively, engaging in mutual learning behaviors. These expectations and the associated outcomes have a basis in the mindset of individual teachers as well the governing authorities of the school systems. Mutual learning and collaborative professional learning are recognized as the basis for the desired student learning outcomes. Teacher efficacy and associated student learning outcomes are recognized as the results of a highly intentional focus on the mutual learning and collaborative

behaviors of professional educators. Educators within those high-performing international systems have been empowered with the mindset that they can improve student learning outcomes (Dweck, 2007; Schwarz, 2013; Darling-Hammond et al., 2017).

Summary

Collaborative professional learning is essential to effective schools and educational professionals. Collaboration occurs with the proper systems, frameworks, practices, and mindset in place (Senge 2006, 2012; Schwarz, 2013; Darling-Hammond et al., 2017). The review of literature focused on collaboration and the collaborative behaviors of organizations, in service of improved professional practice through focused and intentional professional learning activities (Dweck, 2000; Senge, 2006; Schwarz, 2013; Learning Forward, 2017b).

The research of Senge (2006, 2012) centered on the way organizations learn. Senge, considered to be the first theorist to name the idea of a learning organization, identified five disciplines necessary to create this type of culture. The first four were *personal mastery*, *mental models*, *shared vision*, and *team learning*. The first four disciplines, used in concert, promoted the application of the fifth discipline of systems thinking to create an effective learning environment that effectively deals with change and growth. A learning culture creates the structure essential for building the capacity of employees, but processes and standards are essential to ensure the capacity of individuals is being developed to the highest level (Senge, 2006, 2012).

In support of their definition of professional learning, Learning Forward developed seven standards for improving schools by increasing the skills and knowledge

base of educators. These seven essential standards should be prevalent in a school to promote and leverage professional learning. These seven standards are leadership, data, learning designs, outcomes, implementation, resources, and learning communities (Learning Forward, 2017i). Each of the standards represents a broad area of research and recommendations from Learning Forward related to professional learning. Application of the standards to a developing or established program will aid in ensuring that research-based practices for effective professional learning are in place. Several other bodies of research support the seven standards. The standards serve as a benchmark for school district leaders to measure the effectiveness of their professional learning programs and activities (Forward, Learning, 2017). Professional learning based on the seven standards increases educator effectiveness and student learning outcomes (Mizell et al., 2011).

Darling-Hammond et al. (2017) noted that high-performing school systems create opportunities and procedures empowering teachers to perfect their teaching tools in an ongoing cycle of improvement resulting in increased efficacy. These systems also encourage professional learning by creating opportunities for individuals to apply their augmented skills to engage in new professional opportunities within the school system. These opportunities and practices take on different forms in the educational systems of different countries (Darling-Hammond et al., 2017). One component of the high-performing learning systems studied by Darling-Hammond et al. (2017) was that professional learning was continuous and viewed as essential. Structures and processes were intentionally created that promoted a continuous improvement cycle based on analyzing student performance and teacher implementation data. This belief is realized in the expectations and requirements for professional learning that requires teachers to

engage in embedded training within schools, as well as the allocation of resources to create structures and processes that promote collaborative professional learning opportunities (Darling-Hammond et al., 2017).

Schwarz (2013) determined that specific mutual learning behaviors exhibited by teams could promote high levels of meaningful collaboration. These behaviors utilized collaborative learning for teams and leaders to advance learning. Similarly, collaboration and a culture of collegiality were noted as characteristics of high-performing international school systems in the research of Darling-Hammond et al. (2017). Schwarz identified eight mutual learning behaviors that could be utilized to advance the work and learning of groups or systems. Schwarz asserted that the traditional, unilateral control mindset inhibited the ability of teams to communicate proficiently, limiting the ability of the group to problem-solve in an efficient manner (Schwarz, 2013).

One barrier to creating a collaborative professional learning culture, as noted in the research of Dweck (2000), was educators lacking a growth mindset. One essential behavior effective team members working in a collaborative culture often demonstrated was the ability to demonstrate a growth mindset. Research on mindset and the motivation of learners has provided insight into the manner in which learners develop the concepts of self-efficacy and competence as these relate to the learning process. The beliefs of an individual regarding the nature of intelligence impact motivation and achievement during the learning process (Dweck, 2000).

Chapter Two was an overview of theorists and theories on collaborative learning. The review of literature outlined Peter Senge's work on system thinking. It provided a theoretical framework for effective professional development activities based on the

Learning Forward standards. Finally, the review of literature focused on the collaborative behaviors of high-performing international school systems and the specific behaviors of collaborative groups. Chapter Three will outline the methodology for the study to be completed and provide a synopsis of the research design, validity and reliability of the study, and statistical treatment of the data. In Chapter Four, the researcher will present the findings of the study. Chapter Five will summarize conclusions from data analysis as well as provide recommendations for future study in the area of professional learning and collaborative practices.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

Introduction

Collaborative professional learning has been noted as an essential component in high-performing school systems (Darling-Hammond et al., 2017). To effectively implement collaborative professional learning an organization should be prepared to engage in systemic team learning, as defined by Senge (2006). Utilization of the standards for professional learning created by Learning Forward will ensure professional learning activities are focused on the right work, utilizing current research-based best practices. Application of research related the collaborative behaviors and practices of teams will aid in ensuring a growth mindset permeates the collaborative environment (Dweck, 2006; Senge, 2006; Schwarz, 2013; Learning Forward, 2017i).

Purpose of the Study

This quantitative study was designed to examine the perceptions of high school teachers related to the professional learning within their respective school systems and to determine if there are differences in the perceptions of those individuals who identify as collaborative versus those individuals who identify as non-collaborative. The Standards Assessment Inventory (SAI) was utilized as a survey instrument to determine the perceptions of professional educators about professional learning activities in their respective school systems. The researcher compared the responses of the two groups identified as the independent variables; the first group was comprised of teachers indicating they used research-based collaboration practices in their professional learning, and group two was comprised of teachers indicating they did not use research-based

collaboration practices in their professional learning. The researcher used an ANOVA to compare the two groups' responses to test null hypotheses. The researcher chose an ANOVA instead of individual *t*- test for each question to decrease the chance of a Type 1 error and because the ANOVA is the correct test to use when comparing more than one dependent variable.

Research Questions

1. What if any are the differences between Missouri high school teachers' perception regarding the effectiveness of their professional learning opportunities when research-based collaboration practices are utilized compared to when research-based collaborative practices are not utilized?
2. What are the perceptual differences of high school teachers in Missouri about the seven standards for professional learning: learning communities, leadership, resources, data, learning design, implementation, and outcomes when research-based collaboration practices are utilized compared to no utilization of research-based professional learning practices?

Null-Hypotheses

The null hypothesis utilized for the study were as follow:

H_1 There is no significant difference in the perception of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the learning communities' standard?

H_2 There is no significant difference in the perception of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning

practices compared to no utilization of research-based collaboration practices in their professional learning practices for the leadership standard?

H_3 There is no significant difference in the perception of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the resources standard?

H_4 There is no significant difference in the perception of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the data standard?

H_5 There is no significant difference in the perception of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the learning designs standard?

H_6 There is no significant difference in the perception of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the implementation standard?

H_7 There is no significant difference in the perception of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the outcomes standard?

Participants

The participants in this study included high school teachers in grades nine through twelve in the state of Missouri. For this study, teachers were defined as certificated employees working in the designated grade span in a public school in the state of Missouri. Of the 20,188 teachers invited, 300 participated in the study for a 1.486% return. The participants for the study were identified from a list obtained through the Missouri Department of Elementary and Secondary Education. Teachers in schools designed to meet the needs of disabilities or gifted students were excluded, as were all charter, private, and parochial schools. The decision not to include those populations was based on dissimilarities in their funding mechanisms and the associated potential to skew the results of the study.

Ethical considerations and precautions were made to ensure no risks were created for participants from whom the data were collected. Anonymity and was provided to protect participants from whom the research data were collected. A cover letter was provided to all participants explaining the purpose of the study, its significance, and commitment to share results with participants. Within the letter anonymity for participants was addressed. The survey link forwarded by the superintendent included an anonymity explanation for teachers. All teacher responses remained anonymous.

Procedures

In compliance with the Southwest Baptist University guidelines regarding the protection of human participants, the researcher submitted a request for review to the Research Review Board for approval. The request asked permission to survey Missouri high school teacher participants for this study. Participant recruitment and data collection

began after RRB approval was granted. The informational consent forms for teachers to conduct research are located in Appendix B. Information about the purpose of the study, voluntary participation, and anonymity of information gathered through the study was provided at the beginning of the online survey.

The researcher utilized Question Pro to re-create the Standards Assessment Inventory as an online survey. Utilizing Question Pro allowed automation and quick dissemination of surveys to the superintendent. Question Pro generated a unique web address, embedded in an email, directing the participant to the survey. Within the email, the directions and anonymity information were provided, as well as the opportunity to participate or decline before continuing to the survey.

The survey, the ethics certificate, and the Research Review Board (RRB) application were submitted to the RRB. The timeframe of data collection began following approval from the research review board, and surveys were sent out on February 26, 2018. A follow-up reminder was sent on March 14, 2018. The data collection window remained open until March 21, 2018, a period of approximately three weeks. The data collection window closed on March 21, 2018, and no further responses were collected.

Research Setting

Research for this study was conducted exclusively in the state of Missouri, with teachers in ninth through twelfth grades. There were 566 high schools in the state of Missouri included in the study and 20,188 potential teacher respondents working in those schools. (Missouri Department of Elementary and Secondary Education, 2017). The public Missouri school district high schools represented in this research reside within urban, suburban, and rural communities. These school districts are located in 114

counties in Missouri. Populations for these counties range from 2171 to 1,000,438. Family median income in these communities ranges from $32,118 to $82,226 yearly. Community unemployment ranges from 3.2% to 9.3%. Diverse ranges of poverty are also seen in these communities, ranging from 5.8% to 29.3% of families living below the poverty level.

Instrumentation

In this study the seven standards for professional development developed by Learning Forward were considered through the Standards Assessment Inventory as designed by Learning Forward for the purpose of measuring the alignment of implemented professional learning programs to the seven standards for professional development. "The SAI includes 7–8 items aligned to each of the seven Standards, with indicators covering the three key areas of focus for each Standard" (Learning Forward, 2017, p. 9). The Standards Assessment Inventory survey consisted of 50 questions that related directly to each of the Learning Forward Standards. For statistical analysis, a six-response Likert scale: (1) don't know, (2) never, (3) seldom, (4) sometimes, (5) frequently, and (6) always was used for each of the 50 questions. The Standards Assessment Inventory is an assessment instrument to measure the degree to which a school's professional development aligns with the Learning Forward Standards for Professional Development (Denmark & Weavery, 2012). The Standards Assessment Inventory is currently in its third iteration. It consists of seven standards as opposed to the twelve standard measurements utilized in the original Standards Assessment Inventory (Denmark & Weavery, 2012).

Psychometric analysis results on the Standards Assessment Inventory revealed that the instrument is both reliable and valid (Denmark & Weavery, 2012). The psychometric study for the Standards Assessment Inventory consisted of three pilot studies. A Cronbach alpha coefficient of .98 demonstrated a high level of reliability or consistency (Vaden-Kiernan, Jones, & McCann, 2009). Discussions involving the developers of the instrument, experts, and teacher reviewers determined how well the Standards Assessment Inventory items represent effective professional development according to the Learning Forward standards to determine the validity of the instrument. The result of these discussions demonstrated that content validity was achieved. Discriminant function analysis measured criterion validity to identify how well the responses by school staff compare to responses by the expert responses. Schools were grouped in high or low groups according to each school's alignment to the Learning Forward standards. The experts and school staff rated how well the schools' aligned to the Learning Forward standards. The experts and school staff rated how well the schools' professional development adheres to the standards. The discriminant function analysis demonstrated statistically significant mean differences between the high and the low groups for each of the three pilot studies as evidenced by each Chi-square result. Construct validity was determined via a factor analysis utilizing a principal components analysis and varimax rotation procedures. The factor 40 analysis examined the degree to which the Standards Assessment Inventory measures the extent to which a school's professional development programs adhere to the Learning Forward standards (Denmark & Weavery, 2012).

The researcher received written permission (copy Appendix A), and because the validity and reliability of the survey have been established, the researcher did not do a pilot study. The researcher utilized the results from the first section of the survey instrument, Learning Communities, as a basis of comparison for the remaining survey items. The responses to the Learning Communities sections of the survey instrument allowed the researcher to establish the independent variable groups to use in the ANOVA analysis of the survey responses.

Data Analysis

The Standards Assessment Inventory survey consisted of 50 questions that related directly to each of the Learning Forward Standards. For statistical analysis, a five-response Likert scale: (1) don't know, (2) never, (3) seldom, (4) sometimes, (5) frequently, and (6) always was used for each of the 50 questions. Upon completion of the surveys, responses were uploaded to the IBM Statistical Package for Social Sciences Statistics (SPSS) program for analysis. Analysis of the data from the first section of the survey consisting of seven questions related to the Learning Communities standard was utilized to segregate the populations into population groups: collaborators and non-collaborators. The researcher determined that a minimum average Likert scale score of 4 for the first seven questions of the survey identified the respondent as collaborative and a score of 1-3.9 identified the respondent as non-collaborative. The researcher selected 4 as the average score based on the Likert scale ratings for the survey instrument. An average score of 4, noted as frequently on the Likert scale indicated the respondent was knowledgeable and skillful in the area (Learning Forward, 2017i). The two defined groups allowed the researcher to test the null hypothesis.

Analysis of the data allowed the researcher to collect descriptive statistics means and standard deviations for each of the seven Learning Forward Professional Learning Standards as addressed in research question 2. The data collected allowed the researcher to answer, in part, research question 1. The cumulative data allowed the researcher to answer both research questions.

The data required to address research question 2 were entered into SPSS to generate an Analysis of Variance (ANOVA) calculation to determine differences in the mean results of the survey instrument for the previously defined population groups of collaborators and non-collaborators. The ANOVA allowed testing hypotheses H_1, H_2, H_3, H_4, H_5, H_6, and H_7. These data allowed the researcher to reject or fail to reject the null hypotheses.

An ANOVA was utilized to compare the mean scores of the identified population groups defined by their levels of collaboration. Application of the ANOVA was done with the assumption that the data would fall on a normal distribution, and that the individual scores used to determine the mean were independent of each other (Wall, 2017). The ANOVA also "has the assumption that the groups being compared have similar variances or spreads in their scores (this is called homoscedasticity)" (Wall, 2017, p. 194).

Wall (2017) noted the following:

> The ANOVA results in an *F*-statistic that falls along a different distribution than the t-statistic. In ANOVA calculations, *F* is found by dividing a sum of squares for groups by a sum of squares due to error. This calculation is similar to a *t*-test in which differences between individual scores and a mean are divided by a

> measure of variance, except that each level of calculation (the differences in scores from a mean and the measure of variance) are more complex because of the involvement of multiple group means and the individual scores within each group. (p. 194)

The testing of the seven null hypotheses, one for each of the standards for professional learning, individually answered the components listed in research question 2. The combination of the results of the seven null hypotheses assisted the researcher in answering research question 1.

Summary

Chapter three focused on the details of this study's methodology. The details included information on the purpose for the study, a description of participants in the study, the research setting for the study, a description of the instrumentation utilized for the study, and the data treatment utilized for analysis of the data. In chapter four, the researcher will present the findings of the study. Chapter five will summarize conclusions from data analysis as well as provide recommendations for future study in the area of professional learning and collaborative practices.

CHAPTER FOUR

ANALYSIS OF DATA

Introduction

Collaborative professional learning has been found to be an essential component in high-performing school systems (Darling-Hammond et al., 2017). To effectively implement collaborative professional learning, an organization should be prepared to engage in systemic team learning as defined by Senge (2006). Utilization of the standards for professional learning created by Learning Forward will ensure professional learning activities are focused on the right work, utilizing current research-based best practices. Application of research related the collaborative behaviors and practices of teams will aid in ensuring a growth mindset permeates the collaborative environment (Dweck, 2006; Senge, 2006; Schwarz, 2013; Learning Forward, 2017i).

This quantitative study was designed to examine the perceptions of high school teachers related to the professional learning within their respective school systems and to determine if there were differences in the perceptions of those individuals who identified as collaborative versus those individuals who identified as non-collaborative. The Standards Assessment Inventory (SAI) was utilized as a survey instrument to determine the perceptions of professional educators about professional learning activities in their respective school systems.

The researcher compared the responses of the two groups identified as the independent variables; the first group was comprised of teachers identified as utilizing research-based collaboration practices in their professional learning and the second group was comprised of teachers identified as not utilizing research-based collaboration

practices in their professional learning. The overall number of participants in the study (N = 300) limited the ability of the researcher to generalize results to larger populations.

Main Research Questions

The following research questions were addressed within the context of this study:

1. What if any are the differences between Missouri high school teachers' perception regarding the effectiveness of their professional learning opportunities when research-based collaboration practices are utilized compared to when research-based collaborative practices are not utilized?
2. What are the perceptual differences of high school teachers in Missouri about the seven standards for professional learning: learning communities, leadership, resources, data, learning design, implementation, and outcomes when research-based collaboration practices are utilized compared to no utilization of research-based collaboration practices?

Null-Hypotheses

The null hypotheses utilized for the study were as follow:

H_1 There is no significant difference in the perceptions of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the learning communities' standard?

H_2. There is no significant difference in the perceptions of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the leadership standard?

H_3. There is no significant difference in the perceptions of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the resources standard?

H_4. There is no significant difference in the perceptions of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the data standard?

H_5. There is no significant difference in the perceptions of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the learning designs standard?

H_6. There is no significant difference in the perceptions of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the implementation standard?

H_7. There is no significant difference in the perceptions of high school teachers in Missouri when research-based collaboration practices are utilized in their professional learning practices compared to no utilization of research-based collaboration practices in their professional learning practices for the outcomes standard?

Participation and Completion

The participants in this study included high school teachers in grades nine through twelve in the state of Missouri. For this study, teachers were defined as certificated

employees working in the designated grade span in a public school in the state of Missouri. Of the 20,188 teachers invited, 300 participated in the study to completion for a 1.486% return rate. Of the 517 respondents who started the survey, 334 completed the instrument for a completion rate of 64.6%. Of those 334 respondents, the researcher determined that 34 had failed to complete all the items in the survey, rendering their input for the study invalid.

The researcher was granted permission (copy Appendix A) to use Learning Forward's Standards Assessment Inventory survey instrument (copy Appendix C) that was designed to measure teachers' perceptions to provide data on the quality of professional learning at the school level. The Standards Assessment Inventory survey instrument consisted of 50 Likert items measuring how well the district adheres to Learning Forward's Standards for Professional Learning. This part was broken into seven sections, each containing seven to eight questions that corresponded to the seven standards: Learning Communities, Leadership, Resources, Data, Learning Design, Implementation, and Outcomes. The instrument used a six-point Likert scale with potential responses: (1) Never, (2) Seldom, (3) Sometimes, (4) Frequently, (5) Always, and (6) Don't Know.

Descriptive Statistics

Analysis of the data from the first section of the survey consisting of seven questions relating to the Learning Communities standard was utilized to segregate the survey respondents into two distinct groups: collaborators and non-collaborators. The researcher determined that a respondent rating their average perception as a 4 on the Likert scale on the first seven questions of the survey would be designated as a

collaborator, and those that indicated a score of 1-3.9 on each would be identified as non-collaborative. The researcher selected 4 as the average score based on the Likert scale ratings for the survey instrument. An average score of 4 noted as frequently on the Likert scale indicates the respondent is knowledgeable and skillful in the area (Learning Forward, 2017i). The two defined groups allowed the researcher to test the null hypotheses.

Of the 20,188 teachers invited, 300 participated in the study for a 1.486 % return rate. The first seven questions of the survey under the Learning Communities category were utilized to determine two groups of participants. Table 1 depicts the number of participants from each designated group.

Table 1

Identification of Population Groups for the Research Study (*N* = 300)

Characteristic	Frequency	Percent	*Valid Percent*	*Cumulative Percent*
Collaborative	167	55.7	55.7	55.7
Non-collaborative	133	44.3	44.3	100
Total	300	100	100	

Of the 300 participants, 167 met the criteria for being identified as collaborative, and 133 participants met the criteria for being identified as non-collaborative. For the research study, *N* will equal 300. All the participants were high school teachers in grades 9-12 in public, non-charter, non-parochial schools.

Inferential Statistics

Research Question 1: Perception of professional learning effectiveness.

RQ1: What if any are the differences between Missouri high school teachers' perceptions regarding the effectiveness of their professional learning opportunities when research-based collaboration practices are utilized compared to when research-based collaborative practices are not utilized?

To answer research question one, the researcher utilized the responses to the Learning Communities section of the Standards Assessment Inventory. Analysis of the data from the first section of the survey comprised of seven questions related to the Learning Communities standard was utilized to segregate the survey respondents into two distinct groups: collaborators and non-collaborators.

The researcher then applied a one-way analysis of variance to each section Standards Assessment Inventory to determine if there were significant differences in the perceptions between these groups. Each of these sections of the Standards Assessment Inventory contained seven or eight items designed to assess the perceptions of teachers' related to the seven professional learning standards determined by Learning Forward. The seven standards include Learning Communities, Leadership, Resource, Data, Learning Designs, Implementation, and Outcomes. The results from the ANOVA are provided in Tables 2 – 8.

Table 1

One-Way Analysis of Variance for the Perceptions of Collaborators versus Non-collaborators Related to the Learning Communities Standard of the SAI.

Variable and source	SS	d*f*	*MS*	*F*	*p*
Learning Communities 1					
Between	254.065	1	254.065	234.993	.000
Within	322.185	298	1.081		
Total	576.250	1			
Learning Communities 2					
Between	192.644	1	192.644	168.598	.000
Within	340.503	298	1.143		
Total	533.147	299			
Learning Communities 3					
Between	250.410	1	250.410	205.872	.000
Within	362.470	298	1.216		
Total	612.880	299			
Learning Communities 4					
Between	149.945	1	149.945	93.619	.000
Within	477.292	298	1.602		
Total	627.237	299			
Learning Communities 5					
Between	256.119	1	256.119	241.593	.000
Within	315.918	298	1.060		
Total	572.037	299			
Learning Communities 6					
Between	269.317	1	269.317	255.569	.000
Within	314.030	298	1.054		
Total	583.347	299			
Learning Communities 7					
Between	272.658	1	272.658	241.778	.000
Within	336.062	298	1.128		
Total	608.720	299			

Table 2

One-Way Analysis of Variance for the Perceptions of Collaborators versus Non-collaborators Related to the Leadership Standard of the SAI.

Variable and source	SS	d*f*	*MS*	*F*	*p*
Leadership 1					
Between	69.489	1	69.489	74.099	.000
Within	279.458	298	.938		
Total	348.947	299			
Leadership 2					
Between	66.682	1	66.682	64.152	.000
Within	309.754	298	1.039		
Total	376.437	299			
Leadership 3					
Between	75.363	1	75.363	72.010	.000
Within	311.874	298	1.047		
Total	387.237	299			
Leadership 4					
Between	84.552	1	84.552	84.392	.000
Within	298.568	298	1.002		
Total	383.120	299			
Leadership 5					
Between	98.407	1	98.407	94.663	.000
Within	309.789	298	1.040		
Total	408.197	299			
Leadership 6					
Between	77.455	1	77.455	73.161	.000
Within	315.491	298	1.059		
Total	392.947	299			
Leadership 7					
Between	70.676	1	70.676	58.348	.000
Within	360.961	298	1.211		
Total	431.637	299			

Table 3

One-Way Analysis of Variance for the Perceptions of Collaborators versus Non-collaborators Related to the Resource Standard of the SAI.

Variable and source	SS	d*f*	*MS*	*F*	*p*
Resource 1					
Between	31.601	1	31.601	41.712	.000
Within	225.769	298	.758		
Total	257.370	299			
Resource 2					
Between	110.038	1	110.038	97.756	.000
Within	335.442	298	1.126		
Total	445.480	299			
Resource 3					
Between	27.097	1	27.097	17.006	.000
Within	474.833	298	1.593		
Total	501.930	299			
Resource 4					
Between	58.925	1	58.925	48.868	.000
Within	359.325	298	1.206		
Total	418.250	299			
Resource 5					
Between	67.571	1	67.571	46.981	.000
Within	428.599	298	1.438		
Total	496.170	299			
Resource 6					
Between	38.540	1	38.540	30.514	.000
Within	376.377	298	1.263		
Total	414.917	299			
Resource 7					
Between	30.518	1	30.518	32.005	.000
Within	284.149	298	.954		
Total	314.667	299			

Table 4

One-Way Analysis of Variance for the Perceptions of Collaborators versus Non-collaborators Related to the Data Standard of the SAI.

Variable and source	SS	d*f*	*MS*	*F*	*p*
Data 1					
Between	85.481	1	85.481	44.966	.000
Within	566.506	298	1.901		
Total	651.987	299			
Data 2					
Between	69.560	1	69.560	48.788	.000
Within	424.877	298	1.426		
Total	494.437	299			
Data 3					
Between	119.397	1	119.397	69.287	.000
Within	513.523	298	1.723		
Total	632.920	299			
Data 4					
Between	119.346	1	119.346	73.383	.000
Within	484.654	298	1.626		
Total	604.000	299			
Data 5					
Between	54.143	1	54.143	59.881	.000
Within	269.444	298	.904		
Total	323.587	299			
Data 6					
Between	139.105	1	139.105	92.984	.000
Within	445.812	298	1.496		
Total	584.917	299			
Data 7					
Between	130.258	1	130.258	81.931	.000
Within	473.778	298	1.590		
Total	604.037	299			
Data 8					
Between	107.469	1	107.469	57.545	.000
Within	556.531	298	1.868		
Total	664.000	299			

Table 5

One-Way Analysis of Variance for the Perceptions of Collaborators versus Non-collaborators Related to the Learning Designs Standard of the SAI.

Variable and source	SS	d*f*	*MS*	*F*	*p*
Learning Designs 1					
Between	69.192	1	69.192	37.222	.000
Within	553.955	298	1.859		
Total	623.147	299			
Learning Designs 2					
Between	47.705	1	47.705	46.146	.000
Within	308.065	298	1.034		
Total	355.770	299			
Learning Designs 3					
Between	71.296	1	71.296	76.731	.000
Within	276.891	298	.929		
Total	348.187	299			
Learning Designs 4					
Between	103.404	1	103.404	101.285	.000
Within	304.233	298	1.021		
Total	407.637	299			
Learning Designs 5					
Between	75.490	1	75.490	44.372	.000
Within	506.990	298	1.701		
Total	582.480	299			
Learning Designs 6					
Between	53.569	1	53.569	39.066	.000
Within	408.628	298	1.371		
Total	462.197	299			
Learning Designs 7					
Between	54.149	1	54.149	39.476	.000
Within	408.768	298	1.372		
Total	462.917	299			

Table 6

One-Way Analysis of Variance for the Perceptions of Collaborators versus Non-collaborators Related to the Implementation Standard of the SAI.

Variable and source	SS	d*f*	*MS*	*F*	*p*
Implementation 1					
Between	48.689	1	48.689	50.207	.000
Within	288.991	298	.970		
Total	337.680	299			
Implementation 2					
Between	68.613	1	68.613	70.425	.000
Within	290.334	298	.974		
Total	358.947	299			
Implementation 3					
Between	233.753	1	233.753	95.654	.000
Within	728.234	298	2.444		
Total	961.987	299			
Implementation 4					
Between	213.573	1	213.573	114.507	.000
Within	555.814	298	1.865		
Total	769.387	299			
Implementation 5					
Between	43.843	1	43.843	41.489	.000
Within	314.904	298	1.057		
Total	358.747	299			
Implementation 6					
Between	118.198	1	118.198	61.623	.000
Within	571.589	298	1.918		
Total	689.787	299			
Implementation 7					
Between	76.958	1	76.958	63.011	.000
Within	363.958	298	1.221		
Total	440.917	299			

Table 7

One-Way Analysis of Variance for the Perceptions of Collaborators versus Non-collaborators Related to the Outcomes Standard of the SAI.

Variable and source	SS	d*f*	*MS*	*F*	*p*
Outcomes 1					
Between	42.458	1	42.458	43.901	.000
Within	288.208	298	.967		
Total	330.667	299			
Outcomes 2					
Between	94.798	1	94.798	77.567	.000
Within	364.199	298	1.222		
Total	458.997	299			
Outcomes 3					
Between	97.044	1	97.044	53.614	.000
Within	539.393	298	1.810		
Total	636.437	299			
Outcomes 4					
Between	66.020	1	66.020	56.801	.000
Within	346.367	298	1.162		
Total	412.387	299			
Outcomes 5					
Between	81.881	1	81.881	82.658	.000
Within	295.199	298	.991		
Total	377.080	299			
Implementation 6					
Between	138.430	1	138.430	71.123	.000
Within	580.007	298	1.946		
Total	718.437	299			
Implementation 7					
Between	83.600	1	83.600	65.397	.000
Within	380.946	298	1.278		
Total	464.547	299			

Analysis of the data indicated that the results for every item in each section of the Standards Assessment Inventory survey instrument were significant at $p = 0.00$ between the responses from teachers identified as collaborative and those teachers identified as non-collaborative. The researcher determined that there were significant differences in the perceptions of Missouri high school teachers regarding the effectiveness of their professional learning when research-based collaboration practices were utilized compared to when research-based collaboration practices were not utilized.

Research Question 2.

RQ2: What are the perceptual differences of high school teachers in Missouri about the seven standards for professional learning: learning communities, leadership, resources, data, learning design, implementation, and outcomes when research-based collaboration practices are utilized compared to no utilization of research-based professional learning practices?

The first standard addressed in the Standards Assessment Inventory was comprised of seven Likert scale items designed to measure the perceptions of teachers on the Learning Communities Professional Learning Standard. A one way ANOVA was conducted to determine if there was a significant difference at the $p < .05$ level. The results are presented in Table 9.

Table 8

Comparison of Means and Standard Deviations Between Collaborators and Non-Collaborators for the Learning Communities Professional Learning Standard of the SAI

	Collaborators		Non-Collaborators		
	M	*SD*	*M*	*SD*	*p*
Learning Communities Standard Item 1: My school system has policies and procedures that support the vision for learning communities in schools.	5.37	.626	3.52	1.396	0.00*
Learning Communities Standard Item 2: Learning communities in my school meet several times per week to collaborate on how to improve student learning.	4.10	1.149	2.49	.958	0.00*
Learning Communities Standard Item 3: Learning community members in my school believe the responsibility to improve student learning is shared by all stakeholders, such as all staff members, district personnel, families, and community members.	5.34	.733	3.50	1.439	0.00*
Learning Communities Standard Item 4: In my school, some of the learning community members include non-staff members, such as students, parents, community members.	3.87	1.354	2.45	1.145	0.00*
Learning Communities Standard Item 5: My school's learning communities are structured for teachers to engage in the continuous improvement cycle (i.e., data analysis, planning, implementation, reflection, and evaluation).	5.05	.798	3.19	1.262	0.00*
Learning Communities Standard Item 6: In my school, learning community members demonstrate effective communication and relationship skills so that a high level of trust exists among the group.	4.89	.745	2.98	1.297	0.00*
Learning Communities Standard Item 7: All members of the learning communities in my school hold each other accountable to achieve the school's goals.	4.61	.962	2.69	1.175	0.00*

* $p < 0.05$.

There was a significant difference in the responses of collaborators and non-collaborators for every item in the Learning Communities Professional Learning Standard. Each survey item was noted to have a *p*-value of 0.00. Therefore, the null hypothesis (H1) was rejected.

All of the items analyzed for the Learning Communities Professional Learning Standard were found to be significant. The researcher selected items for discussion based on the uniqueness of the results for one or both groups of respondents to the survey. Results from item 1 in Table 9 yielded the highest means in the survey section for both collaborators ($M = 5.37$, $SD = .626$) and non-collaborators ($M = 3.52$, $SD = 1.396$). These data indicated the utilization of policy and procedures in support of collaborative professional learning activities for both of the identified groups.

Additionally, it should be noted the mean results from item four in Table 9 indicated a significant difference between collaborators ($M = 3.87$, $SD = 1.354$) and non-collaborators ($M = 2.45$, $SD = 1.145$). The variance between the means was less significant than the other items in the Learning Communities standard, but the mean response from collaborators was lower for this item than any other item in the Learning Communities Professional Learning Standard of the survey. The results for this item indicated that while a significant difference between collaborators and non-collaborators existed, there may be an implication for all teachers responding to the survey regarding the need for more involvement of non-staff members, such as students, parents, and community members, in collaborative professional learning activities.

Finally, comparison of means and standard deviation for item 7 in Table 9 indicated the mean score for collaborators ($M = 4.61$, $SD = 2.69$) was significantly

different from non-collaborators (M = 2.69, SD = 1.175). These results indicated collaborators perceived increased levels of group accountability for school goals over non-collaborators.

The second standard addressed in the Standards Assessment Inventory was comprised of seven Likert scale items designed to measure the perceptions of teachers on the Leadership Professional Learning Standard. A one way ANOVA was conducted to determine if there was a significant difference at the $p < .05$ level. The results are presented in Table 10.

Table 9

Comparison of Means and Standard Deviations Between Collaborators and Non-Collaborators for the Leadership Professional Learning Standard of the SAI

	Collaborators		Non-Collaborators		
	M	*SD*	*M*	*SD*	*p*
Leadership Standard Item 1: My school's leaders provide teachers with equitable resources to support our individual and collaborative goals for professional learning.	4.92	.860	3.95	1.089	0.00*
Leadership Standard Item 2: My school's leaders are active participants with other staff members in the school's professional learning.	4.96	.898	4.02	1.155	0.00*
Leadership Standard Item 3: My school's leaders advocate for resources to fully support professional learning.	5.02	.898	4.02	1.161	0.00*
Leadership Standard Item 4: My school's leaders regard professional learning as a top priority for all staff.	5.11	.839	4.05	1.173	0.00*
Leadership Standard Item 5: My school's leaders cultivate a positive culture that embraces characteristics such as, collaboration, high expectations, respect, trust, and constructive feedback.	5.11	.885	3.95	1.167	0.00*
Leadership Standard Item 6: My school's leaders speak about the important relationship between improved student achievement and professional learning.	4.94	.929	3.92	1.142	0.00*
Leadership Standard Item 7: My school's leaders consider all staff members capable of being professional learning leaders.	5.09	.835	4.11	1.363	0.00*

* $p < 0.05$.

There was a significant difference in the responses of collaborators and non-collaborators for every item in the Leadership Professional Learning Standard. Each survey item was noted to have a *p*-value of 0.00. Therefore, the null hypothesis (H2) was rejected.

All of the items analyzed in the Leadership Professional Learning Standard were found to be significant. The researcher selected items for discussion based on the uniqueness of the results for one or both groups of respondents to the survey. Results from item 4 in Table 10 documented high means for both collaborators (*M* = 5.11, *SD* = .839) and non-collaborators (*M* = 4.05, *SD* = 1.173). These data indicated that leaders in schools where both groups of teachers were employed regarded professional learning as a top priority for all staff.

Item 5 in Table 10 indicated a variance in the means of collaborators (*M* = 5.11, *SD* = .885) and non-collaborators (*M* = 3.95, *SD* = 1.167). These findings demonstrated that respondents identified as collaborative perceived that their leaders created a positive culture that embraced characteristics such as collaboration, high expectations, respect, trust, and constructive feedback at a higher rate than their non-collaborative peers.

Item 6 in Table 10 demonstrated a disparity in the means of collaborators (*M* = 4.94, *SD* = .929) and non-collaborators (*M* = 3.92, *SD* = 1.142). Responses to the survey item indicated that leaders of teachers who were identified as collaborative were more likely to have discussed with staff the relationship between improved student achievement and professional learning.

Finally, item 7 in Table 10 documented high means for teachers identified as collaborators (*M* = 5.09, *SD* = .835) and for those identified as non-collaborators (*M* =

4.11, *SD* = 1.363). The mean response for non-collaborators was the highest in the survey section. These data indicated that leaders of both identified groups often considered all staff members capable of being professional learning leaders.

The third standard addressed in the Standards Assessment Inventory was comprised of seven Likert scale items designed to measure the perceptions of teachers on the Resources Professional Learning Standard. A one way ANOVA was conducted to determine if there was a significant difference at the $p < .05$ level. The results are presented in Table 11.

Table 10

Comparison of Means and Standard Deviations Between Collaborators and Non-Collaborators for the Resources Professional Learning Standard of the SAI

	Collaborators		Non-Collaborators		
	M	*SD*	*M*	*SD*	*p*
Resources Standard Item 1: Practicing and applying new skills with students in my classroom are regarded as important learning experiences in my school.	5.18	.670	4.53	1.070	0.00*
Resources Standard Item 2: Teachers in my school are involved with monitoring the effectiveness of the professional learning resources.	4.76	.964	3.54	1.171	0.00*
Resources Standard Item 3: Professional learning expenses, such as registration and consultant fees, staff, and materials, are openly discussed in my school.	3.90	1.288	3.29	1.230	0.00*
Resources Standard Item 4: In my school, time is available for teachers during the school day for professional learning.	4.25	1.138	3.35	1.046	0.00*
Resources Standard Item 5: Teachers in my school are involved with the decision-making about how professional learning resources are allocated.	4.23	1.192	3.28	1.208	0.00*
Resources Standard Item 6: Professional learning is available to me at various times, such as job embedded experiences, before or after-school hours, and summer experiences.	4.74	1.110	4.02	1.141	0.00*
Resources Standard Item 7: Teachers in my school have access to various technology resources for professional learning.	5.02	.928	4.38	1.034	0.00*

* $p < 0.05$.

There was a significant difference in the responses of collaborators and non-collaborators for every item in the Resources Professional Learning Standard. Each survey item was noted to have a *p*-value of 0.00. Therefore, the null hypothesis (H3) was rejected.

All of the items analyzed in the Leadership Professional Learning Standard were found to be significant. The researcher selected items for discussion based on the uniqueness of the results for one or both groups of respondents to the survey. Item 1 in Table 11 documented high means for both collaborators (*M* = 5.18, *SD* = .670) and non-collaborators (*M* = 4.52, *SD* = 1.080). These findings suggested the focus of professional learning programs in the schools of survey respondents were focused on the application of new skills with students as a part of their collaborative professional learning programs.

Item 2 in Table 11 indicated the responses of collaborators (*M* = 4.76, *SD* = .964) differed from those of non-collaborators (*M* = 3.54, *SD* = 1.171). These data suggested that teachers who were identified as non-collaborators did not perceive they were involved with monitoring the effectiveness of the professional learning resources in their schools compared with their peers who were identified as collaborative.

Item 3 in table 11 demonstrated low means for both collaborators (*M* = 3.90, *SD* = 1.288) and non-collaborators (*M* = 3.29, *SD* = 1.230). These data illustrated that the respondents in both identified groups perceived professional learning expenses, such as registration, consultant fees, staff, and materials, were not openly discussed in their respective schools.

Item 5 in Table 11 indicated the responses of collaborators (*M* = 4.23, *SD* = 1.192) differed from those of non-collaborators (*M* = 3.28, *SD* = 1.208). These data

suggested that teachers who were identified as non-collaborators did not perceive they were involved in the decision-making process related to how professional learning resources were allocated when compared with their peers who were identified as collaborative.

Item 6 in Table 11 documented dissimilar means for both collaborators ($M = 4.74$, $SD = 1.110$) and non-collaborators ($M = 4.02$, $SD = 1.141$). These findings implied that professional learning was available at various times, including job-embedded experiences, before or after-school hours, and summer experiences with greater frequency in the teachers identified as collaborators versus those individuals who were identified as non-collaborative.

The fourth standard addressed in the Standards Assessment Inventory was comprised of eight Likert scale items designed to measure the perceptions of teachers on the Data Professional Learning Standard. A one way ANOVA was conducted to determine if there was a significant difference at the $p < .05$ level. The results are presented in Table 12.

Table 11

Comparison of Means and Standard Deviations Between Collaborators and Non-Collaborators for the Data Professional Learning Standard of the SAI

	Collaborators		Non-Collaborators		
	M	*SD*	*M*	*SD*	*p*
Data Standard Item 1: Some professional learning programs in my school, such as mentoring or coaching, are continuously evaluated to ensure quality results.	4.15	1.495	3.08	1.216	0.00*
Data Standard Item 2: In my school, teachers have an opportunity to evaluate each professional learning experience to determine its value and impact on student learning.	4.47	1.166	3.50	1.229	0.00*
Data Standard Item 3: In my school, various data such as teacher performance data, individual professional learning goals, and teacher perception data, are used to plan professional learning.	4.50	1.362	3.23	1.249	0.00*
Data Standard Item 4: My school uses a variety of student achievement data to plan professional learning that focuses on school improvement.	4.56	1.254	3.29	1.301	0.00*
Data Standard Item 5: In my school, teachers use what is learned from professional learning to adjust and inform teaching practices.	4.77	.980	3.92	.913	0.00*
Data s Standard Item 6: My school uses a variety of data to monitor the effectiveness of professional learning.	4.49	1.241	3.12	1.200	0.00*
Data Standard Item 7: A variety of data are used to assess the effectiveness of my school's professional learning.	4.31	1.280	2.98	1.237	0.00*
Data Standard Item 8: In my school, how to assess the effectiveness of the professional learning experience is determined before the professional learning plan is implemented.	3.93	1.489	2.73	1.194	0.00*

* $p < 0.05$.

There was a significant difference in the responses of collaborators and non-collaborators for every item in the Data Professional Learning Standard. Each survey item was noted to have a *p*-value of 0.00. Therefore, the null hypothesis (H4) was rejected.

All of the items analyzed in the Data Professional Learning Standard were found to be significant. The researcher selected items for discussion based on the uniqueness of the results for one or both groups of respondents to the survey. Item 6 in Table 12 documented variance in the means for both collaborators (M = 4.49, SD = 1.241) and non-collaborators (M = 3.12, SD = 1.200) related to the utilization of data. The results suggested that those teachers identified as collaborative perceive data were utilized to monitor the effectiveness of professional learning programs with more frequency than did their peers identified as non-collaborative.

Item 7 in Table 12 indicated a dissimilarity in the means for the responses of collaborators (M = 4.31, SD = 1.280) and non-collaborators (M = 2.98, SD = 1.237). These results documented that those individuals identified as non-collaborative reported that a variety of data were not utilized as often to evaluate the effectiveness of professional learning programs when compared with teachers identified as collaborative.

Item 8 in Table 12 demonstrated a disparity in the means for collaborators (M = 3.93, SD = 1.489) and non-collaborators (M = 2.73, SD = 1.194). These respective data points represented the lowest mean responses for the Data Professional Learning Standard of the Standards Assessment Inventory (SAI). The results for this item indicated there may be an implication regarding the lack of utilization of assessment of

effectiveness for professional learning activities prior to the implementation of professional learning plans within the schools of the respondents to the survey.

The fifth standard addressed in the Standards Assessment Inventory was comprised of seven Likert scale items designed to measure the perceptions of teachers on the Implementation Professional Learning Standard. A one way ANOVA was conducted to determine if there was a significant difference at the $p < .05$ level. The results are presented in Table 13.

Table 12

Comparison of Means and Standard Deviations Between Collaborators and Non-Collaborators for the Implementation Professional Learning Standard of the SAI

	Collaborators		Non-Collaborators		
	M	*SD*	*M*	*SD*	*p*
Implementation Standard Item 1: A primary goal for professional learning in my school is to enhance teaching practices to improve student performance.	5.24	.738	4.43	1.227	0.00*
Implementation Standard Item 2: Teachers in my school receive on-going support in various ways to improve teaching.	4.94	.936	3.98	1.048	0.00*
Implementation Standard Item 3: My school has a consistent professional learning plan in place for three to five years.	4.46	1.590	2.68	1.529	0.00*
Implementation Standard Item 4: My school's professional learning plan is aligned to school goals.	5.18	1.037	3.48	1.690	0.00*
Implementation Standard Item 5: In my school, teachers individually reflect about teaching practices and strategies.	4.75	.972	3.98	1.094	0.00*
Implementation Standard Item 6: Professional learning experiences planned at my school are based on research about effective school change.	4.59	1.385	3.32	1.385	0.00*
Implementation Standard Item 7: In my school, teachers give frequent feedback to colleagues to refine the implementation of instructional strategies.	4.34	1.160	3.32	1.033	0.00*

* $p < 0.05$.

There was a significant difference in the responses of collaborators and non-collaborators for every item in the Implementation Professional Learning Standard. Each survey item was noted to have a *p*-value of 0.00. Therefore, the null hypothesis (H5) was rejected.

All of the items analyzed in the Implementation Professional Learning Standard were found to be significant. The researcher selected items for discussion based on the uniqueness of the results for one or both groups of respondents to the survey. Item 1 in Table 13 documented variance in the means for both collaborators (M = 5.24, SD = .738) and non-collaborators (M = 4.43, SD = 1.227). The mean response for non-collaborators to this survey item was the highest mean response by the identified group for the Implementation section of the Standards Assessment Inventory. These results suggested that although a perceptual disparity existed between the groups that a commonality focused on enhancing teaching practices to improve student performance existed as a goal for many professional learning programs.

Item 3 in Table 13 indicated a dissimilarity in the means for collaborators (M = 4.46, SD = 1.590) and non-collaborators (M = 2.68, SD = 1.529). The mean response to this item for non-collaborators represented the lowest mean score for the Implementation Professional Learning Standard of the Standards Assessment Inventory. These results suggested that teachers identified as collaborators perceived their schools had a consistent professional learning plan in place for three to five years with increased frequency over their peers identified as non-collaborative.

Item 4 in Table 13 indicated a dissimilarity in the means for collaborators (M = 5.18, SD = 1.037) and non-collaborators (M = 3.48, SD = 1.690). These results suggested

that collaborators perceived their school's professional learning plan was aligned to school goals with increased frequency when compared to their peers identified as non-collaborative.

The sixth standard addressed in the Standards Assessment Inventory was comprised of seven Likert scale items designed to measure the perceptions of teachers on the Learning Designs Professional Learning Standard. A one way ANOVA was conducted to determine if there was a significant difference at the $p < .05$ level. The results are presented in Table 14.

Table 13

Comparison of Means and Standard Deviations Between Collaborators and Non-Collaborators for the Learning Designs Professional Learning Standard of the SAI

	Collaborators		Non-Collaborators		
	M	*SD*	*M*	*SD*	*p*
Learning Designs Standard Item 1: In my school, teachers' backgrounds, experience levels, and learning needs are considered when professional learning is planned and designed.	4.04	1.474	3.08	1.210	0.00*
Learning Designs Standard Item 2: The use of technology is evident in my school's professional learning.	5.07	.945	4.26	1.100	0.00*
Learning Designs Standard Item 3: Teachers in my school are responsible for selecting professional learning to enhance skills that improve student learning.	4.81	.884	3.83	1.055	0.00*
Learning Designs Standard Item 4: Professional learning in my school includes various forms of support to apply new practices.	4.70	1.027	3.52	.989	0.00*
Learning Designs Standard Item 5: In my school, participation in online professional learning opportunities is considered as a way to connect with colleagues and to learn from experts in education.	4.17	1.347	3.16	1.248	0.00*
Learning Designs Standard Item 6: In my school, teachers have opportunities to observe each other as one type of job-embedded professional learning.	4.11	1.214	3.26	1.114	0.00*
Learning Designs Standard Item 7: Teachers' input is taken into consideration when planning school-wide professional learning.	4.10	1.223	3.24	1.102	0.00*

* $p < 0.05$.

There was a significant difference in the responses of collaborators and non-collaborators for every item in the Learning Designs Professional Learning Standard. Each survey item was noted to have a *p*-value of 0.00. Therefore, the null hypothesis (H6) was rejected.

All of the items analyzed in the Implementation Professional Learning Standard were found to be significant. The researcher selected items for discussion based on the uniqueness of the results for one or both groups of respondents to the survey. Item 1 in Table 14 documented variance in the means for both collaborators (M = 4.04, SD = 1.474) and non-collaborators (M = 3.08, SD = 1.210). The mean responses for collaborators and non-collaborators to this survey item were the lowest mean responses by the identified groups for the Learning Designs Professional Learning Standard section of the Standards Assessment Inventory. These results suggested that respondents to the survey perceived teachers' backgrounds, experience levels, and learning needs were not considered at high levels when professional learning was planned and designed.

Item 2 in Table 14 indicated a dissimilarity in the means for collaborators (M = 5.07, SD = .945) and non-collaborators (M = 4.26, SD = 1.100). The mean responses to this item for non-collaborators represented the highest mean scores for the Implementation Professional Learning Standard of the Standards Assessment Inventory. These results indicated that technology was being utilized for professional learning in both identified groups.

Item 4 in Table 14 documented variance in the mean responses of collaborators (M = 4.40, SD = 1.027) and non-collaborators (M=3.52, SD=.989). The difference in mean responses suggested that teachers identified as collaborative perceived their schools

offered various forms of support to apply new practices acquired through professional learning at higher rates than their peers identified as working in non-collaborative environments.

The seventh standard addressed in the Standards Assessment Inventory was comprised of seven Likert scale items designed to measure the perceptions of teachers on the Outcomes Professional Learning Standard. A one way ANOVA was conducted to determine if there was a significant difference at the $p < .05$ level. The results are presented in Table 15.

Table 14

Comparison of Means and Standard Deviations Between Collaborators and Non-Collaborators for the Outcomes Professional Learning Standard of the SAI

	Collaborators		Non-Collaborators		
	M	*SD*	*M*	*SD*	*p*
Outcomes Standard Item 1: Professional learning at my school focuses on the curriculum and how students learn.	4.80	.859	4.05	1.121	0.00*
Outcomes Standard Item 2: Professional learning in my school contributes to increased student achievement.	4.84	.965	3.71	1.260	0.00*
Outcomes Standard Item 3: Professional learning experiences in my school connect with teacher performance standards (e.g., teacher preparation standards, licensing standards, etc.).	4.55	1.293	3.41	1.409	0.00*
Outcomes Standard Item 4: All professional staff members in my school are held to high standards to increase student learning.	5.01	.925	4.07	1.244	0.00*
Outcomes Standard Item 5: In my school, professional learning supports teachers to develop new learning and then to expand and deepen that learning over time.	4.89	.901	3.83	1.102	0.00*
Outcomes Standard Item 6: Student learning outcomes are used to determine my school's professional learning plan.	4.56	1.378	3.20	1.417	0.00*
Outcomes Standard Item 7: My professional learning this school year is connected to previous professional learning.	4.78	1.019	3.72	1.257	0.00*

* $p < 0.05$.

There was a significant difference in the responses of collaborators and non-collaborators for every item in the Learning Designs Professional Learning Standard. Each survey item was noted to have a *p*-value of 0.00. Therefore, the null hypothesis (H7) was rejected.

All of the items analyzed in the Outcomes Professional Learning Standard were found to be significant. The researcher selected items for discussion based on the uniqueness of the results for one or both groups of respondents to the survey. Item 1 in Table 15 documented variance in the means for both collaborators (M = 4.80, SD = .859) and non-collaborators (M = 4.05, SD = 1.121). The mean response for non-collaborators to this survey item was the second highest mean response by the identified group for the Outcomes Professional Learning Standard section of the Standards Assessment Inventory. These results suggested a perceptual disparity existed between the groups. However, the results also indicated the schools of the participating teachers shared a common practice of ensuring professional learning was focused on the curriculum and the learning needs of students.

Item 2 in Table 15 documented variance in the mean responses of collaborators (M = 4.84, SD = .965) and non-collaborators (M = 3.71, SD = 1.260). The difference in mean responses suggested that teachers identified as collaborative perceived that professional learning activities contributed to increased student achievement at a high rate than their peers identified as non-collaborative.

Item 6 in Table 15 indicated dissimilarity in the mean results for collaborators (M = 4.56, SD = 1.378) and non-collaborators (M = 3.20, SD = 1.417). These results

indicated that those teachers identified as collaborative perceived that student learning outcomes were more often utilized to determine the professional learning plan for the school as opposed to teachers identified as non-collaborative.

Overall Results

In response to the two research questions, all of the items in the Standards Assessment Inventory (SAI) were found to be significant when comparing the perceptions of teachers identified as collaborators to those noted as non-collaborators. Findings related to Research Question 1 recognized there was a significant difference in the total perceptions of professional learning when comparing responses of these two groups of teachers. Findings related to Research Question 2 indicated a significant difference in all items. The researcher selected multiple items from the results for additional analysis as detailed in the inferential statistics section of the study. These findings are synthesized for the purpose of clarity below. The overall number of participants in the study (N = 300) limited the ability of the researcher to generalize results to larger populations.

Results from item 1 in Table 9 yielded the highest means in the survey section for both collaborators (M = 5.37, SD = .626) and non-collaborators (M = 3.52, SD = 1.396). These data indicated the pervasive utilization of policy and procedure in support of collaborative professional learning activities.

Item 4 in Table 9 indicated a significant difference in means between collaborators (M = 3.87, SD = 1.354) and non-collaborators (M = 2.45, SD =1.145). The variance between the means is less significant than the other items in the Learning Communities standard, but the mean response from collaborators was lower for this item

than any other item in this section of the survey. The results for this item indicated that while a significant difference between collaborators and non-collaborators exists, there may be an implication for all teachers responding to the survey regarding the level in which non-staff members, such as students, parents, and community members, were included in collaborative professional learning activities.

Comparison of means and standard deviation for item 7 in Table 9 indicated the mean score for collaborators (M = 4.61, SD = 2.69) was significantly different from non-collaborators (M = 2.69, SD = 1.175). These results indicated collaborators perceived increased levels of group accountability for school goals over non-collaborators.

Results from item 4 in Table 10 documented high means for both collaborators (M = 5.11, SD = .839) and non-collaborators (M = 4.05, SD = 1.173). These data indicated that school leaders in districts where both groups of teachers were employed regarded professional learning as a top priority for all staff.

Item 5 in Table 10 indicated a variance in the means of collaborators (M = 5.11, SD = .885) and non-collaborators (M = 3.95, SD = 1.167). These findings demonstrated that respondents identified as collaborative perceived that their leaders created a positive culture that embraced characteristics such as collaboration, high expectations, respect, trust, and constructive feedback at a higher rate than their non-collaborative peers.

Item 6 in Table 10 demonstrated a disparity in the means of collaborators (M = 4.94, SD = .929) and non-collaborators (M = 3.92, SD = 1.142). Responses to the survey item indicated that leaders of teachers who were identified as collaborative were more likely to have discussed with staff the relationship between improved student achievement and professional learning.

Item 7 in Table 10 documented high means for teachers noted as collaborators (*M* = 5.09, *SD* = .835) and for those determined as non-collaborators (*M* = 4.11, *SD* = 1.363). The mean response for non-collaborators was the highest in the survey section. These data indicated that leaders of both identified groups often considered all staff members capable of being professional learning leaders.

Item 1 in Table 11 documented high means for both collaborators (*M* = 5.18, *SD* = .670) and non-collaborators (*M* = 4.52, *SD* = 1.080). These findings suggested the focus of professional learning programs in the schools of survey respondents were focused on the application of new skills with students as a part of their collaborative professional learning programs.

Item 2 in Table 11 indicated the responses of collaborators (*M* = 4.76, *SD* = .964) differed from those of non-collaborators (*M* = 3.54, *SD* = 1.171). These data suggested that teachers who were identified as non-collaborators did not perceive they were involved with monitoring the effectiveness of the professional learning resources in their schools compared with their peers who were identified as collaborative.

Item 3 in table 11 demonstrated low means for both collaborators (*M* = 3.90, *SD* = 1.288) and non-collaborators (*M* = 3.29, *SD* = 1.230). These data illustrated that the respondents in both identified groups perceived professional learning expenses, such as registration, consultant fees, staff, and materials, were resources about which they had limited input in their respective schools.

Item 5 in Table 11 indicated the responses of collaborators (*M* = 4.23, *SD* = 1.192) differed from those of non-collaborators (*M* = 3.28, *SD* = 1.208). These data suggested that teachers who were identified as non-collaborators did not perceive they

were not involved with the decision-making process related to how professional learning resources were allocated when compared with their peers who were identified as collaborative.

Item 6 in Table 11 documented dissimilar means for both collaborators (M = 4.74, SD = 1.110) and non-collaborators (M = 4.02, SD = 1.141). These findings implied that professional learning was more likely to be available at various times, including job-embedded experiences, before or after-school hours, and as summer experiences in schools, where teachers were identified as collaborators versus those respondents identified as non-collaborative.

Item 6 in Table 12 documented variance in the means for both collaborators (M = 4.49, SD = 1.241) and non-collaborators (M = 3.12, SD = 1.200) related to the utilization of data. The results suggested that those teachers identified as collaborative perceived data was utilized to monitor the effectiveness of professional learning programs with more frequency than their peers identified as non-collaborative.

Item 7 in Table 12 indicated a dissimilarity in the means for the responses of collaborators (M = 4.31, SD = 1.280) and non-collaborators (M = 2.98, SD = 1.237). These results indicated that those teachers identified as non-collaborative reported that a variety of data were not utilized as often to evaluate the effectiveness of professional learning programs when compared with teachers who were identified as collaborative.

Item 8 in Table 12 demonstrated a disparity in the means for collaborators (M = 3.93, SD = 1.489) and non-collaborators (M = 2.73, SD = 1.194). These respective mean data points represented the lowest mean responses for the Data Professional Learning Standard section of the Standards Assessment Inventory (SAI). The results for this item

indicated that while a significant difference between collaborators and non-collaborators exists, there may be an implication for all teachers responding to the survey regarding the assessment of effectiveness for professional learning activities prior to the implementation of professional learning plans.

Item 1 in Table 13 documented variance in the means for both collaborators (M = 5.24, SD = .738) and non-collaborators (M = 4.43, SD = 1.227). The mean response for non-collaborators to this survey item was the highest mean response by the identified group for the Implementation Professional Learning Standard section of the Standards Assessment Inventory (SAI). These results suggested that although a perceptual disparity existed between the groups, a commonality focused on enhancing teaching practices to improve student performance existed as a goal for many professional learning programs in the schools of survey respondents.

Item 3 in Table 13 indicated a dissimilarity in the means for collaborators (M = 4.46, SD = 1.590) and non-collaborators (M = 2.68, SD = 1.529). The mean response to this item for non-collaborators represented the lowest mean score for the Implementation Professional Learning Standard of the Standards Assessment Inventory (SAI). These results suggested that teachers identified as collaborators perceived their schools had a consistent professional learning plan in place for three-to-five years with increased frequency over their peers identified as non-collaborative.

Item 4 in Table 13 indicated a dissimilarity in the means for collaborators (M = 5.18, SD = 1.037) and non-collaborators (M = 3.48, SD = 1.690). These results suggested that collaborators perceived their school's professional learning plan was aligned to school goals with increased frequency over their peers identified as non-collaborative.

Item 1 in Table 14 documented variance in the means for both collaborators (*M* = 4.04, *SD* = 1.474) and non-collaborators (*M* = 3.08, *SD* = 1.210). The mean responses for collaborators and non-collaborators to this survey item were the lowest mean responses by the identified groups for the Learning Designs section of the Standards Assessment Inventory (SAI). These results suggested that both groups of respondents perceived teachers' backgrounds, experience levels, and learning needs were not considered at high levels when professional learning was planned and designed.

Item 2 in Table 14 indicated a dissimilarity in the means for collaborators (*M* = 5.07, *SD* = .945) and non-collaborators (*M* = 4.26, *SD* = 1.100). The mean response to this item for non-collaborators represented the highest mean scores for the Implementation Professional Learning Standard of the Standards Assessment Inventory (SAI). These results documented that some level of technology was being utilized for professional learning in both identified groups.

Item 4 in Table 14 documented variance in the mean responses of collaborators (*M* = 4.40, *SD* = 1.027) and non-collaborators (*M* = 3.52, *SD* = .989). The difference in mean responses suggested that teachers identified as collaborative perceived their schools offered various forms of support to apply new practices acquired through professional learning at higher rates than their peers identified as working in non-collaborative environments.

Item 1 in Table 15 documented variance in the means for both collaborators (*M* = 4.80, *SD* = .859) and non-collaborators (*M* = 4.05, *SD* = 1.121). The mean response for non-collaborators to this survey item was the second highest mean response by the identified group in the Outcomes Professional Learning Standard section of the Standards

Assessment Inventory. These results suggested that although a perceptual disparity existed between the groups that the schools of the participating teachers shared a common practice of ensuring professional learning was focused on the learning needs of students.

Item 2 in Table 15 documented variance in the mean responses of collaborators (M = 4.84, SD = .965) and non-collaborators (M = 3.71, SD = 1.260). The difference in mean responses suggested that teachers identified as collaborative perceived that professional learning activities contributed to increased student achievement at a higher rate than their peers identified as non-collaborative.

Item 6 in Table 15 indicated dissimilarity in the mean results for collaborators (M = 4.56, SD = 1.378) and non-collaborators (M = 3.20, SD = 1.417). These results indicated that those teachers identified as collaborative perceived that student learning outcomes were more often utilized to determine the professional learning plan for the school as opposed to teachers identified as non-collaborative.

Summary

Chapter Four focused on the findings of the research study. The details included a recapitulation of the research questions and null-hypotheses utilized for the study, a summary and findings from descriptive and inferential statistics for the study, and a summary of the overall results from the analysis of data for the research study. Chapter Five will summarize conclusions from data analysis as well as provide recommendations for future study in the area of professional learning and collaborative practices.

CHAPTER FIVE

CONCLUSIONS

Introduction

The purpose of this quantitative study was designed to examine the perceptions of high school teachers related to the professional learning within their respective school systems and to determine if there were differences in the perceptions of those individuals identified as collaborative versus those who were identified as non-collaborative. Collaborative professional learning is essential to effective schools and educational professionals. It is vital that effective professional learning occurs in every school (Hargreaves & Shirley, 2009). Educators should be actively engaged in collaborative professional learning throughout all phases of their professional careers (Fullan, Rincón-Gallardo, & Hargreaves, 2015).

Research evidence demonstrated that the most effective environment for professional learning is a collaborative environment in which teachers have the opportunity to work collaboratively with their peers (Darling-Hammond et al., 2017). Elmore (2003) noted that practice privacy inhibited innovation (Elmore, 2000). Collaboration can only occur with the proper systems, frameworks, practices, and mindset (Senge, 2006; Schwarz, 2013; Darling-Hammond et al., 2017).

To address the purpose of the study, the researcher posed two research questions:

1. What if any are the differences between Missouri high school teachers' perceptions regarding the effectiveness of their professional learning opportunities when research-based collaboration practices are utilized compared to when research-based collaborative practices are not utilized?

2. What are the perceptual differences of high school teachers in Missouri about the seven standards for professional learning: learning communities, leadership, resources, data, learning design, implementation, and outcomes when research-based collaboration practices are utilized compared to no utilization of research-based professional learning practices?

The researcher determined that there were significant differences between Missouri high school teachers' perceptions regarding the effectiveness of their professional learning opportunities when research-based collaboration practices were utilized compared to when research-based collaborative practices were not utilized through an analysis of the survey results for the research study. The researcher further determined there were significant perceptual differences between high school teachers in Missouri related to the seven standards for professional learning: learning communities, leadership, resources, data, learning design, implementation, and outcomes when research-based collaboration practices were utilized compared to no utilization of research-based professional learning practices as determined by an analysis of survey results for the research study. All of the null-hypotheses for the research study were rejected as the researcher determined there were significant perceptual differences between teachers identified as collaborators and those identified as non-collaborators regarding the seven standards for professional learning. The overall number of participants in the study (N = 300) limited the ability of the researcher to generalize results to larger populations.

Conclusions

The first conclusion of this study indicated effective school leaders should engage various stakeholders in decision-making processes related to professional learning to ensure that professional learning is a top priority in schools. Staff must be involved in developing policy and procedures and be seen as capable professional learning leaders. Utilizing feedback from non-staff members including students and community members was also noted in the findings as an important consideration. Richard Elmore (2000) would define these practices as distributed leadership. Distributed leadership values the expertise and input from various stakeholders as an essential leadership principle.

The second conclusion of this study indicated that professional learning programs should be job-embedded and based on the application of instructional skills to meet the learning needs of students with a clear understanding of the relationship between professional learning and increased student achievement. A variety of data should be utilized collaboratively by all stakeholders in planning professional learning programs and in analyzing the effectiveness of those programs. This conclusion echoed the research of Garet et al. (2001) who identified three essential facets of professional learning: content focus, active participation, and coherence. (Garet et al., 2001; Learning Forward, 2017f).

The third conclusion of this study demonstrated that professional learning plans should be designed around student learning outcomes and the impact of professional learning programs on the curriculum. Plans should be implemented over the course of multiple years to ensure they are aligned with school goals and that school leaders are afforded opportunities to embed the various forms of support necessary to ensure new

practices acquired via professional learning are implemented as designed (Reeves & Flach, 2011; Learning Forward, 2017f)

The fourth conclusion of this study indicated that school leaders should create a positive culture, encouraging the growth of teacher-leaders who should assume collective responsibility for school goals and ensure resources are allocated in a manner responsive to the needs of teachers. School leaders should establish and nurture a culture facilitating opportunities for professional learning through the establishment of protected time, procedures for the observation of other instructors, professional learning communities, and an expectation of continuous professional learning (Penuel et al., 2007; Blank & de la Alas, 2009; Darling-Hammond et al., 2009)

Professional Implications

The research study was built around and upon the seven standards for professional learning created by Learning Forward. The seven standards for professional learning represent the third iteration of professional learning standards outlining the attributes of professional learning leading to improved student learning outcomes, effective teaching practices, and enhanced leadership practices designed to facilitate professional learning. The seven identified standards were leadership, data, learning designs, outcomes, implementation, resources, and learning communities (Learning Forward, 2017i). The professional implications of the research study have been presented in terms of the seven standards for professional learning.

Learning Communities. The first professional implication for this standard indicated the importance for school leaders to ensure policies and procedures are in place that support a vision for learning communities. Professional learning activities

implemented consistently over time and focused on learning outcomes for students were impactful in facilitating constructive policy (Garet et al., 2001; Desimone et al., 2002; Chambers, Lam, & Mahitivnichcha, 2008; Blank & de la Alas, 2009). Extant research combined with the results from this study suggest that policy and procedure are integral components of successful learning communities but that successful learning communities also aid in the creation of policy and procedure. It would appear that there may be a complex relationship in which policy and procedure circumscribe the work of learning communities, but the work of learning communities impact the creation of policy and procedure to create the necessary environment for learning communities to thrive.

School leaders must also consider a second implication related to this standard. It is imperative for teachers in learning communities to hold each other accountable for the achievement of the established school goals. Katzenbach and Smith (2015) noted that highly effective teams are collectively committed to the development of working relationships and that those relationships translate into collective accountability for the members of the collaborative team. Real team performance necessitates impact beyond the strengths of individual team members; it requires a collaborative blending of knowledge and skills that produce mutual accountability within the team (Katzenbach & Smith, 2015). Elmore (2000) noted that mutual accountability and mutual understanding would ensure learning teams are engaged in the work of improving student performance and instructional practice. Teachers and leaders must focus the work of professional learning on student outcomes and student achievement. Mutual accountability aids teachers and school leaders in ensuring the work of the learning community remains

focused on the right work for the right reasons (Elmore, 2000; Katzenbach & Smith, 2015).

Leadership. The first professional implication for the Leadership Standard was to recognize as a school administrator the importance of prioritizing professional learning for all staff at the district, building, and classroom levels. School leaders must create high expectations for professional learning through communication and directly connect the link between the learning of professional educators and the learning of students (Learning Forward, 2017d).

This study supported a second implication indicating that effective leaders were instrumental in creating a positive culture for professional learning that embraced characteristics such as collaboration, high expectations, respect, trust, and constructive feedback. Senge supported this type of practice and posited that learning organizations depicted a culture where there was a focus on building the capacity of participants through opportunities for engagement in collaborative learning, intentionally designed to improve their knowledge and skills for deep learning and the betterment of the group. A professional learning organization culture created the structure essential for building the capacity of employees and emphasized processes and standards necessary to ensure the abilities of individuals is developed to the highest level (Senge, 2006; Senge, 2012).

School leaders must be intentional in creating the culture of the school. They must also make clear the relationship to all participants within their respective school environments the relationship between professional learning and student achievement. Collaborative professional learning works only if it is truly collaborative and reflects the

needs of the learners. Everyone in the learning community must be held accountable for a continuous cycle of collaborative professional learning (Darling-Hammond et al., 2017).

Resources. The first implication for school leaders as it related to the Resource Standard was for professional learning programs to be focused on the application of new skills at the classroom level (Learning Forward, 2017i). Resources for professional learning must be targeted to those activities that will directly impact the professional practices of teachers resulting in increased levels of student achievement. If resources are allocated to professional learning activities that lack a clear connection to the work being done within the school then they have been misallocated.

The second implication for professional practice related to the Resource Standard for Professional Learning was that leaders must be intentional in involving teachers in decisions related to resource allocation for the professional learning program. If the planning, design, and allocation of resources for professional learning is something done *with* teachers, rather than *to* teachers, it increases the potential for participants to exhibit high levels of commitment to the professional learning activity (Schwarz, 2013).

The third Resource Standard implication for professional practice was related to the need for job-embedded time to do the work of collaborative professional learning. School leaders must be intentional about creating a schedule that is conducive to professional learning. In high-performing international schools, implementation of professional learning activities is embedded as an integral component of the school system and seen as a vital part of the education process (Darling-Hammond et al., 2017). Ingersol and Strong (2011) found opportunities for collaborative learning and peer learning activities were factors in retaining teachers in the profession. True collaborative

learning is facilitated by allowing teachers time to observe one another's professional practices and by providing job-embedded time for collaborative activities. Teachers in high-performing systems are not in front of students continuously throughout the instructional day. (Darling-Hammond et al., 2017). School leaders know that time is a precious commodity. Time spent in collaborative professional learning should be viewed as in investment rather than a simple expenditure.

Data. The implication for the Data Standard was centered on teachers utilizing a variety of data to plan and evaluate the effectiveness of professional learning programs. Detailed analysis and consistent utilization are requisite for data to inform decisions regarding professional learning. (Learning Forward, 2017a; Hargreaves et al., 2014). Data should not thoughtlessly compel stakeholders but should alternatively be utilized in a significant and constructive manner (Hargreaves et al., 2014).

The goal for professional learning must remain focused on the improvement of professional practices to impact student achievement positively. Professional learning, therefore, must be based on data related to specific learning outcomes. Educators engaged in detailed and authentic analysis of data around the needs and issues within their respective schools will drastically increase the chances that professional learning will address the goal of student achievement. Detailed analysis and consistent utilization are requisite for data to inform decisions regarding professional learning (Learning Forward, 2017; Hargreaves et al., 2014).

Utilizing data aids educators in making better decisions. Educators should be encouraged and endowed with the ability to identify problems at the building level and consider how reforms may assist in finding solutions to those issues (Learning Forward,

2017a; Hargreaves, 1996). The information needed to engage in substantive review of relevant data already exists in schools. If educators are not empowered to utilize data to make informed decisions regarding planned professional learning and to evaluate the effectiveness of professional learning activities, then educational leaders must acknowledge that not only do they lack a clear understanding of the antecedents of success and failure but that they cannot be bothered to discover them.

Implementation. The first implication for the Implementation Standard indicated the need for the creation of professional learning programs focused on professional practices that impact student achievement. Planning is essential to the implementation of collaborative professional learning programs. Professional learning plans need to be collaboratively developed by stakeholders to address the learning need of schools for three-to-five years (Darling-Hammond et al., 2017; Learning Forward, 2017i).

Professional learning is vital to the work of professional educators. It cannot be perceived as something that is done *to* teachers. Rather, it is essential it be perceived as something done *with* teachers (Garet et al., 2001; Desimone et al., 2002; Blank, de las Alas, & Smith, 2007; Learning Forward, 2017c).

Professional educators are sometimes perceived as faddists in regard to professional learning, jumping from one solution to another in an effort to find results in the here and now. School leaders must have a clear, consistent vision for collaborative professional learning that is aligned with the established goals for the school. They should communicate that vision in an unceasing clarion call to action. Implementation of quality professional learning programs will not occur without high levels of intentionality applied consistently over the course of years.

The second implication for the Implementation Standard indicated that leaders need to ensure professional learning plans based on identified and measurable student learning outcomes are in place prior to the implementation of professional learning. Plans for professional learning should address multiple years of consistent implementation with established mechanisms for measuring the effectiveness of the overall professional learning program.

Learning Designs. The implication for the Learning Designs standard suggested adults learn best when the learning is tied to prior knowledge, applicable to work they are doing, and is perceived as valuable. Professional learning opportunities should be planned with the needs of teachers as a core underpinning. Professional learning designed for the background, experience levels, and learning needs of teachers will facilitate the implementation of new pedagogical practices in support of student learning outcomes. Effectively designed professional learning programs are designed to move educators forward in their professional practice and support increased levels of student achievement.

Professional learning programs designed with input from teachers based on the established learning needs of the teachers and the organization have a higher chance of realizing the desired outcomes (Learning Forward, 2017f). An effectively designed professional learning program, therefore, should be viewed as one that is collaboratively developed by stakeholders to meet the needs of the learners.

Outcomes. The professional implication for the Outcomes Standard indicated the need for professional learning to have an unwavering focus on impacting the curriculum and the needs of students. The outcomes for professional learning are defined regarding

learning, changes in the curriculum, and changes in the professional practices of educators (Learning Forward, 2017g). Cohen and Hill (2000) found the amount of time spent engaging in professional learning activities had a direct correlation with the implementation of innovative instructional outcomes in the classroom.

Student learning and achievement at high levels must be a logical outcome of professional learning. If teachers do not perceive that professional learning is having a positive impact on student outcomes, then there is a disconnect in the established goals for the professional learning programs. Professional educators are to be held responsible for the implementation of instructional strategies to facilitate student learning (DuFour, DuFour, & Eaker, 2009). Teacher leaders and school leaders working collaboratively must be intentional in the establishment of professional learning with clearly defined and measurable outcomes.

Recommendations for Future Research

The population size of the research study *(N*=300) limits the broader application of the results realized from this study. The researcher would advocate for a more comprehensive survey of teachers in the same, or parallel, demographics to determine if the statistical significance of the results can be verified or repeated. Utilization of the standards assessment inventory, as developed by Learning Forward, affords a unique opportunity for the research to be extended by means of an established survey instrument.

There is potential for a parallel study among high school administrators to determine if the perceptions of administrators align with high school teachers regarding professional learning. Utilization of the Standards Assessment Inventory would allow a researcher to reproduce the current study with another audience.

The researcher suggests duplication of this study in Kindergarten-Eighth grade school districts in the state of Missouri to determine if the results are commensurate with the results from the current study. Many Kindergarten-Eighth grade school districts lack the resources of their Kindergarten-Twelfth grade counterpart districts. A study at this level could provide insights regarding the nature of professional development in Kindergarten-Eighth grade school districts.

Finally, the researcher recommends replication of this study with an emphasis on resource allocation. Comparing the perceptions of teachers regarding professional learning from the standpoint of the resource allocation of schools, including money, time, and materials could potentially yield results with implications for per-teacher expenditures for professional learning.

Summary

Chapter Five summarized conclusions from data analysis as well as provided recommendations for future study in the area of professional learning and collaborative practices. The researcher answered the two primary research questions. There was a significant difference in the perceptions of teachers identified as collaborative and those identified as non-collaborative regarding professional learning and to the seven standards for professional learning as developed by Learning Forward.

In the conclusions section of Chapter Five the researcher noted that effective collaborative professional learning programs should be cooperatively developed, implemented, and evaluated. Professional learning should have a clear connection to previous professional learning, the work currently being done by teachers, and to student learning outcomes and achievement. Additionally, the researcher noted the importance of

leadership related to professional learning, emphasizing the need for leaders to distribute leadership and to utilize feedback to ensure professional learning is, and remains, a top priority.

The researcher noted the professional implications of the study through the lens of the seven standards for professional learning: learning communities, leadership, resources, data, implementation, and outcomes. The overall number of participants in the study (N = 300) limited the ability of the researcher to generalize results to larger populations. Despite that limitation the researcher was able to make recommendations based on the results of the study and the existing literature to professional educators regarding collaborative professional learning. Finally, the researcher provided recommendations for future research. Duplication of the study at the national level, among administrators, and Kindergarten-Eighth grade school districts in the state of Missouri were recommended as areas for potential future studies. The researcher concluded the recommendations by advocating for a study on the subject from the perspective of resource allocation.

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APPENDIX A: SURVEY PERMISSION LETTER

January 16, 2018

Scott Dill
1705 Zehm Ave.
Poplar Bluff, MO 63901

Dear Scott,

Learning Forward grants you permission to use the Standards Assessment Inventory (SAI) in your doctoral dissertation research as an instrument to compare perspectives on professional learning between teachers who identify as collaborative and those who identify as non-collaborative.

Please ensure that this credit line appears in your work in reference to the SAI:

"Used with permission of Learning Forward, www.learningforward.org.
All rights reserved."

Good luck in your research in pursuit of your

doctorate. Sincerely,

Tom Manning
Associate Director of Consulting and Networks, Learning
Forward 17330 Preston Road, Suite 106-D
Dallas, Texas 75252
(972) 421-0888
tom.manning@learningforward.org

APPENDIX B: TEACHER CONSENT TO CONDUCT RESEARCH

By clicking, "I Agree," you are giving consent to participate in this research project and understand the following:

Project Background
This project involves gathering data through the Question Pro online survey that follows, and will look into the perceptions of teachers regarding professional learning. The data will be collected for analysis and may be published. Participants must of at least 18 years of age to participate and must currently hold a title of certified high-school teacher in a public school setting, which houses grades 9-12, in any combination.

Purpose
This quantitative study was designed to examine the perceptions of high school teachers related to collaboratives professional learning within their respective school systems and to determine if there are differences in the perceptions of those individuals who identify as collaborative versus those individuals who identify as non-collaborative.

Voluntary
The survey is entirely voluntary. You may refuse to answer any question or choose to withdraw from the study at any time, without any penalty or loss of benefits to which you are otherwise entitled.

Procedures
Participants in the research study will receive the email via their superintendent that includes the online survey invitations and a link to the survey instrument. The invitation to participate will be sent to all teachers in Missouri public schools with the following exceptions: teachers in schools designed to meet the needs of disabilities or gifted students were excluded, as were all charter, private, and parochial schools.

Duration of Involvement
Participation in this study should only take approximately 30 minutes or less. Following the survey, your participation will be complete. No further involvement is necessary. Superintendents or participants may request to receive a copy of the findings from the research when complete.

Anonymity
Your anonymity will be maintained in that a participant's name will not be collected, nor will any other information that could potentially identify participants be collected, appear on the survey or in the published study itself. Question Pro is a secure, password-protected system that will keep the data from this study safe and anonymous. The data will only be reported in cumulative form. Anonymity for all participants is guaranteed.

Risks
This project does not pose any risks greater than those encountered in everyday life.

Benefits
Your participation in this research project will enhance the information base for collaboration and professional learning. Additional benefits might include insight into the perspectives of high-school teachers in the state of Missouri in planning future professional learning opportunities.

Copies of the findings of this research study will be made available upon request.

Thank you for your assistance in providing information regarding your perceptions of professional learning. Your time and effort are much appreciated. If you have questions regarding this study, please contact me at (417)-217-9030, or scottdill@pb.k12.mo.us. You may also contact my Faculty Advisor, Dr. Pam Hedgpeth, at (417) 328-1449, or phedgpeth@sbuniv.edu.
The SBU Research Review Board has reviewed this study. If you have questions regarding your rights as a participant in research, please feel free to contact the Research Review Board Chair, Martaun Stockstill at (417) 328-2089, or RRB@sbuniv.edu. Thank you in advance for your assistance with this research project

Sincerely,

Scott Dill, Doctoral Candidate
Southwest Baptist University

APPENDIX C: STANDARDS ASSESSMENT INVENTORY ITEMS

The Standards Assessment Inventory was used with permission of Learning Forward, www.learningforward.org. All rights reserved.

Demographic items:

1. Role:
- Content area teacher
- Support teacher
- Elective or special area teacher

2. Experience level as a teacher:
- Less than 1 year
- 1-4 years
- 5-10 years
- 11-16 years
- 17-25 years
- More than 25 years

3. Years at current school:
- 0-1
- 2-4
- 5-9
- 10-20
- 21 or more

4. School setting:
- Career/technical
- College preparatory
- Early learning center
- Early childhood
- Elementary
- Middle
- High

5. School governance:

- Corporation
- Faith-based
- Private, non-faith-based
- Private charter
- Public
- Public charter

SURVEY ITEMS

All items in the SAI use the following Likert scale items as responses:

- Don’t know
- Never
- Seldom
- Sometimes
- Frequently
- Always

Learning Communities

1. My school system has policies and procedures that support the vision for learning communities in schools.

2. Learning communities in my school meet several times per week to collaborate on how to improve student learning.

3. Learning community members in my school believe the responsibility to improve student learning is shared by all stakeholders, such as all staff members, district personnel, families, and community members.

4. In my school, some of the learning community members include non-staff members, such as students, parents, community members.

5. My school's learning communities are structured for teachers to engage in the continuous improvement cycle (i.e., data analysis, planning, implementation, reflection, and evaluation).

6. In my school, learning community members demonstrate effective communication and relationship skills so that a high level of trust exists among the group.

7. All members of the learning communities in my school hold each other accountable to achieve the school's goals.

Leadership

8. My school's leaders provide teachers with equitable resources to support our individual and collaborative goals for professional learning.

9. My school's leaders are active participants with other staff members in the school's professional learning.

10. My school's leaders advocate for resources to fully support professional learning.

11. My school's leaders regard professional learning as a top priority for all staff.

12. My school's leaders cultivate a positive culture that embraces characteristics such as, collaboration, high expectations, respect, trust, and constructive feedback.

13. My school's leaders speak about the important relationship between improved student achievement and professional learning.

14. My school's leaders consider all staff members capable of being professional learning leaders.

Resources

15. Practicing and applying new skills with students in my classroom are regarded as important learning experiences in my school.

16. Teachers in my school are involved with monitoring the effectiveness of the professional learning resources.

17. Professional learning expenses, such as registration and consultant fees, staff, and materials, are openly discussed in my school.

18. In my school, time is available for teachers during the school day for professional learning.

19. Teachers in my school are involved with the decision-making about how professional learning resources are allocated.

20. Professional learning is available to me at various times, such as job embedded experiences, before or after-school hours, and summer experiences.

21. Teachers in my school have access to various technology resources for professional learning.

Data

22. Some professional learning programs in my school, such as mentoring or coaching, are continuously evaluated to ensure quality results.

23. In my school, teachers have an opportunity to evaluate each professional learning experience to determine its value and impact on student learning.

24. In my school, various data such as teacher performance data, individual professional learning goals, and teacher perception data, are used to plan professional learning.

25. My school uses a variety of student achievement data to plan professional learning that focuses on school improvement.

26. In my school, teachers use what is learned from professional learning to adjust and inform teaching practices.

27. My school uses a variety of data to monitor the effectiveness of professional learning.

28. A variety of data are used to assess the effectiveness of my school's professional learning.

29. In my school, how to assess the effectiveness of the professional learning experience is determined before the professional learning plan is implemented.

Learning Designs

30. In my school, teachers' backgrounds, experience levels, and learning needs are considered when professional learning is planned and designed.

31. The use of technology is evident in my school's professional learning.

32. Teachers in my school are responsible for selecting professional learning to enhance skills that improve student learning.

33. Professional learning in my school includes various forms of support to apply new practices.

34. In my school, participation in online professional learning opportunities is considered as a way to connect with colleagues, and to learn from experts in education.

35. In my school, teachers have opportunities to observe each other as one type of job-embedded professional learning.

36. Teachers' input is taken into consideration when planning school-wide professional learning.

Implementation

37. A primary goal for professional learning in my school is to enhance teaching practices to improve student performance.

38. Teachers in my school receive on-going support in various ways to improve teaching.

39. My school has a consistent professional learning plan in place for three to five years.

40. My school's professional learning plan is aligned to school goals.

41. In my school, teachers individually reflect about teaching practices and strategies.

42. Professional learning experiences planned at my school are based on research about effective school change.

43. In my school, teachers give frequent feedback to colleagues to refine the implementation of instructional strategies.

Outcomes

44. Professional learning at my school focuses on the curriculum and how students learn.

45. Professional learning in my school contributes to increased student achievement.

46. Professional learning experiences in my school connect with teacher performance standards (e.g., teacher preparation standards, licensing standards, etc.).

47. All professional staff members in my school are held to high standards to increase student learning.

48. In my school, professional learning supports teachers to develop new learning and then to expand and deepen that learning over time.

49. Student learning outcomes are used to determine my school's professional learning plan.

50. My professional learning this school year is connected to previous professional learning.

APPENDIX D: SUPERINTENDENT EMAIL REQUEST

Dear Colleagues,

My name is Scott Dill and I am a doctoral student at Southwest Baptist University. As part of my research, I am asking for 10-15 minutes of time from your high school teachers to complete an anonymous survey regarding perceptions of collaborative professional learning.

Participation in this study is completely voluntary and anonymous. There are no foreseeable risks associated with this project. However, if your teachers feel uncomfortable answering any questions, they may withdraw from the survey at any point. Thank you very much for your support and understanding of this doctoral endeavor.

Following the completion of my research, results will be available for reading at http://www.sbuniv.edu (University Libraries, Graduate Education Ed.D. Dissertations). I will be happy to field any inquiries you may have and can be contacted at scottdill@pb.k12.mo.us. We have contracted with QuestionPro, an independent research firm, to field your anonymous survey responses. Please click on this link to start the survey: https://cpl.questionpro.com