

ABSTRACT

The Art of Change Leadership and the Science of Implementation

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This dissertation investigates the efficacy of Implementation Science in K-12 public school leadership. Far from a checklist, Implementation Science is a framework for understanding change which values the perspective, expertise, and involvement of everyone within the organization. Teachers from two school districts, both of which undergoing change, were surveyed. The survey instrument used an Implementation Science framework to gauge leader behaviors as well as followers' satisfaction with the implementation. Findings show that Implementation Science is an effective way for leaders to facilitate the change process.

The Art of Change Leadership and Science of Implementation

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DEDICATION

To my daughters Marilyn, Elsie, and Genevieve. Learn all you can and help others.

CHAPTER ONE

Framing a Problem of Practice

Introduction

A key strategy for preparing personalized learning experiences in the Georgetown Independent School District (GISD) involves the use of the designing engaging work framework. This framework requires teachers to think critically about student needs, preferences, and interests (Schlechty, 2002). It is a district-wide initiative primarily executed by teachers and supported by principals and district-level staff. The problem of practice is that no guiding framework exists that is usable and understood by all for leading implementation of evidence-based practices. If a practical framework for implementation is identified and utilized, more teachers will authentically adopt evidence-based practice. Consequently, more students will benefit from superior instructional strategies. Identifying potential solutions includes two important elements. First, implementers' perceptions regarding the efficacy of their leaders' implementation leadership strategies must be measured. Second, practitioners' perceptions of the innovation's potential benefit must also be measured. The survey instrument used in this study provides insight into these perceptions. Possible solutions for the specific problem of practice in GISD, which is the lack of a commonly understood implementation framework, are identified in the perceptions of teachers across the state who are the first line implementers of innovations in the classroom.

Contexts

If leaders implement change poorly, they create an inappropriate and unworkable amount of stress. Often those involved in poorly implemented change hesitate to engage in later change efforts (Bordia et al., 2011). This can hinder or skew the use of promising evidence-based practices before they can produce results (Wilder et al., 2006). Leuschke (2017) showed that change in public schools occurs quickly and is often multilayered, with multiple changes happening at the same time at different stages of implementation. This variance takes a significant toll on teachers, causing teacher morale to suffer due to a phenomenon known as change fatigue (Bernerth et al., 2011). Change fatigue can negatively impact teacher performance, job satisfaction, and retention. Most importantly, poor implementation can negatively affect student learning. Ikemoto et al. (2016) showed that students who experienced poorly implemented student-centered learning practices performed lower than students who received no change in educational treatment at all. The purpose of innovation is improvement, so implementation efforts must be managed to avoid negatives that outweigh positives. Though wrought with difficulty, change is necessary. Educators must continue to develop, and evidence-based practices must continue to evolve to meet the needs of 21st century learners.

There are too many changes too quickly for teachers (Yettick et al., 2017). Over 500 teachers nationwide were surveyed about education innovations and reforms. Eighty-six percent of respondents reported they had experienced a notable change in the last 2 years. The top three areas of change reported involved teacher evaluation, curriculum and instruction, and professional development. Fifty-eight percent of teachers reported they experienced “too-much” or “way too much” change, and 84% of teachers responded that

as soon as they became comfortable with a reform, it changed. Change occurs often in K–12 education, but unfortunately, it is not always well managed. Nordstrum et al. (2017) asserted:

Practitioners’ behaviors and beliefs, contextual variables and implementation fidelity, among others, are not routine considerations when striving for program effectiveness. Implementation science, then, is a product both of the increasing realization that the characteristics and dynamics of implementation matter greatly for program effectiveness, and the sobering realization that most efforts overlook these aspects of programs. (para. 4)

Several evidence-based practices are available to practitioners, any of which would work well if implemented effectively. In other words, if a program or practice fails, it may or may not be due to its own viability. It could be due to poor implementation. If a practice succeeds, however, it is because an evidence-based solution has been implemented well. All too often, educators abandon initiatives without inquiry into implementation, and therefore, a revolving door of new evidence-based practices challenges teachers to continually learn new systems. Nordstrum et al. (2017) continued: “Education programs have historically been created and disseminated without much concern for potential effectiveness. Instead, interventions have been instituted on the basis of social and political considerations and have been terminated without recourse to findings from program evaluations” (para. 7). Rather than continually swapping out new practices, educators might investigate whether those practices were implemented with fidelity.

At least as important as problems with change and implementation is the notion that our evolving world will require change to continue or increase dramatically. That is not to say that change should occur for the sake of change itself. Attempting to move forward with changes without a clear picture of the purpose is erroneous and draining on

the organization (Smith, 2016). At least two drivers exist for national, regional, and local school change that will propel the need for quality implementation moving forward. One is new, one is old, and both seriously impact school systems' abilities to prepare all students for their future. Because these drivers for change will continue, innovation and the need for effective implementation will continue as well.

The first driver for change is the technology explosion that has occurred across the world over the last 50 years. This shift changed the way teachers and students gain and share knowledge. Learners must possess both traditional and digital literacy skills to navigate the increasingly high volume of information available to them (Quinn et al., 2012). Collins and Halverson (2018) proposed in *Rethinking Education in the Age of Technology* that schools no longer effectively organize experiences because the education system has failed to evolve with society. The authors drew a connection between the invention of the printing press and the “knowledge explosion” (p. 24) that has accompanied advancing technology and the invention of the Internet. “A number of writers have tried to characterize the shift that occurred with the invention of the printing press as society moved from traditional oral culture to literate culture dominated by the printed word” (Collins & Halverson, 2009, p. 24). This statement describes the dramatic influence of the printing press on society and how it changed information sharing. Similarly, digital technology has introduced another dramatic change to the creation, storage, and dissemination of information. The tremendous impact of new communication technologies such as video, computers, the Internet, and video conferencing that work together to enable individuals to reach anyone no matter where they are on the globe (p. 24). The education system, which evolved to support the

industrial revolution, has barely responded to the information age. It includes classrooms filled with rows and columns of desks for students to sit, facing forward, listening to a teacher deliver information. A bell manages time. Teachers expect students to be quiet and prove their educational attainment by writing on a piece of paper.

Educators must understand the rapidly changing information age and consider how technology can be applied when planning and implementing academic programs. Just as the printing press initiated a societal move toward literacy and the dominance of the written word, the advent of the Internet and the information age requires new and more robust understandings of literacy as well as pedagogies that promote and support those literacies. Educators must consider increased digital literacy as a necessary component of preparing students for their future (Bonderup, 2018). If educators use the Internet correctly, students will have to work beyond the written word to become digitally literate. Videos, photos, or memes can convey so much content. Due to the sheer volume of information, consumers must decide quickly and correctly about the reliability of sources to avoid being duped by false information. Bonderup described digital literacy as “not just about being able to work with digital technologies and the media itself, but also being able to act in the contexts in which technology and media are included” (p. 140).

The National Assessment of Educational Progress (NAEP) measures students’ ability to correctly interpret digital resources. The technology and engineering literacy assessment measures “whether students can use the internet to find and summarize information to solve a problem” (NCES, 2014). In the technology and engineering framework, the National Assessment Governing Board noted the need for technology and engineering within the modern educational landscape as the impetus for initiating the

development of the first NAEP Technology and Literacy Assessment (NCES, 2014). The changing world demands that teachers include technology in their practice. The students who are not supported in their technology and literacy development will fall behind. Therefore, effective implementation leadership must include consideration of the digital environment. The influence of technology on professional discourse concerning best practice is clear. New competencies such as digital literacy have been named, and educators have attempted to measure those competencies. Likewise, local school districts continue to experiment with integrating technology and the wealth of information it affords into everything from the actual physical plant to changes in the nature of teaching and learning. The role of the instructor as keeper of knowledge is quickly disappearing because teachers and students can readily access information (Schlechty, 2005). The role of teacher as facilitator, guide to instruction, and designer of engaging learning experiences will remain. This means that many teachers must rethink the way they fulfill their role and change their practices. Because this evolution will continue for some time, educational leaders must address the need for innovation and quality implementation.

A second and especially important driver for change involves closing the achievement gap. This issue has persisted throughout the history of U.S. education (Schmoker, 2012). In the United States, a variety of diverse cultures, ethnicities, and backgrounds come together in many beneficial ways, but unfortunately, differences in educational outcomes as measured by state and national assessments continue to show achievement gaps among students from different socioeconomic backgrounds and across ethnic groups. Though gaps persist, they are diminishing (Hansen et al, 2017), and many educators have committed to iterating until the problem is solved completely.

McFarland et al. (2018) showed that students from more affluent homes score higher in reading at the fourth grade, eighth grade, and high school levels. The NAEP reading assessment is scored on a 0–500 scale, and student performance decreases as poverty increases. Figure 1 shows a summary of results at all three grades broken down by poverty classification.

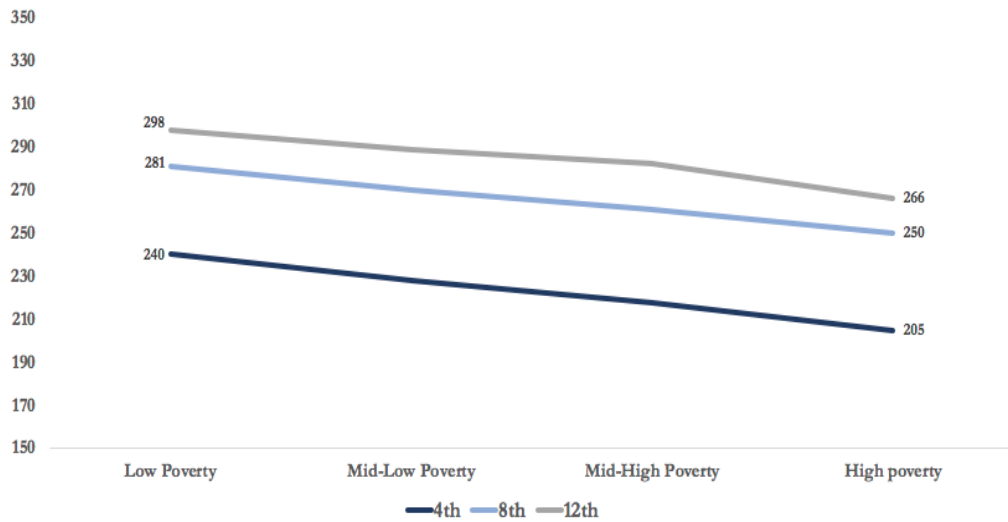


Figure 1.1. Reading assessment results by poverty classification.

Achievement gaps also persist across races. A 20- to 30-point spread exists between White students and Black and Hispanic students. The average NAEP reading scores appear in Figure 1.2.

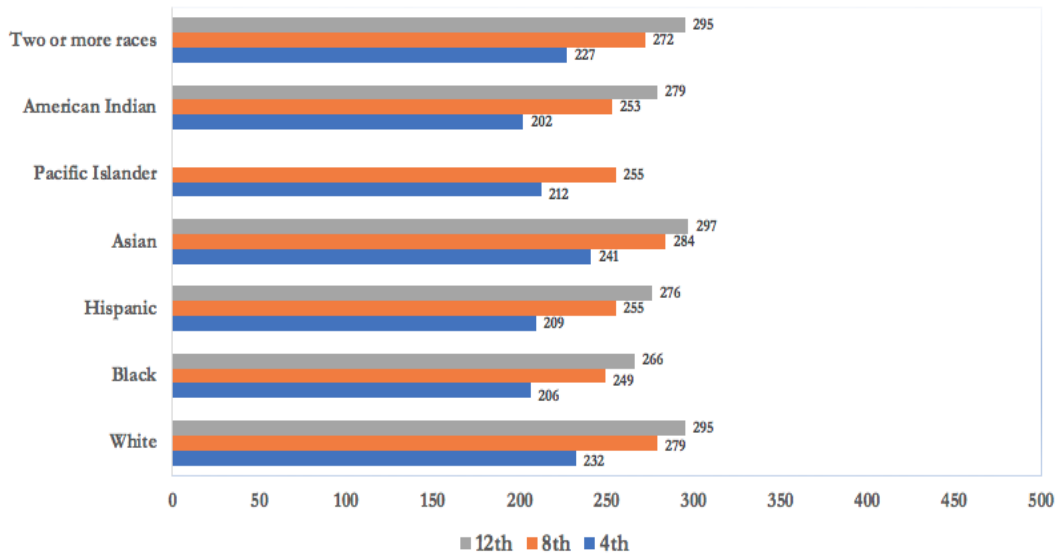


Figure 1.2. Average NAEP reading scores.

If students fall behind in reading, the deficiency will translate to the digital literacy skills so critical to their future success. Researchers have previously described the connection between low-income families and the potential causes of students' lower academic performance. For example, Hart and Risley (1995) posed the idea of the word gap, where children from low-income families encounter roughly 30 million fewer words than their working-class peers. This total was extrapolated from observations of 42 families. Although a small sample size, the result provides some empirical evidence to support broad anecdotal evidence that students from poorer backgrounds fare worse academically than their more affluent counterparts. Hoff and Tian (2005) discussed socioeconomic and cultural factors that influence language acquisition. Particularly they, and others noted the powerful effect that mothers have on their children simply by exposing them to language through their speech. The authors concluded that more affluent mothers expose their children to more language that is more robust than do less affluent mothers.

More recently, Duursma and Pan (2011) discussed the great benefits that children experience when fathers read to them. They noted, “Families where both parents reported regular reading tended to have children with better language and cognitive skills than children in families where only mothers reported reading frequently to the child” (Duursma & Pan, 2010, p. 5). They also noted that low-income children should be exposed to “cognitively challenging and enriching talk that accompanies book reading” (Duursma & Pan, 2011, p. 4). Achievement gaps exist at the national, regional, and local levels, and because those gaps generate a great deal of research and innovation, they also drive change.

State Achievement Gap

Achievement gaps among economic and ethnic groups exist at the state level in Texas as well. The average scale score on the NAEP reading test for fourth graders eligible for the national free and reduced lunch program was 205 in 2017, which was 26 points lower than the average score of students who did not qualify for the free and reduced lunch program that year. Their average score was 231. The average score for Asian Pacific Islanders was 238. White students’ average score was 231, and two or more races averaged 223. Black students averaged 210 on the NAEP reading test, and Hispanic students averaged 206. The average score for all fourth graders was 215. Eighth graders who were eligible for free and reduced lunch averaged a score of 251. Eighth-grade students who did not qualify for free and reduced lunch achieved 21 points higher with an average score of 272. Eighth grade Asian Pacific Islander students averaged 287; White students in the same grade averaged 271, and Hispanic and Black students averaged 254 and 247, respectively. Students who identified as two or more races averaged 268, and

the average score for all eighth-grade students was 260. NAEP results as a whole for the state of Texas revealed a socioeconomic achievement gap at all levels as well as a disparity between White students and Black and Hispanic students (NCES, 2017).

Local Achievement Gap

The pattern of socioeconomic achievement gaps that exists at the national and state level appear at the district level as well when measured by state standardized assessment data. According to Public Education Information Management System data obtained from the Texas Education Agency (2018), 42.4% of students in the GISD qualify as economically disadvantaged. Roughly 900 fourth graders took the Texas Assessment of Academic Readiness (STAAR) in reading. Among this group, 52% met the minimum standard. The passing rate for all students was 70%. Additionally, 74% of economically disadvantaged eighth-graders who took the reading STAAR achieved the minimum standard compared with the 84% of all eighth-grade students who met the standard. Gaps also exist between racial groups in GISD. Eighty percent of White students achieved the “approaches” level of performance on the reading STAAR test compared to 57% of Hispanic students. Equivalent results occurred among eighth-grade students with 14% more White students than Hispanic students meeting the minimum standard, and 17% more White students than Black students meeting the minimum standard. These gaps resemble those on the state math assessment. Eighteen percent fewer economically disadvantaged fourth-grade students achieved the minimum standard on the state math assessment when compared to the all-student group. That gap was 15% for seventh graders taking the state math assessment. Achievement gaps exist at the

national, regional, and local level, and because those gaps generate a great deal of research and innovation, they also drive change.

Local Context

GISD administrators have sought to address learning gaps and the impact of technology on today's learners by providing personalized learning experiences for each student. To carry this out, teachers use Schlechty's (2002) designing engaging work framework, which is a protocol for creating educational experiences with the student's learning style, preferences, and interests in mind. Schlechty defined engagement as a construct of attention, commitment, and persistence held together by meaning and value to the student. Technology represents a critical resource for bringing meaningful experiences to students, but it is not a substitute for the work of educators as guides to learning. This work requires teachers to understand the whole child and commit to incorporate that knowledge when designing effective and engaging learning experiences. Far from a scripted intervention, this practice requires teachers to think critically about the best way to help each learner apprehend the knowledge and skills the teacher aims to convey, beginning with the learner's needs in mind. It requires authentic support and execution from the teacher to be effective and implementing this practice in a school system goes beyond lists and checkboxes. To accomplish the goal of providing personalized learning for each student through the designing engaging work framework, leaders in GISD must understand how to implement well.

A little known and relatively new construct, implementation science (IS. i.e., the study of implementation), could supply guidance. Originating in the health care field, IS provides a clear way of thinking about implementation in general. Mittman and Eccles

(2006) offered the following helpful definition: “Implementation research is the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice” (para. 5). Fixsen et al. (2009) also described it as “The art and science of incorporating innovations into typical service settings to benefit clients” (p. 1). Education leaders cannot compel others to act in an authentic way. Teachers are free agents who can either accept or reject any change proposed by the leader. At the same time, evidence-based practices should be implemented in an effort to improve outcomes. The education leader must carefully guide implementation so that teachers authentically adopt a practice and use it when no one is looking. Although several different IS frameworks exist, Burke et al. (2012) generalized the construct into the following four categories of actions. The first set of actions entails exploring and preparing. This includes involving many others in discussion about the issue prompting change. During this phase, participants come to a collective understanding of the need for change. The next set of actions involves planning and resourcing. During this phase, educators select more specific directions and resources to address the change. Additionally, they develop a clear plan for implementing the change. The third set of actions includes implementing and operationalizing. In this step, an iterative cycle for learning the new practice comes to life. During this phase, educators must expect failures along the way as participants master the practice. Finally, after the iterative process has done its work of improvement, participants move to the fourth stage when the practice becomes business as usual. These categories bear a striking resemblance to recognized leadership theory, which is applied to more than implementation situations. However, an understanding of IS principles could possibly aid

education leaders in GISD and elsewhere when negotiating the uptake of evidence-based practices. Researchers must learn more about the similarities and differences between recognized leadership theories and IS, education leaders' knowledge of IS, and whether their use of it results from explicit knowledge of the construct. Education leaders, working from an understanding of other recognized leadership theories, may possibly accomplish the same goals of quality implementation identified through an IS lens. A growing body of research supports the efficacy of IS in producing the authentic uptake of evidence-based practices. Understanding of this construct, as well as the degree to which leaders adhere to its elements, could provide GISD leaders with valuable insight into the most effective ways to implement the designing engaging work framework and guide future implementation efforts.

Support for Inquiry

Change drivers such as technology and multiple existing achievement gaps impact schools across the country. Educators render too many evidence-based solutions ineffective due to poor implementation, and students who need these solutions miss out because practitioners cannot deliver. This creates a research-rich and practice-poor setting where practitioners continually search for the next evidence-based solution, thinking it will help when the previous one failed. The reality is that the next one will fail for the same reason—poor implementation on the part of the practitioner. Change both benefits and places demands on students and teachers. Effective implementation must occur, and education leaders must make leading this type of change a centerpiece of their practice. Therefore, a need exists for research connecting educational leadership with the implementation of evidence-based practices.

Although ample research has been devoted to organizational change and change management, the relationship between education leaders' knowledge and their use of best practices from an IS framework has not been explicitly explored. Additionally, correlations between the IS literature and leadership theories have not been investigated in enough detail nor made explicit through an education lens. To guide inquiry and to identify solutions, the following research questions were used to guide this study:

- RQ1. To what degree were study participants satisfied with the implementation of EPB within their organization?
- RQ2. To what degree did study participants perceive that EBP implementation had been appropriately supported within their organization?
- RQ3. To what degree did study participants perceive EPB implementation in their district as an effective means of moving the organization in the right direction?
- RQ4. Considering the dimensions of proactive leadership, knowledgeable leadership, supportive leadership, and perseverant leadership, which was most associated with and predictive of study participants' overall satisfaction with the implementation of EPB within their organization?
- RQ5. Considering the dimensions of proactive leadership, knowledgeable leadership, supportive leadership, and perseverant leadership, which was most associated with and predictive of study participant perception that EPB implementation in their district represented an effective means of moving the organization in the right direction?

The implementation leadership scale (ILS), an instrument developed by Aarons et al. (2014) to measure 12 important leadership practices in four domains that are critical to effective implementation, was adopted for this study. A survey instrument incorporating the ILS was used to also gather information regarding the respondents' belief in an initiative's effectiveness. Educators who recently experienced or are currently experiencing change provided responses based on their perceptions of the implementation process.

Learning generated from these questions supplied insight into the overlap between IS principles and other more well-known leadership principles, providing insight into possible connections between IS practices and perceptions of effectiveness. Also, because the survey showed the use of IS practices with and without knowledge of the construct itself, insight was gained into the importance of understanding IS principles as a leader.

Summary

Too many changes in the form of evidence-based practices fall by the wayside or produce disappointing results due to poor implementation. This negatively affects the educational community by leading to change fatigue, lower teacher morale, and lower student outcomes. However, due to change drivers such as technology and existing achievement gaps across economic and ethnic categories, the need for innovation will not diminish anytime soon (Mitchell et al., 2018). To increase the effectiveness of new EBPs going forward, education leaders must better understand how to implement change across the system. If they do not, researchers' contributions will never reach students.

CHAPTER TWO

Literature Review

To fully appreciate the importance of thoughtful implementation and the effectiveness of IS principles in K–12 education, researchers and educators must understand the evolution of organizational change, the development of educational research for improved outcomes, the impetus of evidence-based practice, and the origins of the IS approach. This chapter provides a survey of the academic literature related to these topics by exploring organizational change, evidence-based practice (EBP), IS, and the connection of IS to educational leadership.

This review shows the need for organizational change and the need for organizational change leadership driven by the use of EBP. Following the lead of health care organizations, education leaders began to recognize the benefits of employing strategies identified through research. These came to be known as EBPs, and although more and more EBPs are developed each day, little attention has been paid to effectively implementing these practices. The principles known as IS, though sparsely applied today, have shown promise in the education sector.

The following search terms were used in a variety of combinations to provide a robust and targeted review of the literature. The terms included: *implementation, science, education, leadership, evidence-based practice, change, organization, and organizational*. Searches were conducted on the Education Resources Information Center and EBSCOHost. Once literature was identified, titles and abstracts were screened for their relevance to the research goals. Because the problem addressed in this study was the

need for more quality implementation of EBP, only literature relevant to improving organizations through thoughtful implementation of EBP is included in this review.

Change and Leadership

Many schools fail to meet their potential because they are busy preparing students for the past (Schlechty, 2005). The economic boom of the industrial revolution left its mark on so much of American society, including the education system. This influence led to schools that treat teachers as managers and students as factory workers. To maintain relevance, schools will have to transform into true learning organizations that foster critical thinking, creativity, collaboration, and innovation. This commentary comes at a moment in the history of education when schools have held to old models predicated on past success for too long, and the U.S. system has struggled with what it means to prepare students for their future. Some have suggested technology developments have transformed the workplace, culture, and our very lives, and it is time for these developments to transform education as well. Conversely, researchers have expressed concerns that the greatness of U.S. public schooling is at risk of becoming obsolete at the hands of technology (Collins & Halverson, 2018). For the education field, it appears that a desire to hold onto the past has caused a reluctance to look toward the future. However true this may be, the field of education will not catch up to history simply by taking on the developments realized in a particular field such as technology. Rather, leaders in the field of education must recognize the need to develop practice so that it can better facilitate advances in every other field. The necessity to change arises both from a need to catch up to history and from a need to continually improve and remain on the cutting edge. The world is more networked than ever. Many technological advances have come

about because of the human desire to connect, but many schools still only tolerate, or worse yet, completely ban the technology that can serve as the connective fibers in a tapestry of meaning. It is no wonder students reject factory-style education as irrelevant (Bonderup, 2018).

As the literature showed, organizations have dealt with the idea of change for some time. In educative organizations, change has developed from the idea of general change, or coping with change, to the idea of improvement. This desire to improve has led to the development of evidence-based practices, which have given rise to the need for effective implementation. This literature review shows that as the notion of change has developed to one of improvement requiring effective implementation, so has the notion of change leadership evolved to include superintending the authentic adoption of EBP. Two propositions summarize this point well. First, in order for organizations to be effective, leaders must pay close attention to implementation. Second, implementation leadership does not include mandating particular practices be utilized but rather is a process of intentional and well-researched steps toward fostering authentic adoption.

Organizational Change

Organizational change has evolved, morphing over time in a variety of ways. It has moved from top-down to grassroots, from compliance to assent, and from expertise to continuous improvement. Leadership of organizational change has evolved from authoritative to supportive, and the primary means by which it is thought to come about has shifted from followers' quiet acquiescence to EBP to active and authentic adoption. The next section documents the evidence for these shifts from within the academic

literature and provides a discussion of the implications associated with these developments.

From Top-Down to Grassroots

There are many definitions of leadership, but ultimately, leadership amounts to compelling others to do or not do something even when no one is looking. As organizations confront change, adjust, and evolve to keep in step with the changing world, leaders must compel changes in practice that support their mission, vision, and evolving strategies. Earlier in U.S. history, this took the form of top-down edicts. Memos from leaders compelled compliance. During the industrial revolution, companies utilized very hierarchical structures to ensure efficient production and ultimately a larger piece of the market share. As will be seen through the literature review, the notion of leadership in the United States broadly, and in American K–12 education specifically, has developed over time away from this autocratic rule toward a more supportive sensibility.

Organizational change has been slow to gain traction in the United States because it too often takes the form of edicts from the top (Grant, 2009). Though referencing challenges with change in the United Kingdom, Grant (2009) described challenges with which the American system has struggled. He wrote: “Schools have been allowed little room for real thought by a top-down, ill-fitting, and dogmatic series of demands. . . . But, nevertheless, the government for all this has not won the battle of ideas” (p. 31). Indeed, this described efforts of the U.S. federal and state governments regarding education. Sometimes these measures are also utilized by local school districts. The Rand Change Agent Study, which was a federally funded effort to spread innovation within public schools, recognized the need to develop implementation practices within public schools.

Conducted between 1973 and 1978, the findings still hold sway as an explanation for the need for effective implementation. McLaughlin (1990) revisited the study to determine which findings continued to be relevant. She asserted:

A general finding of the Change Agent study that has become almost a truism is that it is exceedingly difficult for policy to change practice, especially across levels of government. Contrary to the one-to-one relationship assumed to exist between policy and practice, the Change Agent study demonstrated that the nature, amount, and pace of change at the local level was a product of local factors that were largely beyond the control of higher-level policymakers. (McLaughlin, 1990)

Implementation dominates outcome; policy cannot mandate what matters, and local variability rules (McLaughlin, 1990). Acknowledging the inability of policies to produce outcomes is at the heart of the improvement discussion and has been for a long time. Simply making and communicating a rule does not ensure behavior will change. A number of reasons for this exist. First, each locality differs. Each has their particular nuances, which may make implementation difficult or impossible. Policy also fails to produce outcomes because compliance with rules simply for the sake of doing so ensures adoption only if the follower believes they will be inspected. In order for change to be effective, it must be brought about through more authentic means, which points to the importance of implementation (McLaughlin, 1990). The RAND study moved collective thinking away from uttering edicts from the top as a way to promote change. Instead, the effective leader must adopt a thoughtful method for guiding the desired change into practice. Kotter (1996) identified an 8-step process for guiding change. The steps include: Create a sense of urgency, build a guiding coalition, form a strategic vision and initiatives, enlist a volunteer army, enable action by removing barriers, generate short-term wins, sustain acceleration, and institute change. Certainly, these steps involve much

more than simply commanding a change to happen in an autocratic way. Instead, they involve a process that considers followers and their perceptions of the change. Though Kotter wrote these words in 1996, Grant (2009) described change initiatives in 2009 as being ineffective because of their autocratic posture. Current research connected autocratic with ineffective and grassroots with effective. Leaders must be connected to individuals throughout the organization and work to relieve or mitigate any tensions between leadership and those implementing change (Aas, 2017). As the leader moves away from top-down strategies and toward grassroots involvement, they will experience more implementation success. Kotter's (1996) model moved thought in a more effective direction along this continuum, but it is important to note the verbs in Kotter's model all pertain to leader actions. Kotter does not mention what followers do to bring about change. Therefore, Kotter's model could still be described as top-down. Further movement toward the grassroots pole on this continuum would be to involve people throughout the organization in decisions regarding the change process.

The use of implementation teams provides an example of a more organic change process. These are teams comprised of a cross-section of the organization that includes individuals charged with shepherding the implementation process. Utilizing a team approach to implementation means that the leader shifts from an autocrat to one who trusts people within the organization to meaningfully contribute to the change process because of their perspectives and expertise gained from service to the organization. This makes the leader much less an autocrat and much more a facilitator. This does not mean the leader has abdicated their role. They still manage team selection and progress monitor team development. A key difference is that in this approach, the leader connects to a

feedback loop relative to the implementation and allows collective thinking to benefit the whole (Higgins et al., 2012).

From Authoritative to Supportive

Rather than simply publishing memos requiring others to change according to the leader's philosophies and desires, supportive leaders understand that their role is to help others accomplish their goals and objectives. Newton (2003) argued:

Strategy needs to be constantly evaluated at all levels in terms of ownership, levels of acceptance, the success or failure of implementation, the extent of quality improvement and enhancement, as well as a strategy's ongoing relevance to internal and external environments. (Newton, 2003, p. 440)

Therefore, the leader does their work by continually monitoring all of the various members and parts of the organization and evaluating their collective efficacy toward the desired change.

Evolution of Evidence-Based Practices

Water cures thirst. If you scoop water with a bowl and bring it to your mouth, you will quench your thirst. However, if you scoop water with a colander, it will never adequately meet your needs. The water remains unchanged, but the vessel for delivering it makes a difference. The water can be likened to EBP, and the bowl to strong implementation. The colander represents poor implementation. Like the bowl that more effectively scoops water, improving outcomes requires both quality EBP and strong implementation to be effective. They go hand in hand and must be understood together in order to correctly diagnose problems in a way that leads to positive development and the evolution of educational practices. A failure to recognize the coupled nature of EBPs and implementation leads to finger-pointing that stagnates progress.

Grasping conventional wisdom regarding EBPs requires an understanding of how they have risen to prominence in education. The term *evidence-based medicine* came from a new emphasis in teaching medicine that stresses examination of evidence from clinical research and moves away from “intuition, unsystematic clinical experience, and pathophysiologic rationale” (Guyatt et al, 1992, para. 1). The work of Guyatt et al. (1992) marked a shift in thinking among medical doctors away from intuition and toward verifiable evidence. A similar evolution occurred among educators. At the beginning of the 21st century, Slavin (2002) wrote about the promise of EBPs in education and advocated for evidence-based policies requiring educational institutions to utilize EBPs to receive funding. Claiming that education was “on the brink of a scientific revolution,” Slavin (2002, p. 1) believed that the change would revolutionize education completely. He concluded that evidence-based policies coupled with governmental demands for evidence would propel education forward, and so the journey toward education utopia was thus paved with EBPs.

The U.S. Department of Education weighed in on evidence early as well. In fact, Slavin (2002) cited Congress’ 1998 appropriations for schools to adopt comprehensive reform models as evidence for the effectiveness of these strategies. The *Early Implementation of the Comprehensive School Reform Demonstration (CSRD) Program Summary Report* noted that Congress appropriated \$120 million to support comprehensive reforms in schools with children from low-income backgrounds and an additional \$25 million was appropriated for all public schools. By 1999, funds had been allocated to schools in all 50 states and the District of Columbia (U.S. Department of

Education, Planning and Evaluation Service, 2000). The *Comprehensive School Reform Demonstration* noted the following foci for its efforts.

- Whole school rather than piecemeal reform efforts
- Research-based strategies for school improvement
- External partnerships and support for improvement process
- Extensive use of data for assessing needs and school improvement
- Flexible use of resources to support reform priorities (p. 7).

The report also listed nine components with which participating schools must comply in order to utilize funds. These components emphasize “reliable research,” “measurable goals,” and “evaluation” (U.S. Department of Education, 2000, p. 7). The guidance makes research and evidence a centerpiece of the strategy for improving schools with a high number of students from a low socioeconomic background.

After a clear understanding of the need for EBPs developed, many articles published regarding implementation seemed to treat it simply as a recipe to be followed. Many of these perspectives, intentionally or otherwise, portrayed the teacher as simply needing to follow steps laid out by researchers or learn more about the EBP itself. The No Child Left Behind Act (2002) called on practitioners to use scientifically based research in their decision making. In the article, “Identifying and Implementing Educational Practices Supported by Rigorous Evidence: A User-Friendly Guide” (U.S. Department of Education, 2001), the authors acknowledged the dramatic impact of medical evidence-based practice on Americans’ health and argued that similar benefits could be realized in the field of education if EBPs were applied there as well.

Continuing, the trajectory laid out by No Child Left Behind and the Bush administration, President Obama signed Every Student Succeeds Act law in 2015, continuing the call for EBPs and statewide assessment structures. The law appropriates \$378 million for statewide assessments and over \$47 million for prevention and intervention programs. According to the legislation, these programs must be evidence-based, and legislators outlined four tiers to describe the quality or levels of evidence. Tier 1 relies on strong evidence which is supported by at least one well-designed and well-implemented randomized control experimental study. Tier 2 relies on moderate evidence supported by one or more quasiexperimental study. Tier 3 relies on promising evidence, which is supported by one or more correlational study. Finally, Tier 4 requires a demonstrated rationale, which involves a “well-defined logic model or theory of action” that is supported by research (Every Student Succeeds Act, 2015). In both the 2001 adoption of No Child Left Behind and the 2015 continuation in Every Student Succeeds Act, Congress committed to EBPs. That is not to deny that with these tiers, Congress also acknowledged the need for the EBPs to be well-implemented. Although the Every Student Succeeds Act, as well as future guidance from the U.S. Department of Education, acknowledged the need for strong implementation, the nature and type of this implementation was not fully described. By 2016, the U.S. Department of Education acknowledged the need for thoughtful implementation in their nonregulatory guidance, “Using Evidence to Strengthen Education Investments.” This guidance provided a 5-step process: (a) identify local needs, (b) select relevant, evidence-based interventions, (c) plan for implementation, (d) implement, (e) examine and reflect. Though implementation appeared in two steps in this process, the model does not emphasize effective

implementation and appears to lead toward local education agencies selecting more and more evidence-based practices rather than evaluating the implementation process itself.

Another issue with this model is that the strategies within the plan-for-implementation step and the implement step do not involve those implementing in a meaningful way. The guidance instead calls for timelines and logic models. These strategies can be employed without gaining various types of input from the individuals actually carrying out the EBP. The guidance did well to identify the importance of implementation, but it did not go far enough toward outlining strategies that include input from practitioners on the front lines of implementation. As mentioned previously, Slavin (2002) repeatedly underscored the need to move away from strategies that yielded little. A move toward more systematic inquiry into what makes education successful is absolutely necessary to produce ever-improved outcomes. However, Slavin, and the U.S. Department of Education were slightly off course in similar ways. Neither gave appropriate weight to all of the factors that may influence the success or failure of an EBP. Their perspectives supported the necessity of EBPs but did little to emphasize the importance of implementation. As school systems continued their attempts to implement EBP, a theme emerged in the literature that more training was needed for teachers to help them implement new practices effectively. The 2016 U.S. Department of Education guidance was not only predicated on Slavin's (2002) work. A large portion of the literature related to this topic appears to skew toward both the need for eliminating ineffective EBPs as well as the need to train teachers more. Additionally, it seemed as though EBPs were developed in one place and implemented in another with the assumption that if enough training could be provided, teachers would be able to

successfully implement them. This begins to look like the researcher telling teachers what to do.

Although some researchers rightly identified implementation as the critical link between research and practice (Odom, 2009; Olswang and Prelock, 2015; Wandersman et al., 2008), emphasis on EBPs with little attention to implementation continued in other portions of the literature. Investigating factors that lead to EBP uptake in children's group home facilities, Stuart et al. (2011) found that facilities with clearer expectations regarding EBP experienced a higher uptake of those practices. Stuart et al. reported that workers in low-uptake facilities did not appear to know what was expected of them, and leaders did not clearly communicate the evidence-based practice to workers. Although Stuart et al. showed the need for clear communication of the EBP, other factors come into play as well. Though not a school setting, this example points to the need for key implementers to clearly understand what is expected of them in terms of the EBP, showing a correlation between high-uptake facilities and the presence of clearly written and understood expectations. However, it also frames the breakdown in EBP use as being with those who are the first-line implementers. Furthermore, although written policies and procedures benefit everyone in the organization, they are not guaranteed to be followed. As the literature regarding EBP moved from health care into other fields, it influenced the field of education. The conclusions drawn by Stuart et al. (2011) may be perfectly appropriate for group care facilities but do not necessarily translate to the field of education. Stuart et al. showed that producing reliable outcomes depends on providing every implementer with a clear understanding of what must be accomplished. Although this may be true, applying only that logic in education settings will not necessarily

produce high uptake, but there are examples of literature coming from educational settings that reach the same conclusion.

Torres et al. (2012) wrote *A Special Educator's Guide to Successfully Implementing Evidence-Based Practices*. Their perspective on the subject of implementation differs in a number of ways, but it also bears a striking resemblance to Stuart et al. (2011) and other EBP researchers. These differences and similarities illuminate some important developments in terms of conventional wisdom related to EBPs. Torres et al. (2012) outlined a step-by-step process for identifying, selecting, implementing, evaluating, and adapting EBPs in inclusion classrooms. The 10 steps are as follows:

1. Determine student, environment, and instructional characteristics.
2. Search sources for EBPs.
3. Select applicable EBP.
4. Identify essential components of the practice.
5. Implement within the cycle of effective instruction.
6. Check implementation fidelity.
7. Monitor student progress.
8. Adapt the practice if unsuccessful or desired.
9. Make data-driven decisions.
10. Share—become a leader and advocate.

This perspective differs slightly from that of Stuart et al. (2011) in that these steps provide practitioners the encouragement to both choose which EBP to employ as well as to evaluate and even adapt the EBP if necessary. Steps 1–3 of their 10-step process

include determining student and instructional characteristics, searching for EBPs, and finally selecting an applicable EBP. Compared with the example from the group care facility in Stuart et al., this process involves the discretion of the practitioner much more. Additionally, Step 8 encourages teachers to adapt the EBP if it is not meeting the needs of all students. This places much more autonomy in the hands of practitioners, and to many developers of EBPs, will likely cause some degree of angst because modifying or adapting the EBP could also cause some key characteristics of the practice to be altered so dramatically that it could alter the practice itself. It was clear that Torres et al. (2012) provided teachers with much more leeway to exercise their professional practice, and contrary to the general thrust in Stuart et al. (2011), their process read more as a guidebook than a set of policies to be followed. The differences between Stuart et al. and Torres et al. (2010) demonstrated a general shift in the literature related to both EBPs and implementation. The shift moved away from prescribed methodologies imposed from above and toward allowing practitioners more discretion in the way they utilize an EBP, thus acknowledging the need for teachers to apply appropriate modifications within the confines of the practice itself. This does not mean that teachers' discretion is intended to be so wide that it alters the EBP beyond efficacy. Instead, Torres et al. (2012) outlined a process that included educators becoming very familiar with the critical components of the EBP. Step 4 in their process is to "Identify the essential components of the practice" (p. 5). This framework, therefore, allows the educators to adapt the practice in accordance with these essential components.

Although these differences represented a positive shift in the direction of involving teachers in meaningful ways when using EBPs, Torres et al. (2012) resembled

Stuart et al. (2011) as well as other previous researchers related to implementing EBPs in that the prescription for remedying the education system is to fix teachers who do a bad job of implementing EBPs. Researchers have published literature centered on adjusting teachers' practices so that they comport more nicely with the controlled setting in which the practice was developed. To their credit, Torres et al. (2012) recognized this direction and attempted to adjust course by building some autonomy into their structure, but none the less, they present a system that invites teachers, who are the first line implementers of EBPs, to adjust toward the requirements of the selected EBP.

Other studies supported the idea special education teachers do not effectively use EBPs (Boardman et al., 2005). However, Mazzotti and Plottner (2016) showed that despite these findings, when educators themselves were polled, they reported feeling they did a fair job of utilizing EBPs. There is therefore at least some level of disparity between the way researchers viewed educators and the way educators viewed themselves in terms of EBP use. This disparity could contribute to a difficult relationship between researchers and practitioners in several ways. First, it could be that respondents believed they were doing a good job when they were not. This would indicate a lack of competence that comports with the general perspective found in Stuart et al. (2011) and Torres et al. (2012). Conversely, when field results fail to support those found in experimental settings, researchers place blame with teachers, who are the actual implementers of the EBP, instead of investigating whether the fault lies with the development of the EBP itself, the context, or any number of other factors.

Like education, social work is a field where authentic uptake critical for success, and practitioners from the field of social work recognize the need for developers and

implementers of EBPs to come closer together. Social work is an area where implementation could be very difficult for at least two reasons. The first reason is that social workers typically operate with a high degree of autonomy. They often work in the field, interacting with clients without any direct supervision. At the same time, they encounter varying situations and nuanced challenges experienced by clients. This means that social workers will likely have a difficult time matching an imposed, rigid implementation protocol in a one-to-one fashion. Instead, social workers need to make assessments and adjustments along the way. Social workers also experience challenges implementing EBPs because their clients often take part entirely on a voluntary basis, meaning they cannot be coerced into responding in a certain way to an EBP utilized by the social work professional. This produces the need to convince rather than coerce individuals who employ or otherwise interact with EBPs.

Franklin and Hopson (2007) recognized the research–practice gap, but they took a different tack when seeking to bring people from different roles and perspectives together to craft the best solution. They asserted: “The inability to implement EBPs is an important issue reflecting a lack of knowledge transfer and collaborative relationships between researchers, educators, and community-based practitioners and programs” (para. 4). This means that in order for EBPs to be developed and utilized effectively, the culture of an organization must support the type of conditions that allow for dialogue and growth during implementation. Franklin and Hopson endorsed providing conditions in which individuals can collaborate and discuss challenges to EBP implementation rather than rely on the organizational hierarchy to compel compliance. This implied an emphasis on organizational factors, including culture, and shifted the role of supervisors from one of

giving directives and then measuring compliance to one of taking concrete action toward creating an environment of open communication.

Culture is a key component in social work, and in agencies with poor cultural resources, time, practitioner knowledge, and skills are inhibiting factors (Gray et al., 2013). This analysis lay at the heart of implementation development and highlighted the best direction toward a positive outcome. Rather than being forced from the top of the organization down to those who will implement, EBPs must be acknowledged as viable by the individuals who will implement them if they are to be successful. Leaders can create environments where EBPs flourish or at least attempt to mitigate factors that appear to limit EBP uptake. These factors include blame cultures, an environment that does not support critical questioning, a lack of opportunities for practitioners to improve their skills in terms of taking research and putting it into practice, moving on too quickly when results are not immediately seen, and administrative practices which limit or punish practitioners (Gray et al., 2013).

The findings of Gray et al. demonstrate a clear divergence in the literature. Researchers on one pathway attempted to connect improved outcomes with better and better EBPs and training, and researchers on the other pathway connected improved outcomes with providing an environment where practitioners can grapple with EBPs and ultimately flourish. One pathway busies administrators and supervisors with making decisions about which EBP to utilize, providing training to staff intended to utilize the EBP, and then monitoring closely to ensure that the practitioner implements the EBP with fidelity. The other pathway busies administrators and supervisors with building teams of competent individuals and then ensuring that a quality culture exists among the whole

group so that innovation and improvement results from their collective efforts. The former is simple. The latter is complex. The two propositions appeared as a clear divergence in the literature. Researchers on both avenues recognized the importance of implementation, but those on only one path recognized that implementation could not be mandated, and those implementing the EBP must be given appropriate leeway to practice as a professional.

The beginnings of the EBP movement in the education sector included a move toward more scientific approaches (Slavin, 2002). This might lead to the assumption that supervisory approaches that compel compliance through a rigid set of concrete actions related to the EBP align with that value. There are other ways to take a scientific approach to leadership in learning organizations. Teachers are practicing professionals who must continually apply their expertise in novel ways while reflecting upon results, so they require more room to operate than a rigid structure can provide (Burke et al., 2019). The problem is that a rigid structure can negatively impact autonomy. In environments where autonomy matters less, more rigid strategies may well produce positive outcomes, as has been seen in group care facilities (Stuart et al., 2011).

Allowing for autonomy does not eliminate the need for structure. As Cook and Odom (2013) showed, implementation is the crux of any effective EBP, and educators need structures that systematically support effective and authentic implementation. The authors suggested IS as the most viable framework for reliable EBP uptake in special education settings. Moir (2018) concurred with Cook and Odom (2013) regarding the importance of implementation and underscored the reality that schools purchase EBPs without asking questions about why the existing intervention failed in the first place.

Moir, Cook, and Odom recognized the positive results stemming from utilizing an IS framework and concluded that it should be “incorporated into the design and evaluation of every school program to ensure effectiveness and sustainability” (Moir, 2018).

Because researchers have associated IS with increased practitioner autonomy, it could be mistaken as no system at all, but this is not the case.

The self-determined learning model of instruction is a research-based educational approach through which educators acknowledge a level of autonomy within each student (Burke et al., 2019). Because the self-determined learning model of instruction honors students as the causal agent in their own learning and provides students with an appropriate amount of autonomy in their own education, this model provides both student and teacher with a degree of autonomy. The IS framework fits well with the self-determined learning model of instruction because it does not require coerced outcomes. Rather it offers a systematic approach to convincing a population to voluntarily utilize the EBP. It also includes the structures necessary to support scaling to a very large population (Burke et al., 2019). Sorensen and Kosten (2011) recognized the interplay between the need for fidelity to the intervention and the need to adapt in practice. They asserted:

The implementation of broader evidence-based treatments and more component-level evidence-based practices depends on both top-down and bottom-up responsibilities. The top-down approach—involving strict adherence to evidence-based studies in order to maximize potential efficacy—can come into conflict with the bottom-up approach, which is concerned about the utility of these interventions to the providers, patients, and treatment programs. (Sorensen & Kosten, 2011, para. 2).

The key features of allowing appropriate autonomy as well as having the structures necessary to scale to large populations makes IS both a critical innovation as well as an

extremely viable option for education leaders to consider when thinking about organizational change.

The development of EBPs beyond the medical field influenced a variety of sectors, including education (Burke et al., 2019). Borrowing first the concept of EBPs from medicine, researchers in other disciplines began to work out the best way to utilize them in their own fields. In the education sector, the movement began with a strong emphasis on EBPs themselves, such that if an EBP failed, local education agencies simply moved on to the next one without careful consideration as to why the failure occurred (Moir, 2018). From here, researchers focused more attention on implementation as important for EBP success, and that development came about in two vastly different ways. In the first, teachers and their ineffective use of EBPs came to be seen as the cause for failure, which led to an emphasis on training and careful monitoring of teacher performance to ensure compliance with specific elements of the new practice. Researchers in another development recognized the need for some autonomy within a teacher's professional practice related to EBPs and focused on setting appropriate conditions for teachers to flourish during implementation (Burke et al., 2019). This development exposed a need for more structure, and a viable solution was formed in IS (Fixsen et al., 2009). The remaining portions of this literature review provide an explanation of IS itself, where it has been used in education, and its relationship to leadership in the education sector.

Implementation Science

In the inaugural article of *Implementation Science*, Mittman and Eccles (2006) outlined the importance of effective uptake of research findings in health care and justified the need for scholarly input regarding implementation. They defined implementation research as “The scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practices” (Mittman & Eccles, 2006, para. 1). Creating this outlet did not generate the field of IS itself, but instead created an academic space for existing and rapid development. Prior to this publication, articles related to IS were “scattered across a wide range of journals, including clinical, public health, health services, and healthcare quality/safety journals” (Mittman & Eccles, 2006, para. 6). The field has been growing with no dedicated space, and research published in other outlets did not enjoy the opportunity to discuss factors and issues related to implementation itself. After health care practitioners transitioned to seeking and implementing more evidence-based solutions (Guyatt et al., 1992), a seeming inability to successfully deliver these EBPs to patients inspired closer study into the implementation step and ultimately gave rise to IS (Glasgow et al, 2012). For example, in heart patients, new statin drugs only showed a 7% advantage over existing statins in lowering cholesterol. However, increasing the consistency of using existing statins has a much more profound effect (Glasgow et al., 2012). This showed that even if an intervention’s improvement appears to reach an upper bound, often more careful implementation will improve results, which naturally implies the importance of implementation research. It also showed the importance of influencing the uptake process to improve performance related to research-based practices (Rubenstein & Pugh, 2006).

The significant amount of money and effort spent developing new interventions could be utilized instead to develop viable implementation practices (Fixsen et al., 2009). Additionally, lack of EBP use leads to negative outcomes not because of lacking EBPs but because no reliable transmission structures exist to facilitate uptake of those practices (Fixsen et al., 2009). Earlier developers of EBP use, such as Slavin (2002), did not recognize that denying the importance of implementation can cause harm. The idea that little harm could come from trying an EBP and failing has since been invalidated. Because inadequate evaluation of implementation could inadvertently lead to a false conclusion regarding an EBP's efficacy, researchers in health care and related fields came to realize that implementation requires the same commitment to careful study as EBPs themselves (Damschroder & Hagedorn, 2011).

Because of the need to balance innovation with various constraints, practitioners require a clear framework for navigating between those two realities. Votova (2019) stated:

Implementation science can provide a synthesis of effective strategies and a theoretical understanding of how internal and external knowledge impact change and ways to develop coalitions with external knowledge sources such as EPOC [The Cochrane Effective Practice and Organization of Care] enable rapid access to evidence. This is particularly pertinent for the many health decision-makers who have to balance the innovation agenda with resource constraints and prioritize EBP implementation when there is uncertainty about evidence. (para. 18)

The ability to honor both the EBP itself while also providing flexibility within a viable framework gives a leader using IS principles the ability to meet student needs. Another way to think of the construct is that its flexibility enables practitioners to prioritize the needs of patients, students, or other beneficiaries while also providing the structure necessary to be replicable in a variety of settings and fields. Researchers and

practitioners utilize IS in a variety of areas, including health care, juvenile justice, employment, mental health, and education (Fixsen et al., 2009). Educators have taken notice as a means of addressing concerns with the implementation of EBPs in various settings. However, prior to looking at areas in the education sector that have utilized an IS approach, a clear understanding of its structure should be established.

Elements of Implementation Science

IS evolved in an organic fashion. Therefore, identifying the construct's specific elements requires a synthesis of the literature. Meyers et al. (2012) undertook such an endeavor by synthesizing over 25 implementation frameworks. In doing so, Meyers et al. produced the quality implementation framework. Through careful analysis, Meyers et al. coalesced four phases into the framework. They are as follows:

- Phase 1. Initial considerations regarding the host setting
- Phase 2. Creating a structure for implementation
- Phase 3. Ongoing structure once implementation begins
- Phase 4 – Improving future applications

Though the specific language describing each phase may differ slightly, these four general phases have guided those who study the IS framework. Aarons et al. (2014) articulated the four phases as proactive leadership, knowledgeable leadership, supportive leadership, and perseverant leadership. Importantly, these phases may not always be linear in practice; it is possible to move fluidly through them, and members of an organization may not all be always in the same phase (Meyers et al., 2012). To help with clarity throughout this review, the phases will be referred to in the following phases:

1. Initial considerations (Meyers et al., 2012) and proactive leadership (Aarons et al., 2014)
2. Creating structure (Meyers et al., 2012) and knowledgeable leadership (Aarons et al., 2014)
3. Ongoing structure (Meyers et al., 2012) and supportive leadership (Aarons et al., 2014)
4. Improving future applications (Meyers et al., 2012) and perseverant leadership (Aarons et al., 2014)

In the first phase, the researcher focuses on understanding the environment in which the EBP will be implemented. This involves needs and readiness assessments, obtaining buy-in from stakeholders, identifying potential adaptations, and developing preimplementation training structures (Meyers et al., 2012). Phase 1 is also a way of measuring the organization's readiness for and support of change. Aarons et al. (2014) referred to the first phase as proactive leadership because "it indicates the degree to which the leader anticipates and addresses implementation challenges" (para. 28). Notably, in Meyers et al. (2012), Phase 1 represents the largest of all phases in terms of steps to consider. This indicates leaders must be thoughtful in this phase. Also noteworthy, leaders make connections in this initial step and seek input from those who will ultimately be responsible for implementing the EBP. Implementers participate in the process from the beginning.

The second phase (i.e., creating a structure for implementation) includes creating implementation teams and developing an implementation plan (Meyers et al., 2012). In this step, the leader takes action that involves others within the organization to develop

the best path forward related to implementation. Aarons et al. (2014) described Phase 2 as knowledgeable leadership because the leader must understand the EBP itself as well as understand what issues may arise during implementation. The leader does not dictate next steps but rather takes responsibility for facilitating and organizing efforts toward successful implementation of the EBP. In another key feature of the IS approach, these first two phases happen prior to implementing the EBP in practice. The first two phases involve preparing individuals in the organization for the innovation as well as involving them in the process from the beginning.

The third phase involves actual use of EBP by the implementers. Meyers et al. (2012) referred to this phase as ongoing structure. Aarons et al. (2014) referred to it as supportive leadership. Both described the importance of providing ongoing supports to those who will implement the EBP and recognize that this is a period where implementers iterate and improve. Not everything will go smoothly, and some things will go poorly, but the leader must establish structures to support the implementer's learning. Meyers et al. (2012) outlined three important steps within this phase that describe its overall purpose:

1. Provide needed and ongoing technical assistance to front-line providers.
2. Monitor ongoing implementation.
3. Create feedback mechanisms for implementers.

Here again, the leader acts as a facilitator and works on systems focused on supporting this phase of implementation. The leader recognizes that implementors require feedback and support to improve their EBP execution.

The fourth phase begins when the EBP takes hold within the organization so that it seems to happen naturally or as common practice. This does not eliminate the need for leadership. In fact, just the contrary is true. Aarons et al. (2014) referred to this as perseverant leadership because ensuring that conditions exist in the organization to support the continued use of effective EBP is important work for any leader. Meyers et al. (2012) referred to this phase as improving future Applications because it involves continuous, intentional monitoring and feedback. This label carries with it the idea that efforts to improve an EBP should not cease once it becomes a natural part of the organization's functioning. Instead, leaders should commit to continuous improvement with regard to the EBP. Phase 3 differs from Phase 4 because the EBP is still relatively new to the organization in Phase 3, so implementers should expect to see improvement just after utilization of the EBP begins. Additionally, long-term discipline, focus, and fidelity related to the EBP will produce steady improvements long into the future even if each gain seems relatively small in comparison to the gains achieved in the early stages of implementation.

Aarons et al. (2014) mapped the four phases of IS articulated by Meyers et al. (2012) onto a leadership paradigm when they described and tested their instrument for measuring implementation leadership (i.e., the ILS). The connection between IS itself and leadership occurs naturally if leadership is considered a way of convincing, facilitating, and supporting rather than telling, mandating, and coercing (Nordstrum et al., 2017). IS can be characterized as both a systematic and responsive way of ushering in improved policies and practices, meaning enough clarity and structure exists for it to be systematically followed, but users can also apply appropriate variation based on context.

The coupling of these key features gives users of IS the ability to apply practices in widely varied contexts as well as on a large scale. The use of IS in countries like Singapore and Hong Kong have produced impressive results as measured by the Program for International Student Assessment and the Trends in International Mathematics and Science Study, which found wise policy choices and the effective embedding of those policies in practice (Harris et al., 2014). IS offers a systematic and sophisticated approach to fidelity (Nordstrum et al., 2017). Because users can tailor the phases of implementation described in the IS literature to specific contexts, the IS approach provides both structure and flexibility simultaneously. Practitioners in a variety of settings, including in education, have long recognized the chasm between EBP and improved results could be spanned by effective implementation, but determining the best system for implementation has taken time to develop. IS has emerged as an excellent option for bridging the gap between research and practice (Fixsen et al., 2009).

Characteristics of Implementation Science

In IS, leaders can utilize its practices without even being aware they are doing so. Though intentionality when using IS may yield better results, research has demonstrated in some health care settings that users apply IS principles without awareness of the construct itself (Stevens, 2019). This suggests that where an individual's actions related to implementation comport with IS, efficacy of the EBP improves, and although an implementer may not be aware of IS as a system, they may naturally act in ways that comply with the structure, thus bringing about improved outcomes. This is a significant finding because it suggests that IS emerged from a reality related to implementation and not simply from an arbitrary construct surmised by researchers. Additionally, IS

developed as a way to improve the EBP adoption rate. Use of IS can improve the rate at which EBPs become standard practice. When passive methods of implementation are used, it takes 17 years for just 14% of research to uptake into a population and IS offers a more efficient approach for EBP uptake (Douglas et al., 2015). Further, users of IS take a more active, intentional approach that can be sustained over time in educational settings largely because it involves more individuals in more phases of change. IS works in educational settings and should be further utilized and studied because of its feasibility and sustainability (Lyon et al., 2019). Although Lyon et al. (2019) called for more IS research in educational settings, the literature already contained a number of examples of IS in various areas within the education sector. The following section of this literature review contains findings.

Implementation Science in Education

IS frameworks have been utilized in some educational settings. This literature review addresses representative literature from a variety of areas within the field, including multitiered system of supports (MTSS), school psychology, curriculum development, special education, and early childhood education. However, prior to delving into ways in which IS has been utilized in education settings, the unique risks associated with implementing poorly should be noted. Poor implementation of proven EBP has been shown to yield negative results for students. This section begins with the risks of poor implementation in educational settings.

The Risk of Poor Implementation

Odom et al. (2009) rightly identified implementation as the critical link between research and practice. However, a researcher or practitioner may erroneously assume that when implementation fails, students will simply not realize its benefit and will otherwise be left unharmed. Evidence to the contrary existed within the literature. When students receive poorly implemented EBPs, their outcomes are worse than if they had not received any EBP at all. They fall behind where they would have been if left alone (Ikemoto et al., 2016). This reality increases the stakes for proper implementation and should serve as a caution to educators to use prudence while navigating change. The fact that many EBPs never materialize in educational settings due to poor implementation (Hagermoser & Collier-Meek, 2019) does not only waste resources and cause frustration; it negatively affects student outcomes (Ikemoto et al., 2016).

In addition to the negative effects for students, poor implementation also has a detrimental effect on teachers. A correlation exists between teacher perceptions that change happens too often or is poorly managed and reports of change fatigue among teachers (Leuschke, 2017). With this research in mind, leaders should ensure purposeful, meaningful, and well-conducted change to respect teachers' efforts to implement new strategies and practices.

Implementation Science in Multitiered System of Supports

Ineffective programs often result not from inherent defects but from poor implementation (Dillard, 2017). This applies to MTSS initiatives as well. Dillard (2017) asserted: "Without a systems approach to MTSS implementation, failure to improve student outcomes may be mistaken for a failure of the EBPs in MTSS" (p. 35). Dillard

recognized the need for a systematic way of implementing EBPs and put forward IS as a highly effective option. Implementing MTSS using an IS model forces implementation to happen in stages (Fixsen et al., 2009). The natural organization of MTSS implementation into stages impacts professional development and also provides a way for implementers to understand when it is time to move forward in the implementation process by moving to the next stage (Dillard, 2017). Thoughtful progress through the implementation process ensures the implementation fidelity necessary for success (Dillard, 2017).

In a study of response to intervention implementation, Alhusayni et al. (2016) used an IS framework to understand fidelity. Findings included a need for more explicit training as well as program evaluation along the way. The authors showed it was imperative to evaluate a program on an ongoing basis to appropriately manage the organization through the phases of implementation depending upon their stage of development. It appeared in this example that more attention was needed to provide opportunities for staff to resource themselves. Additionally, as evidenced by the desire for individual and program evaluation, it appeared that more could have been done to create feedback loops to inform implementers of their progress during the supportive stage.

Implementing MTSS frameworks involves a complex process because it provides students with the specific support they need in a timely and coordinated way (Leonard et al., 2019). Organizing that work is critical for achieving success. School administrators believe that intervention and supports improve student outcomes, and they believe roles and responsibilities when providing these supports should be shared among key staff within the school (Frigmanski, 2014). Thoughtful and organized approaches to implementing MTSS are needed, but state governments often do not provide guidance in

terms of what interventions to use, how to progress monitor, and other important components of implementation (Briesch et al., 2019). Therefore, local districts and schools must provide professionals the structures necessary for understanding and guiding implementation. IS provides a construct that leaders can use to build support structures for educators who are implementing or otherwise utilizing MTSS practices. The framework provides a structure whereby district leadership can connect professional learning, technical assistance, and other supports while also leaving room for autonomous practice by implementers (Freeman et al., 2015).

Implementation Science in School Psychology

Researchers in school psychology have recognized the benefits of IS. Although acknowledging that overall implementation literacy should improve within the field, IS represents a viable way to help educational psychologists improve EBP adoption (Hagermoser & Collier-Meek, 2019). School psychologists face a variety of very situations, needs, and challenges, so a one-size-fits-all approach is inappropriate. Use of IS uniquely enables practitioners to match strategies with determinants, a process known as *tailoring* (Hagermoser & Collier-Meek, 2019). This combination of structure and adaptability makes IS a desirable framework for implementing EBPs in school psychology.

Implementation Science in Curriculum Development

Goldstein and Olszewski (2019) explained that IS has been used in curriculum development:

The guiding principles of the exploration, preparation, implementation, sustainment implementation science framework high-light the important considerations in developing effective and practical interventions. Considering implementation and sustainment during the intervention development process and using data-based decision making has the potential to expand the availability of user-friendly evidence-based practices in communication sciences and disorders and encourage a bridging of the researcher-clinician gap. (p. 1)

This perspective highlights the ability of IS's four broad categories to positively impact curriculum development. A clear structure for understanding the implementation of a particular curricular intervention or initiative can be added to the development process making thoughtful and authentic uptake more likely. Designing with the end in mind and including implementation through an IS framework can produce better results than when considering development and implementation separately.

Regarding curriculum, educators' expectations appear top-down in some respects and collaborative in others (Thompson, 2006). When embarking on a curricular change, Thompson (2006) observed the following beliefs:

1. Individual teachers are supposed to learn about new curriculum through attending professional development.
2. Teachers believe administrators should:
 - (a) Provide teachers with current information and documents supporting changes in curriculum.
 - (b) Support teachers' attendance at professional development.
 - (c) Budget for purchase of new resources to support the curriculum.
 - (d) Provide time for teachers to collaborate and plan with other teachers.
3. It is the role of the C&I department to provide professional development opportunities.
4. Alberta education agency should provide updates regarding curriculum changes, funding, get feedback from teachers.
5. Professional development should:
 - (a) be provided to all individuals with substitute costs being covered,
 - (b) be scheduled during the school day,
 - (c) include an opportunity to work together in teams,
 - (d) include follow-up after the implementation has started.

(p. 77)

This data can serve as guideposts to leaders who are promoting change. On one hand, it appeared that teachers believe administrators should provide them with the learning they need rather than inviting teachers to have a voice throughout the

implementation process. On the other hand, teachers recognized the benefit of teaming with one another as well as the importance of follow up throughout the change process.

Implementation Science in Special Education

The Every Student Succeeds Act requires that school practices be supported by scientifically based evidence (Every Student Succeeds, 2015), so the challenge of implementing EBPs in the special education arena must be overcome. IS provides educators with the means of successfully bringing EBPs to use in special education environments (Cook & Odom, 2013). Programs such as school wide positive behavior supports have been helped by using IS during the implementation process. Use of IS helps practitioners implement school wide positive behavior supports through its structure and adaptability (Cook & Odom, 2013). IS provides educational leaders the opportunity to network groups for the purpose of implementing EBPs. Stahmer et al. (2018) argued: “Characterization of malleable organizational factors with accompanying linkage to implementation and clinical outcomes is an innovative process with the potential to increase understanding of the mechanisms of action of system level implementation factors” (para. 29).

Implementation Science in Early Childhood Education

The use of EBPs in early childhood education has increased as well (Odom, 2009). Although this development is exciting, implementation itself remains a barrier. Odom (2009) said: “The emerging field of IS is beginning to inform us about factors that support implementation of innovative practices, with such factors embedded in the social and organizational systems in which EI/ECSE programs are situated” (p. 7). The

importance of implementation in early childhood environments has been studied empirically. Showing the importance of sustained implementation efforts, Sandfort et al (2008) put forward the following two hypotheses after careful analysis of a field-based study that included 22 organizations. The analysis was focused on the impact of government tools in the implementation process. Sandfort et al. first hypothesized: Supply-side government tools that provide organizations with a stable revenue base will have a greater impact on an organization's management capacity and management outcomes. The authors also hypothesized: Government tools that allow for stability and innovation, such as grants, will increase programmatic capacity. This conclusion supported the importance of sustainable implementation processes because outcomes in early childhood settings improved when consistent implementation was maintained.

Implementation Science Connections to Leadership

Researchers have not widely connected IS frameworks to leadership theory in educational settings, but connections do exist. Some come in the form of leadership as it relates to implementation in general and not specifically to IS. These connections to implementation in general provide insight into the way a leader influences the implementation process. This in turn clarifies how an IS framework can help a leader deliberately and responsively influence followers to authentically adopt and successfully utilize an EBP (Wisdom, 2019).

Leaders' decisions should connect dynamically to individuals within the organization and their perceptions regarding the efficacy of the implementation (Johnson, 2017). Additionally, a leader must be able to evaluate the system's capacity in real-time as the implementation process unfolds (Aarons et al., 2011). Rogers (1983) described

innovation within organizations as mediated through a combination of the characteristics describing the individuals within that organization (e.g., their attitude toward change, their values, their skills, and perception of the need). First, this description of innovation into social systems appears to resemble the description of IS given by Aarons et al. (2014) and Meyers et al. (2012). Secondly, because successful implementation of innovation depends upon the attitudes and perceptions of the individuals throughout the organization, strong leadership must exist to manage, coordinate, and react as needs arise before, throughout, and after initial implementation (Aarons et al., 2011; Greenhalgh et al., 2004). At the end of the day, authentic and sustained change in practice cannot be coerced (Wills & Holmes-Royner, 2006). This requires leadership that supports, promotes, facilitates, and develops others as they adjust their practice because they truly want to improve, and they believe in the innovation being implemented.

The superintendent, school principal, and other school leaders play key roles in facilitating an EBP. Hollingworth (2012) drew a number of conclusions regarding the role of the school leader in implementation. First, their effectiveness hinged upon relationships. Second, the leadership played a facilitative role and distributed leadership throughout the school. Third, success relied on recognizing the importance of leadership in every implementation.

In a changing world, educational organizations have to continually adapt and grow in order to meet the changing needs of society. This has made organizational change and new implementations of EBPs fundamental to organizational success (Palumbo & Manna, 2019). The leader should act as a facilitator in environments of organizational change. Palumbo and Manna (2019) explained:

Specific strategies should be implemented to overcome the resistance to change and to set the conditions for organizational growth. Among others, the adoption of a deliberative approach to manage the change event, the introduction of change agents and the establishment of implementation teams are essential ingredients of the recipe for successful change in educational organizations. (p. 16).

This perspective supports both the use of IS as well as the importance of leadership during the change event.

Although deliberative approaches to implementation are important, it is possible to utilize practices that comport with an IS framework even without having knowledge of the framework itself. For example, as early as 1980, long before any understanding of IS, some researchers conveyed ideas similar to the IS framework. Baldrige (1980) provided a list of steps for implementing new practices in higher education. The steps included:

Introduce the project (Don't promise the moon, keep the scope of the project in bounds, staff with competent people, political neutrality), and Supporting the Project (administrative support is a life-or-death matter, faculty support is also critical, build a security blanket for the project, staff turnover kills a project, financial starvation is a quick way to kill a project, plan for the death of a project). (pp. 15-19)

These steps resemble the four components of IS, and the fact these elements appeared in the 1980s also demonstrates that leaders can and have utilized ideas that were at least similar to IS prior to the construct being identified and named by researchers.

The fact that leaders employ IS practices without direct knowledge of the construct itself could be because of the impact that transformational leadership can have on an organization's ability to cope with change. Transformational leadership positively impacts innovation climates in organizations (Aarons & Sommerfeld, 2012). Therefore, transformational leadership can provide the conditions necessary for positive change to occur. Aarons and Sommerfeld (2012) also pointed to the need for further study regarding

change leadership. Factors within an organization can make it naturally resistant to change. Therefore, leadership must be applied in an intentional way (Scott, 2001).

As has been shown, IS offers an intentional approach to implementation and organizational change. Rather than dictating and directing, the leader becomes a champion for the vision of the organization and a facilitator for bringing about needed change. As a facilitator, the leader turns their attention towards creating the conditions where professionals within the organization can collaborate and move the work forward. One strategy for doing this is to create feedback loops (Nordstrum et al., 2017). These feedback loops honor the expertise of individuals within the organization and provide the opportunity for the learning community to capitalize on this expertise. The leader does not dictate outcomes but instead casts a vision for the future, provides the conditions in which professionals can innovate toward that future, and facilitates communication, collaboration, and critical thinking. Nordstrum et al. (2017) stated:

A specific mechanism in Implementation Science partnerships for eliciting information about the status of program implementation in local settings is a feedback loop between practitioners, support providers, and researchers on the implementation team. As mentioned in the previous section, feedback loops are developed to open lines of communication between team members to ascertain the extent to which adaptations are being used, and to determine whether further adaptations are necessary in the implementation process. These feedback loops carry information about the local setting back to other members of the implementation team to facilitate quick adaptation and to maximize sensitivity to local needs. (p. 13)

When leaders recognize their work as facilitators toward a commonly held vision, they lead with authenticity. Additionally, when leaders regularly consider feedback, they support their commitment to personal and organizational improvement.

Alignment between leaders' perceptions of their own leadership and followers' perceptions of their leadership is critical for being effective. Moullin et al. (2018)

explained: “When subordinates perceive leaders’ behavior differently than the leader’s perception of their own behavior, there are implications for organizational culture, climate, and implementation climate” (para. 14). The findings of Moullin et al. supported the importance of perception data. Feedback loops that happen in real-time contain individuals’ perceptions, and although all perceptions may not be completely accurate, they all matter to the leader.

In this study a measure adapted from the ILS was utilized. Aarons et al. (2014) developed the ILS around the four factors of IS (i.e., proactive leadership, knowledgeable leadership, supportive leadership, and perseverant leadership). Quantitative data reduction techniques were used to develop this brief measure. Aarons et al. (2014) asserted: “Such brief measures are needed to improve the efficiency of services and implementation research” (para. 31). Aarons et al. (2014) also found that the ILS “demonstrated strong internal consistency reliability, convergent validity, and discriminant validity” (para. 33). Aarons et al. designed the measure so it would not be cumbersome for respondents, thus allowing the measure to be utilized in real-world settings where it could provide much-needed perception data to leaders. Aarons et al. (2014) explained:

Because the scale is comprised of behaviorally focused items, results of the assessment may be used to guide leadership development. Thus, not only does this measure allow for assessment of implementation leadership, it has the potential to serve as a developmental tool to improve both leadership and EBP implementation success within organizations. (para. 37)

Though it is the first measure of its kind, it was developed based on existing literature (Aarons et al., 2014), and other researchers recognized its effectiveness. The ILS and its substructures apply in the education sector (Lyon et al., 2018). Internal

consistencies range from .95 to .98, and according to Lyon et al. (2018), “The ILS has demonstrated adequate internal consistency reliability as well as convergent and discriminant validity from related scales” (para. 21). More information regarding the ILS appears in Chapter Three, but notably, the ILS characteristics of being low-burden, able to capture perception data, and able to provide information both about the implementation itself and the leader made it an excellent measure for this study.

Conclusion

The effort to improve student outcomes requires bringing ever-improved EBPs into school settings. However, simply developing EBPs, mandating their use at the federal level, and attempting to coerce teachers into utilizing them has proven a terrible way of bringing about positive change in education (Cook & Odom, 2013; Nordstrum et al., 2017). As the idea of implementation has developed over time, it has become increasingly clear that the best way to ensure effective utilization of EBPs in schools is to convince teachers of their efficacy and to provide support while they adjust their practice (Palumbo & Manna, 2019). IS provides a structure that can guide educators toward innovation and improved practice (Aarons & Sommerfeld, 2012). Leaders today can promote innovation and development at the grassroots level by relying on the IS framework to guide their actions. Leaders who adopt this approach recognize the humanity of students and teachers. Being people, they exist within a culture that is supported by campus leadership. That culture can be shaped through intentional inputs from those leading change efforts and can have a tremendous impact on meaningful and lasting implementation and authentic adoption of EBPs (Moullin et al., 2018). The world is evolving, and in order to prepare for the future, students must possess the 21st-century

skills needed to adapt and thrive. The educational paradigms that prepared students for the industrial revolution must be abandoned and exchanged for improved paradigms (Schlechty, 2005). If educators want students to be job-ready and to possess 21st-century skills, education must continually change. If education must continually change, then educators must be proficient at bringing that change about (Kivunja, 2014). Implementation Science gives a framework to guide that process.

CHAPTER THREE

Methodology

The purpose of this study was to examine relationships between followers' perceptions of leader's actions and perceptions of implementation efficacy. The ILS, an instrument developed to measure various leader actions related to implementation, guided this inquiry. That measure was applied in an educational setting to specifically examine leadership (Aarons et al., 2014). Additionally, this study was designed to inquire about perceptions of how well an evidence-based practice was implemented. On a practical level, the aim was to learn what it means to be a leader. Good leaders strive to promote authentic adoption of a philosophy, direction, strategy, or practice (Moullin et al., 2018). Good leaders do not have to coerce, but rather they understand their followers well enough to guide them through the process of seeing a need and then improving to meet that need. However, this concept can become nebulous, and leaders often struggle to identify exactly how to lead in a changing environment. Therefore, a goal of this study was to explore a possible connection between systematically approached change leadership in the form of IS and followers' perceptions of efficacy. These connections can help educational leaders navigate the changes their organizations will inevitably experience. The chapter begins with a discussion of the rationale for choosing the research tradition. Then, research setting, data sources, data collection methods, and analysis are discussed. Finally, limitations are identified.

Research Setting and Context

From the launch of Sputnik and the subsequent publishing of *A Nation at Risk*, the American education system has operated in improvement mode. The country continues a path toward improvement that has most recently taken the form of implementing EBPs (Slavin, 2002). To produce EBPs, researchers identify a practice, test it for effectiveness, and publish the results. When researchers find highly effective practice, the practice acquires value for school districts and is often packaged for sale. Practitioners then take their newly purchased educational program and attempt to replicate research results in their local contexts. When this ends poorly, real consequences such as teacher fatigue and suppressed student achievement result (Ikemoto et al., 2016; Leuschke, 2017; Tucker, 2013). Additionally, educational leaders often conclude that the EBP is ineffective in their local context, discard it, and move on to something new (Moir, 2018). These changes have consequences for teacher morale and commitment (Tucker, 2013).

IS emerged from the health care field. Though researchers may find practices that make people healthier (e.g., exercising for 60 min per day), they cannot compel free individuals to act upon that evidence. Consequently, the construct known as IS formed to promote authentic adoption of evidence-based practices (Mittman & Eccles, 2006). A key characteristic of IS that makes it applicable to the educational environment is its lack of a coercive feature. Instead of dictating action, followers of the construct acknowledge that individuals cannot be forced to act. Some educational leaders may believe they can demand their followers use certain practices, but research has shown mandating change does not work (McLaughlin, 1990). Instead, top-down orders deny teachers their professional capacity and move them toward a managerial or operative capacity (Grant,

2009). Teachers must lead students toward overall success. The profession requires diverse and rigorous thought to respond to individual needs. Teachers diagnose student needs and prescribe educational treatments based on those needs, but that is not all. Teachers leverage student learning preferences to design engaging activities that will encourage apprehension of the knowledge or skills (Schlechty, 2005). Doctors or lawyers who prescribe treatments or provide council they believe in because a manager told them to do so most likely will not survive within their chosen profession. To ask teachers to do the same would remove them from the rank of professional and lead to the same fate (Grant, 2009).

Because teachers act according to what they believe to be best for their students, and because pedagogy must continue to evolve with the aid of EBPs, authentic implementation is critical in K–12 education. Therefore, this study was focused on the K–12 public education environment. One important criterion was that this study be conducted in an educational environment where teachers had recently implemented or were in the process of implementing an EBP. The survey questions were written under the presumption of a recent or ongoing implementation of an EBP within a K–12 public school setting.

Rationale for Research Approach

The ILS includes 12 statements that fall into four broad categories of implementation leadership. Questioning respondents about their perceptions of their leaders' application of these implementation practices yielded meaningful results based on a representative sample of educators who had recently implemented an EBP. A quantitative approach in the form of a survey using a Likert scale was selected as the best

means of gaining insight into participant perceptions. A recognizable overlap existed between IS and organizational change leadership, so it was possible that a leader used implementation leadership principles without being familiar with IS frameworks. They might be following another construct altogether, but if the concepts which comprised that construct overlapped with IS, the leader's actions may be perceived by followers as comporting with IS. For this reason, the survey was not directed toward leaders and their knowledge of IS, but rather were focused on followers and their perceptions of their leaders' behaviors.

The survey instrument included 17 total items. Two items addressed demographics, asking how long the respondent had been a teacher as well as how long they had taught in their current district. Twelve items were derived from the ILS, and three items measured the respondents' perceptions of general implementation efficacy. Participants responded using a 5-point Likert scale. Utilizing a survey with a Likert scale enables researchers to quantify something as subjective as perceptions of implementation in a way that can be digested by education leaders so that it can inform changes in their practice (Allen & Seaman, 2007). Results of the survey produced a distance from the null (i.e., the neither-agree-nor-disagree or middle position) to determine statistical significance between leader actions described in the ILS and perceptions of implementation effectiveness.

Sample and Data Sources

This study was focused on IS practices within the K–12 public education system and was particularly focused on identifying practices that led to perceptions of effective change leadership. All participants were selected from the K–12 environment within the

state of Texas. Additionally, respondents must have recently implemented or were currently implementing an EBP. To determine if an implementation was in-process or had been recently completed, those in charge of such programs were contacted and asked to confirm that a particular EBP had been implemented in an intentional way. Purposeful implementation efforts were confirmed by district personnel responsible for curriculum and instruction in their district. All participating respondents and their schools were kept confidential to promote authentic responses and to encourage participation.

The first data collection step involved finding schools and districts that met the criteria of having recently implemented or were in the process of implementing an EBP. To accomplish this, various superintendents, curriculum chiefs, and other executive leaders in the K–12 education environment in the state of Texas were approached. Once potential participants were identified, communication was sent in the form of a letter or email describing the study, communicating the purpose, outlining the measurement survey itself, and providing assurance of anonymity. Two educational leaders responded to this letter indicating their district’s willingness to participate in the study. Each leader who responded also indicated what EBP their district had implemented. Next, teachers or other educators responsible for utilizing the recently implemented EBP received an email explaining the study and providing an informed consent form and the survey itself. This email also included instructions directing respondents to fill out the survey with implementation of the EBP identified by their leader in mind. The actual EBP implemented differed for each school district.

Because the research questions in this study focused on perceptions of IS practices in K–12 education and possible connections to overall perceptions of

implementation efficacy, the criteria for participant selection only required the participants to work in a K–12 education environment that had recently implemented or was currently implementing an EBP. Other information such as demographic data was not considered to determine participant selection but is included for context.

The survey instrument was distributed to teachers from two school districts in the state of Texas. The first district was a suburban district in the Dallas Fort Worth area. According to the 2018–2019 Texas Academic Performance Report, the first district received an academic rating of B. Other details gleaned from the Texas Academic Performance Report for Birdville Independent School District (2019a) are included in Table 3.1.

Table 3.1

First District Population Data

Demographic	Population
Total students	23,518
Economically disadvantaged	58.4%
English language learners	21.4%
At-risk students	44.9%
African American students	8.9%
Hispanic students	42.9%
White students	39.1%
Asian	4.9%

This district focused on literacy at the elementary school, and they had recently implemented the Phountas & Pinnell Benchmark Assessment System (BAS) at the elementary level. The BAS is a formative assessment that informs teachers and students

of next steps in reading instruction. A key feature of this system involves providing information about each student regardless of where they are in their reading development. Put another way, the BAS does more than identify struggling readers. Kulp (2017) explained: “Formative use of benchmark assessments is not just best practice for schools in jeopardy of, or who have already, lost their state accreditation status. All students need to demonstrate growth in order to achieve at their highest level” (p. 118).

The second school district to respond, the central Texas region, also earned an academic rating of B. Details about this district are listed in Table 3.2 according to the 2018–2019 Texas Academic Performance Report (2019b).

Table 3.2

Second District Population Data

Demographic	Population
Total students	11,732
Economically disadvantaged	42.5%
English language learners	13.9%
At-risk students	44.2%
African American students	4.3%
Hispanic students	43.7%
White students	46.4%
Asian	1.5%

This district focused on student engagement and was implementing the designing engaging work framework as an intentional step toward creating engaging learning experiences. Educators use the designing engaging work framework to identify intentional actions teachers can utilize when designing instruction, and in the framework,

adopters consider the learner to be a client for whom the teacher designs (Schlechty, 2005).

All participants provided informed consent. Responses were anonymous, and no identifiable information has been published. These precautions were taken to secure candid responses about school leaders as well as to remove the possibility of any adverse consequences resulting from participating in the study. Additionally, because this study only solicited adults and not students about their perceptions, no risk existed of harm to students whose teachers participated.

This study includes 102 respondents from two school districts. Removing partial responses yielded a total of 66 respondents from which actionable data could be gleaned. Forty-nine respondents came from School District 1 that recently implemented the BAS, the evidence-based practice aimed at formatively assessing student reading. Fifty-three respondents came from School District 2 that recently implemented designing engaging work, the evidence-based practice aimed at designing learning experiences so that students are attentive, committed, and persistent because they find meaning and value in the work (Schlechty, 2005).

Research Questions

Five specific research questions were posed to address the study's topic and research problem:

- RQ1. To what degree were study participants satisfied with the implementation of EPB within their organization?
- RQ2. To what degree did study participants perceive that EBP implementation had been appropriately supported within their organization?

- RQ3. To what degree did study participants perceive EPB implementation in their district as an effective means of moving the organization in the right direction?
- RQ4. Considering the dimensions of proactive leadership, knowledgeable leadership, supportive leadership, and perseverant leadership, which was most associated with and predictive of study participants' overall satisfaction with the implementation of EPB within their organization?
- RQ5. Considering the dimensions of proactive leadership, knowledgeable leadership, supportive leadership, and perseverant leadership, which was most associated with and predictive of study participant perception that EPB implementation in their district represented an effective means of moving the organization in the right direction?

Data Analysis

Prior to the analysis of the five research questions posed in the study, analyses of a foundational, preliminary nature were conducted. Specific analyses included: evaluations of missing data, internal consistency (i.e., reliability) of participant response, and essential demographic and descriptive information. Missing data were analyzed using both descriptive and inferential statistical techniques. Frequency counts and percentages were utilized for initial illustrative and comparative purposes. The amount of missing data was measured to ensure it fell within an acceptable range.

Internal consistency of participant responses to the survey items on the research instrument was assessed using Cronbach's alpha. The statistical significance of alpha was evaluated through the application of an *F*-Test. *F* values of $p < .05$ were considered

statistically significant. The study's essential demographic information and foundational descriptive information were analyzed and reported using descriptive statistical techniques. Frequency counts, percentages, mean scores, and standard deviations represented the primary descriptive techniques utilized for illustrative and comparative purposes.

Data Analysis by Research Question

The study's research questions were addressed using a variety of descriptive, associative or predictive, and inferential statistical techniques. Frequency counts, percentages, and measures of typicality and variability represented the primary descriptive statistical techniques used to address the five formally posed research questions in the study.

Responses to the survey instrument were collected on a five-point Likert scale. Respondents selected the box that most closely matched their perceptions. The choices were as follows in this order: strongly agree, somewhat agree, neither agree or disagree, somewhat disagree, and strongly disagree. The third position of neither agree or disagree was considered as the median. A conceptual comparison was made using the median number, 3, as the population mean for comparison in the one sample t tests. In Research Questions 1, 2, and 3, the one sample t test was used to assess the statistical significance of participant responses to each research question. The alpha level of $p < .05$ represented the threshold for statistical significance of finding. Cohen's d was used to assess the magnitude of effect (i.e., effect size). Cohen and Sawilowsky's parameters of interpretation of effect sizes were employed for comparative purposes in each of the three research questions.

Research Questions 4 and 5 were associative and predictive in nature, utilizing multiple independent predictor variables in the predictive modeling process. The multiple linear regression test statistic was therefore utilized to assess the predictive robustness of the respective independent variables in Research Questions 4 and 5. Predictive model fitness was assessed through the interpretation of the predictive model's ANOVA table F value. An F value of $p < .05$ was indicative of predictive model viability. Independent variable predictive slope values, interpreted through the predictive model's t values, represented the means by which the statistical significance of independent variables was interpreted. Values of $p < .05$ were considered statistically significant for variable slope values. R^2 values were utilized as the basis for effect size measurement for each independent predictor variable. The R^2 statistic was interpreted for each predictor variable for comparative purposes and transformed to a Cohen's d value for interpretability purposes.

All major assumptions associated with the use of multiple linear regression were assessed either by statistical means (i.e., Durbin-Watson values, tolerance/variance inflation factor values, and Cook's distances) or visual inspection (i.e., scatter plots, box and whisker, PP/QQ plots; and bar charts). The analysis, interpretation, and reporting of finding were conducted using IBM's 26th version of the *Statistical Package for the Social Sciences*.

Limitations

This study was limited only by the respondents' perceptions, and results were interpreted with this in mind. Additionally, although 66 actionable respondents represent a viable sample size, those respondents were comprised of teachers from one of two

school districts. Furthermore, because the only criteria for respondents was implementing or having implemented an EBP, consideration was not given to a variety of possibly enlightening lenses such as demographics, achievement level, and climate surveys.

Summary

To gain insight into the most effective ways of leading during times of organizational change, this study was focused on respondents' perceptions as measured by the ILS. The ILS has been independently validated and supported by subsequent research into the measure itself. The study was framed by five research questions that were addressed using a variety of descriptive, associative or predictive, and inferential statistical techniques. Results from these measures and analysis techniques yielded important outcomes, which will be discussed in detail in Chapter Four.

CHAPTER FOUR

Results

Introduction

Chapter Four presents the study findings for both foundational, segue analyses and the analyses associated with the study's research questions. Five distinct research questions were posed at the study outset to address the topic and research problem. Descriptive, inferential, and associative or predictive statistical techniques were utilized in the analytics process. Study data were initially captured and recorded via Excel spreadsheet format. The study's analyses, interpretation, and reporting of findings were conducted using the 26th version of IBM's *Statistical Package for the Social Sciences*.

Missing Data

The study's initial data set included 102 respondents. Further screening of the data set eliminated 36 potential study participants for reasons of nonresponse. As a result, the study's final, actionable data set included 66 participants. The study's missing data after the initial screening process was very minimal (0.13%; $n = 1$). The completion rate achieved in the study of 99.87% was noteworthy, as it exceeded the general, customary rate of 78.6% achieved in the surveying process.

Internal Reliability

The internal reliability of study participant response to survey items on the research instrument was addressed using the Cronbach's alpha statistical technique. The overall internal reliability of study participant response to survey items on the research

instrument was considered excellent at $\alpha = .97$. Cronbach alpha levels of $\alpha \geq .90$ represent excellent levels of internal reliability.

Table 4.1 contains a summary of internal reliability values achieved in the study.

Table 4.1

Internal Reliability: Overall and by Dimension

Category	<i>n</i>	<i>a</i>
Proactive leadership	3	.91
Knowledgeable leadership	3	.90
Supportive leadership	3	.92
Perseverant leadership	3	.95
Overall	12	.97

Demographic Identifiers

Two primary demographic identifiers were utilized in the study: study participant years in the teaching profession and study participant years of teaching experience within the district. Nearly half (43.9%; $n = 29$) indicated they had taught within the 11 to 20 years category. Nearly one-quarter (24.2%; $n = 16$) indicated serving the field of education as a teacher for 21 years or more.

Almost one-half (42.4%; $n = 28$) of study participants indicated they had been employed as a teacher within the district for 5 years or less. Nearly one-third (31.8%; $n = 21$) indicated they had taught within the district for 11 to 20 years. Only 7.6% ($n = 5$) of study participants indicated they had been employed as a teacher with the district for 21 years or more.

Survey Item Responses

Survey items were analyzed individually in advance of the formal analyses associated with the study's research questions. Descriptive and inferential statistical techniques were used for analyzing and reporting purposes. Table 4.2 contains a complete summary of findings for the preliminary analyses of survey items on the study's research instrument.

Notably, a subset of survey items was associated with each dimension of the IS framework on the ILS. The dimensions included: proactive leadership, knowledgeable leadership, supportive leadership, and perseverant leadership. Items 1 through 3 were associated with proactive leadership. Survey Items 4 through 6 were associated with the knowledgeable leadership. Survey Items 7 through 9 were associated with supportive leadership. Survey Items 10 through 12 were associated with perseverant leadership (Aarons et al., 2014).

Table 4.2

Summary of Analyses: Individual Survey Items

Survey item	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>d</i>
My leader established clear standards for the implementation of the EBP.	66	4.09	1.12	7.92***	.97 ^a
My leader has developed a plan to facilitate the EBP implementation.	66	4.09	1.19	7.47***	.92 ^a
Obstacles and barriers to successful implementation of the EBP have been addressed and removed by my leader.	66	3.61	1.20	4.10***	.51
My leader is confident about his/her ability to successfully implement the EBP.	66	4.02	1.16	7.13***	.88 ^a
My leader is knowledgeable about the EBP.	66	3.97	1.10	7.19***	.88 ^a
My leader effectively addresses staff questions that arise about the EBP.	66	3.94	1.20	6.35***	.78
Employee efforts to use the EBP have been well-supported by my leader.	66	4.24	1.16	8.67***	.07
My leader supports employee efforts to gain a thorough understanding about the EBP.	66	4.35	0.98	11.13***	.38
Employee efforts to understand and embrace the EBP are recognized and appreciated by my leader.	66	4.26	0.98	10.41***	.29
My leader shows great perseverance through the challenges of implementing the EBP.	66	4.20	1.10	8.85***	.09
My leader has maintained a steady, positive attitude in his/her commitment to implementing the EBP regardless of the challenges and setbacks experienced in the process.	65	4.17	1.13	8.37***	.04
My leader responds effectively to critical issues regarding the implementation of the EBP.	66	4.06	1.08	7.98***	.98 ^a

Note. EBP = evidence-based practices, ****p* < .001, ^aLarge effect (*d* ≥ .80).

Response by Survey Dimensions

Survey dimensions were analyzed individually in advance of the formal analyses associated with the study's research questions. Descriptive and inferential statistical techniques were used for analyzing and reporting purposes. Table 4.3 contains a complete summary of findings for the preliminary analyses of survey dimensions represented through the survey items on the study's research instrument.

Table 4.3

Summary of Analyses: Study Dimensions

Dimension	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>d</i>
Proactive leadership	66	3.93	1.08	7.02***	.86 ^b
Knowledgeable leadership	66	3.98	1.05	7.56***	.93 ^b
Supportive leadership	66	4.28	0.98	10.69***	1.31 ^a
Perseverant leadership	65	4.14	1.06	8.70***	1.08 ^b

Note. ^aVery large effect ($d \geq 1.20$).

^bLarge effect ($d \geq .80$).

*** $p < .001$.

Finding by Research Question

Research Question One

The first research question was: To what degree were study participants satisfied with the implementation of EPB within their organization? The one sample *t* test was used to evaluate the statistical significance of study participant degree of overall satisfaction with the implementation of EPB within their organization. The Cohen's *d* statistical technique was used to assess the magnitude of effect of study participant overall satisfaction with the implementation of EPB within their organization. As a result,

a study participant mean score response of 3.74 ($SD = 1.38$) in Research Question 1 manifested at a statistically significant level ($t_{(64)} = 4.30, p < .001$). The magnitude of effect for study participant overall perceptions of satisfaction with the implementation of EPB within their organization was considered medium ($d = .54$).

Research Question Two

The second research question was: To what degree did study participants perceive that EBP implementation had been appropriately supported within their organization? The one sample t test was used to evaluate the statistical significance of study participant perceptions that the implementation of EPB within their organization had been appropriately supported. The Cohen's d statistical technique was used to assess the magnitude of effect of study participant overall perceptions that the implementation of EPB within their organization had been appropriately supported. As a result, a study participant mean score response of 3.89 ($SD = 1.32$) in Research Question 2 manifested at a statistically significant level ($t_{(64)} = 5.43, p < .001$). The magnitude of effect for study participant overall perceptions that the implementation of EPB within their organization had been appropriately supported was considered medium and approaching a large effect ($d = .67$).

Research Question Three

The third research question was: To what degree did study participants perceive EPB implementation in their district as an effective means of moving the organization in the right direction? The one sample t test was used to assess the statistical significance of study participant perceptions that EPB implementation in their district represented an

effective means of moving the organization in the right direction. The Cohen's d statistical technique was used to assess the magnitude of effect of study participant perceptions that EPB implementation in their district represented an effective means of moving the organization in the right direction. As a result, a study participant mean score response of 4.12 ($SD = 1.14$) in Research Question 3 manifested at a statistically significant level ($t_{(65)} = 7.86, p < .001$). The magnitude of effect for study participant overall perceptions that EPB implementation in their district represented an effective means of moving the organization in the right direction was considered large ($d = .98$).

Research Question Four

The fourth research question was: Considering the dimensions of proactive leadership, knowledgeable leadership, supportive leadership, and perseverant leadership, which was most associated with and predictive of study participant overall satisfaction with the implementation of EPB within their organization? The multiple linear regression statistical technique was used to address the viability of the four independent predictor variables associated with Research Question 4. As a result, the variable of proactive leadership represented the most viable correlate and predictor of study participant perceptions of overall satisfaction with the implementation of EPB within their organization. The associative or predictive effect for the variable proactive leadership was statistically significant ($p = .004$) and considered very large ($d = 1.50$).

The predictive model used to address Research Question 4 was a viable model ($F_{(4, 60)} = 25.29, p < .001$), with the confluence of the four independent predictor variables accounting for 62.8% ($r^2 = .628$) of the explained variance in the model's dependent

variable of study participant perceptions of overall satisfaction with the implementation of EPB within their organization.

Predictive model assumptions associated with multiple linear regression were addressed and satisfied through statistical means (i.e., multicollinearity, outliers, independence of error, and normal distribution of residuals) and visual inspection (i.e., linearity and homoscedasticity). Table 4.4 presents a complete summary of findings for the predictive modeling associated with Research Question 4.

Table 4.4

Predicting Participant Perceptions of Overall EBP Satisfaction

Model	β	SE	Standardized β
Intercept	-0.55	0.49	
Proactive leadership	0.77	0.26	.60**
Knowledgeable leadership	-0.16	0.25	-.12
Supportive leadership	0.22	0.25	.15
Perseverant leadership	0.23	0.25	.18

Note. ** $p = .004$.

Research Question Five

The fifth research question was: Considering the dimensions of proactive leadership, knowledgeable leadership, supportive leadership, and perseverant leadership, which was most associated with and predictive of study participant perception that EPB implementation in their district represented an effective means of moving the organization in the right direction? The multiple linear regression statistical technique was used to address the viability of the four independent predictor variables associated with Research Question 5. As a result, the variable of perseverant leadership represented

the most viable correlate and predictor of study participant perceptions that EPB implementation in their district represented an effective means of moving the organization in the right direction. The associative or predictive effect for the variable proactive leadership was statistically significant ($p = .05$) and considered large ($d = .90$).

The predictive model used to address Research Question 5 was a viable model ($F_{(4, 60)} = 18.08, p < .001$), with the confluence of the four independent predictor variables accounting for 54.7% ($r^2 = .547$) of the explained variance in the model's dependent variable of study participant perceptions that EPB implementation in their district represented an effective means of moving the organization in the right direction. Predictive model assumptions associated with multiple linear regression were addressed and satisfied through statistical means (i.e., multicollinearity, outliers, independence of error, and normal distribution of residuals) and visual inspection (i.e., linearity and homoscedasticity). Table 4.5 presents a complete summary of findings for the predictive modeling associated with Research Question 5.

Table 4.5

Predicting Participant Perceptions of EPB Efficacy

Model	β	SE	Standardized β
Intercept	0.71	0.45	
Proactive leadership	0.05	0.24	.05
Knowledgeable leadership	0.35	0.22	.32
Supportive leadership	-0.00	0.23	-.00(2)
Perseverant leadership	0.44	0.23	.41*

Note. * $p = .05$.

CHAPTER FIVE

Discussion

Introduction

This study relied on the ILS, which is a survey created to measure leader behaviors within an IS framework in an educational setting. The purpose of this study is to gain understanding of how teachers perceived their leaders' behaviors during the implementation of an evidence-based practice. EBP implementation represents a change event for schools, and the ability to navigate change has become a skill all school leaders must possess in order to be successful into the future. The primary goal of this study was to explore a possible connection between systematically approached change leadership in the form of IS and followers' perceptions of efficacy. Chapters One through Four presented the need for inquiry into this type of leadership, a review of the literature related to IS and its connection to recognized leadership theory, a detailed exposition of the study method, and a review of study results. Chapter Five includes a discussion of study findings, their implications for professional practice, limitations, and directions for future study. In addition to broad connections between leader behaviors related to the IS framework and efficacy of EBP implementation, a number of interesting and helpful correlations related to leader behaviors and specific domains of the IS framework are discussed. These connections could inform leaders' actions when leading their organizations through change and can serve as the basis for future experimental inquiry to produce deeper understanding and possibly identify causal connections.

Discussion of Foundational Analysis

The study included a survey instrument comprised of items from the ILS, two demographic questions, and three questions designed to gauge respondents' perceptions of implementation effort efficacy. Respondents were drawn from two different school districts in Texas, each of which had either recently implemented or begun implementing an EBP. This study relied on a nonexperimental, quantitative approach and results were analyzed using a variety of descriptive, inferential, and associative or predictive statistical techniques. A total of 102 respondents engaged. After preliminary analysis, 36 of those were removed due to nonresponse. This made the actionable data set inclusive of 66 respondents. With only one response missing from this data set, the response rate was 99.97%, exceeding the acceptable response rate of 78.6% for survey response (Fluid Survey, 2014) by 21.37%. The internal validity of the data set was assessed using Cronbach's alpha. With $\alpha = .97$, the internal validity of the data set was excellent. Additionally, within each category of proactive, knowledgeable, supportive, and perseverant leadership, Cronbach's alpha remained above $\alpha = .90$, the excellent range for each (Field, 2018). Each survey item, including the first three research questions, was analyzed using a one sample t test to determine statistical significance and Cohen's d to determine effect size. The last two research questions were analyzed using the multiple linear regression analysis technique to determine the viability of the four predictor variables associated with each question. The next section provides a discussion of the analysis of each research question.

Discussion by Research Question

Research Question One

The first research question was: To what degree were study participants satisfied with the implementation of EPB within their organization? The summary of findings for Research Question 1 includes the measurement of statistical significance using a one sample t test and the measurement of the magnitude of the effect size using Cohen's d . As a result, the findings for study participant responses in Research Question 1 was statistically significant as indicated by a value of $t = 4.30$. Additionally, the magnitude of effect for study participant responses in Research Question 1 was considered medium with Cohen's d having a value of $d = .54$.

These results show that survey respondents indicated, to a statistically significant degree, they were more satisfied than not with the implementation of the EBP in their districts. The significance level being high indicates that results related to the effect size as calculated by Cohen's d should be taken with a high degree of confidence. As a group, these survey respondents expressed satisfaction to a medium degree with the implementation of EBP within their organization, according to Cohen's d . Research Question 1 was itself an item on the survey, so participants responded directly to this question. The one sample t test for all other questions, except Item 3 (i.e., Obstacles and barriers to successful implementation of the EBP have been addressed and removed by my leader), which had value of $t = 4.10$, had higher t values ($6.5 < t < 11.13$). This should not be taken to mean that the one sample t test for Research Question 1 yielded a low degree of statistical significance. Instead, it should be noted that each survey item

indicated statistical significance including the survey item associated with Research Question 1.

When comparing Research Question 1 with other survey items, the other survey items, which are associated with the four domains of IS, also yielded high statistical significance in terms of t values and large effect sizes according to Cohen's d . These survey respondents indicated they were more satisfied than not with EBP implementation, and they also indicated their leaders' actions were more agreeable with an IS framework than not.

Respondents' perceptions of effective implementation are extremely important. Leuschke et al. (2017) pointed out the negative effect that poor implementation has on teacher morale. The authors showed that ineffective or poorly managed change correlates to reports of change fatigue among teachers.

Other research questions in this study can and should be interpreted with these results in mind. It would be quite a different thing if the results for Research Question 1 revealed that survey respondents had expressed dissatisfaction with the implementation of the EBP in their districts, and results of subsequent questions would have to be interpreted accordingly. When interpreting other results in this discussion, the fact that this group of survey respondents indicated on average they were happier than not with EBP implementation should be considered. This matters because, when taken together, the findings of each research question, especially Research Questions 1 through 3 can produce helpful insights into the perceptions of survey respondents. After discussing the first three research questions individually, attention is given to the findings of Research Questions 1 through 3 together.

Research Question Two

Research Question 2 was: To what degree did study participants perceive that EBP implementation had been appropriately supported within their organization? The one sample t test was used to determine statistical significance of study participants' perceptions that the EBP implementation had been appropriately supported in their organization. The Cohen's d statistical method was used to determine the effect of study participants' overall perception that leaders effectively supported the EBP implementation in their organization. The mean score of study participant responses on the survey item associated with Research Question 2 was 3.89. It manifested at a statistically significant level according to the one sample t test with a $t = 5.43$. The magnitude of study participant responses in terms of effect was medium but approaching large with a Cohen's d value of $d = .67$. Like Research Question 1, survey respondents indicated, with a high degree of statistical confidence, more satisfaction than not with the way leaders supported the EBP implementation within their organization.

Research Question 2 was also a survey item, so participants responded directly to this question. The one sample t test for Research Question 2 yielded a result of $t = 5.43$. As with Research Question 1, this should not be taken to mean that the one sample t test for Research Question 2 yielded a low degree of statistical significance. Instead, it should be noted that each survey item indicated statistical significance, including the survey item associated with Research Question 2.

When comparing Research Question 2 with other survey items, the other survey items associated with the four domains of IS also yielded high statistical significance in terms of t values and large effect sizes according to Cohen's d . Survey respondents in this

study indicated that leaders in their organization appropriately supported the EBP implementation, and they also indicated their leaders' actions were more agreeable than not with an IS framework.

These important findings show the survey respondents found that the word "support" described their leaders' behaviors. These findings corroborate the literature review which discusses that a connection between IS and change leadership occurs naturally if leadership is considered as a way of convincing, facilitating, and supporting (Nordstrum et al., 2017). Respondents agreed their leaders' actions were supportive, and they also believed that the EBP implementation represented a move in the right direction for their organization. It would be quite different if respondents felt their leader had not supported the implementation while they also believed the EBP would move their organization in the right direction. As with Research Question 1, the fact that respondents agreed with a positive characterization of their leaders' actions by deeming those actions as supportive should be kept in mind when interpreting the remaining research questions.

Research Question Three

The third research question was: To what degree did study participants perceive EBP implementation in their district as an effectual means of moving the organization in the right direction? As in Research Questions 1 and 2, the one sample t test was used to assess the statistical significance of study participants' perceptions that EBP implementation in their district represented an effective means of moving the organization in the right direction. Additionally, like the previous two research questions, Cohen's d statistical technique was used to assess the magnitude of the effect of study participant perceptions that EBP implementation in their district represented an effective

means of moving the organization in the right direction. The mean score of study participant responses on the survey item associated with Research Question 3 was 4.12. It manifested at a statistically significant level according to the one sample t test result of $t = 7.86$. The magnitude of effect as measured by Cohen's d was large with a value of $d = .98$. Therefore, survey respondents indicated, with a high degree of statistical confidence and to a large degree, that the EBP implementation in their district represented an effective means of moving the organization in the right direction.

Research Question 3 was a survey item, so participants responded directly to this question. The large effect size indicates survey respondents valued the EBP implementation and believed it would help them accomplish their mission as educators. This high degree of confidence from Research Question 3 couples with survey item responses related to Survey Items 1 through 12, which are associated with the domains of the IS framework. The first group of three survey items, which comprise the proactive leadership dimension of the ILS, together produced a large effect size as measured by Cohen's d ($d = .86$) with a high degree of statistical confidence as measured by the one sample t test ($t = 7.02$). The second group of three survey items, which comprise the knowledgeable leadership dimension of the ILS, together produced a larger effect size as measured by Cohen's d ($d = .93$) with a higher degree of statistical confidence as measured by the one sample t test ($t = 7.56$). The third group of three survey items, which comprise the supportive leadership dimension of the ILS, together produced the largest effect size of all four dimensions as measured by Cohen's d ($d = 1.31$) with the highest statistical confidence as measured by the one sample t test ($t = 10.69$). The fourth group of three survey items, which comprise the perseverant leadership dimension, together

produced a large effect as measured by Cohen's d ($d = 1.08$) with a high degree of statistical confidence as measured by the one sample t test ($t = 8.70$).

According to the results above, respondents felt their leader utilized IS practices as measured by the ILS, and they also felt that the implementation of the EBP represented an effective way of moving their organization in the right direction. This positive relationship shows that, for this group of respondents, utilization of IS practices accompanied a belief that the EBP represented a step in the right direction. This connection matters because the beliefs of those implementing an EBP drives their actions. This finding supports the perspective of Nordstrum et al. (2017) who noted: "practitioners' behaviors and beliefs" as well as the "characteristics and dynamics" (p. 2) of implementation matter a great deal because these elements are often overlooked in new programs. This connection also supports Newton's (2003) assertion that implementation strategy should be evaluated at all levels in terms of ownership and levels of acceptance. Simply put, as shown in the literature review, the directly monitored use of an EBP is not a good indicator of authentic uptake of an EBP. Instead, leaders must consider the beliefs and acceptance of those implementing the EBP to achieve an effective implementation. Findings from this group of respondents corroborate the assertions uncovered in the literature review in which Leuschke (2017) showed that a correlation exists between teachers' perceptions of poorly or too-often implemented change and the onset of change fatigue in teachers. The respondents of this survey provided positive results in terms of implementation as measured by the dimensions of the ILS and also noted a belief that the EBP moved the organization in the right direction. Although "moving the organization in the right direction" does not equate to a lack of

change fatigue, these results indicate that this group of respondents affirmed the EBP itself and held positive feelings about its implementation.

Research Questions One Through Three Considered Together

The first three research questions should be discussed together for a variety of reasons. First, these three questions each appeared as an individual survey item. Second, the results for all three research questions were evaluated using both a one sample t test and Cohen's d . Third, all three produced positive results as measured by the one sample t test as well as Cohen's d . With this in mind, consideration of Research Questions 1 through 3 as a group (i.e., respondents' perceptions regarding the implementation itself) along with the remaining 12 survey items as a group (i.e., the elements of the ILS), can help make meaning of results. Research Questions 1 through 3 worked together to answer the question: Was the implementation effective? The remaining survey items worked together to answer the question: Did your leader utilize IS principles? Taken together, the results of all three research questions in this specific study can be summarized by stating that these respondents were satisfied with the EBP implementation. They believed it was appropriately supported, and they believed the implementation represented an effective way of moving the organization in the right direction. As has been noted previously in the discussion for individual research questions, the importance of the respondents' agreement on the first three questions must be recognized. If respondents indicated a negative response to any one of the first three research questions, the analysis would have produced vastly different results. For example, if respondents had indicated satisfaction with the implementation and a belief their leader had appropriately supported it but also indicated they did not believe it represented an effective way of moving the organization

in the right direction, then results would have been much more difficult to interpret relative to the impact of their leader's use of an IS framework on participant perceptions.

Table 4.2 showed results connected to the other 12 survey items, which correlated with elements of the ILS. Like Research Questions 1 through 3, these items were also evaluated using the one sample *t* test and with Cohen's *d* individually and as part of the IS dimension to which they belonged. Individually, these survey items all produced positive results in terms of statistical significance as measured by the one sample *t* test and in terms of effect size as measured by Cohen's *d*. Some survey items yielded higher results than others. Table 4.3, which shows results for the IS dimensions of proactive leadership, knowledgeable leadership, supportive leadership, and perseverant leadership, also indicates positive perceptions in terms of statistical significance as measured by the one sample *t* test, and in terms of effect size as measured by Cohen's *d*. Coupling respondents' positive perceptions relative to Research Questions 1 through 3 with the positive perceptions expressed relative to the other survey items, which are elements of the ILS yields a result. For these respondents, that result showed positive feelings regarding the implementation along with indications that their leader utilized IS practices. Leaders did not necessarily have to be aware of IS principles in order to utilize them. Stevens (2019) demonstrated this in some health care settings.

Other possible combinations could have been produced relative to the connection between Research Questions 1 through 3 as a group and the remaining survey items. Results could have shown that respondents had negative feelings about the implementation while also indicating they did not perceive their leader utilized IS principles. Or results could have indicated disagreement between respondents'

perceptions of the implementation and respondents' perceptions that their leader utilized IS practices. Finally, respondent perceptions relative to the implementation as well as their leaders' use of IS principles could have been mixed and, therefore, would have failed to provide any definitive indicator of respondents' perceptions as a group.

Fortunately, this survey did result in definitive indicators both of respondents' perceptions of the implementation itself and their leaders' use of IS principles. The results indicated positive perceptions toward both. Therefore, it is fair to conclude the following: These respondents were satisfied with the EBP implementation. They believed their leaders appropriately supported it, and they believed the implementation would move their school forward. At the same time, they also indicated their leader utilized IS principles.

Research Question Four

The fourth research question was: Considering the dimensions of proactive leadership, knowledgeable leadership, supportive leadership, and perseverant leadership, which was most associated with and predictive of study participants' overall satisfaction with the implementation of EBP within their organization? The multiple linear regression statistical technique was used to understand which dimension of the IS framework had the greatest impact on survey respondents' perception of overall satisfaction with the implementation of the EBP within their organization. Of the four dimensions, proactive leadership emerged as the most predictive. Aarons et al. (2014) described proactive leadership in the survey questions themselves. Proactive leadership occurs when the leader establishes clear standards for EBP implementation, develops a plan to facilitate the EBP implementation, and addresses obstacles or barriers to successful

implementation. This corroborated Meyers et al. (2012), who used different language to describe a similar, if not the same, phenomenon. In their quality implementation framework, Meyers et al. (2012) labeled the first of four phases of implementation: “Phase 1: Initial considerations regarding the host setting” (p. 469). This phase, which includes eight steps, contains more detail and more considerations than any other phase. It involves questions such as, “Why are we doing this? What problems or conditions does this innovation address? Do we have genuine and explicit buy-in for this innovation?” (Meyers et al., 2012, p. 470). The fact that survey respondents indicated that proactive leadership was the most predictive variable related to overall satisfaction did not come as a surprise because, in the ILS, proactive leadership measures what Meyers et al. (2012) described in Phase 1, and it is Phase 1 where Meyers et al. devoted more energy than any other phase. Survey respondents’ perceptions match the emphasis Meyers et al. placed on Phase 1 and signal the importance of the first step.

Leadership theorists recognize the principle of going slow to go fast. Meyers et al. (2012) and the survey respondents indicated that the first phase is of primary importance. However, taking Meyers et al. into full consideration, going slow may not be the best way to describe what happens in the early stages of implementing an innovation. The truth is, the first stages of implementation require more work, with more things to be accomplished. Leaders do not drag their feet moving from one consideration to the next. Implementers do not necessarily provide resistance. There is just simply more to do in the early stages to encourage authentic uptake down the line.

Research Question Five

The fifth research question was: Considering the dimensions of proactive leadership, knowledgeable leadership, supportive leadership, and perseverant leadership, which was most associated with and predictive of study participant perception that EBP implementation in their district represented an effective means of moving the organization in the right direction? The multiple linear regression statistical technique was used to understand which dimension of the IS framework had the greatest impact on survey respondents' perception that EBP implementation in their district represented an effective means of moving the organization in the right direction. Of the four dimensions, perseverant leadership proved the most predictive. According to the results of this study, the perseverant leadership dimension was most associated with perceptions that the implementation moved the organization in the right direction.

Returning to McLaughlin (1990), policy does not change practices and does not produce outcomes. The author noted that policy is ineffective for producing outcomes because complying with directives for the sake of following directions only ensures compliance will be achieved when compliers are monitored. Instead, a leader must “form a strategic vision” and “create a sense of urgency” (Kotter, 1996). Leaders must bring change about by authentic means (McLaughlin, 1990). Something must propel the innovation forward besides policy edicts, top-down approaches, and coercion. The belief among first-line implementers that the implementation represents a step in the right direction is a critical step toward authentic adoption. This is because individuals are less likely to adopt something when they do not believe it is the right thing to do. Although belief in an initiative may not be enough on its own to motivate action or compliance, it

represents a necessary step that leaders must achieve. For example, many people believe they can move in the right direction through exercise, but not all people with that belief exercise. But belief in the benefits of exercise represents a critical first step in persuading someone to exercise. Therefore, the belief that an implementation represents a step in the right direction is critical for an initiative's success. However, leaders can promote the belief that the implementation is an effective way of moving the organization in the right direction by seeing the implementation through. The perseverant leader connects belief to practice by attending to the implementation each day. Once first line implementers see the effects of the EBP in terms of positive results, they will be convinced that the implementation moved the organization in the right direction. In short, there is no better way to promote a belief that the EBP is moving the organization in the right direction other than to persevere with the practice until positive results make it undeniable.

These findings indicate that the perseverant leadership dimension is a way for leaders to positively impact followers' buy-in when implementing an innovation. In their articulation of Phase 1, Meyers et al. (2012) described what the ILS measures in the proactive leadership dimension. The authors included elements that appear related to this belief including the questions "Why are we doing this?" and "How well does the innovation match the identified needs of community?" These questions serve as examples of how leaders can use the IS framework to influence the beliefs of those implementing a change. As important as these initial steps are in creating initial buy-in, a leader demonstrates their own belief in initiative by seeing it through. This promotes the same belief in followers. Phase 4 in the Meyers et al. (2012) Quality Implementation Framework which correlates to the Perseverant Leadership dimension in the Aarons et al.

(2014) ILS includes setting up collaborative experiences for first line implementers to debrief and give honest feedback about their experiences when implementing the EBP. It includes thinking collectively about what lessons have been learned while implementing the EBP. This certainly conveys commitment on the part of the leader, and it is natural that it would instill a belief among first-line implementers that the organization is moving in the right direction. Results of the multiple linear regression statistical analysis indicated that the elements measured by the perseverant leadership dimension, which appeared to promote a belief that the implementation moved the organization in the right direction, did produce that impact for the survey respondents in this study. A leader working with this group of respondents, armed with the knowledge that their own perseverant leadership behaviors influenced their followers' positive beliefs related to the efficacy of this implementation, could then intentionally focus their attention on those behaviors during future implementation efforts.

Research Questions 4 and 5 Considered Together

Just as Research Questions 1 through 3 possessed similarities in terms of their analysis and results, Research Questions 4 and 5 can be considered together. Both Research Questions 4 and 5 were analyzed using the multiple linear regression statistical analysis method. According to the survey responses and the multiple linear regression statistical analysis, proactive leadership positively affected overall implementation satisfaction and perseverant leadership positively affected the belief that the implementation represented an effective means of moving the organization in the right direction.

These findings matter for a leader who wishes to involve and support a team during implementation rather than rely on top-down tactics for bringing about change. As McLaughlin (1990) noted, making a rule and communicating a rule falls short. Each locale and system involve individuals and groups with characteristics unique to them. What works with one group may not work in all groups, so rules are not enough. Top-down approaches do not inspire authentic adoption of an innovation. A leader must thoughtfully guide change. However, due to a history of top-down approaches to leadership in education, some leaders have struggled to conceptualize a concrete way forward.

IS offers a framework for effective leadership, and the results of this study showed that framework can serve as a thoughtful leadership approach through which leaders can influence beliefs and promote authentic adoption. Satisfaction with the implementation and a belief that change efforts are moving the organization in the right direction are important in environments where leaders of change avoid top-down tactics. As was previously noted in the literature review, a leader who focuses on setting the proper conditions for teachers to flourish takes a critical step toward realizing an innovation's success (Shogren et al., 2012). Standing in stark contrast to implementation efforts that rely on top-down edicts, a leader who promotes feelings of satisfaction with the implementation and a sense that the implementation will improve organizational functioning encourages volunteers to join the innovation effort. Armed with the knowledge that the proactive leadership dimension most influences overall satisfaction with the EBP implementation, and perseverant leadership most influences the perception that EBP implementation is moving the organization in the right direction, a leader can

intentionally tailor their approach so that it emphasizes these two dimensions. This changes the role of the leader from one who requires new action to one who helps change by attending to the needs of those who will ultimately implement the change, recognizing that those implementers must understand the need for change in order to authentically adopt it. The proactive leadership dimension described by Aarons et al. (2014) and Phase 1 of the quality implementation framework described by Meyers et al. (2012) amounted to what many leaders disregard either because of their haste, their failure to recognize the value of involving others from the beginning, or their lack of understanding about how this impact could occur even before a single teacher tries the EBP in their classroom.

Limitations

The study was created to evaluate participants' perceptions of EBP implementation within their organizations, and findings are observational in nature. The non-experimental nature of the study design limits the generalization of study results. Probability sampling techniques were not considered to be feasible and therefore a non-probability sampling technique was utilized. Drawing from teachers who had completed or who were involved in an implementation is convenient and purposive (Suen et al., 2014). As such, generalization of the study's findings to other teachers outside of the sample is limited and should not occur.

Implications for Professional Practice

Though not generalizable, respondents to this survey showed satisfaction with the implementation of the EBP, perceived that the implementation was well supported, and believed the implementation moved their organization in the right direction. Results also

revealed the impact that the proactive dimension of the IS framework had on perceptions of satisfaction with the implementation as well as perceptions that the implementation moved the organization in the right direction. These results imply that intentional use of the IS framework could bring about positive results in future innovations within these two districts. Therefore, training specifically in the IS framework could be delivered to leaders prior to future implementation efforts.

Additionally, the study model could be applied in these as well as other districts to gather data prior to other EBP implementations. To follow this model, leaders should survey first-line implementers using the ILS instrument in this study to gather insight regarding implementation efforts prior to launching. This survey could reference a prior implementation as a frame of reference for respondents as they answer questions. Then, using the one sample t test and Cohen's d , leaders can draw conclusions about whether a leader utilized an IS framework in the past and whether the leader's efforts produced perceptions of satisfaction, support, and movement in the right direction. This is a crucial step because if data show a leader did not use an IS framework, but perception and other data indicate past successful implementations, there would be little reason to change strategies. However, if data show that a leader did use an IS framework, and positive perceptions existed, then the leader could utilize Research Questions 4 and 5 to determine which dimension of the IS framework were most important in their system. To put it in another way, if data indicate that an IS framework will be helpful, then the leader should utilize all dimensions and be sure to meaningfully emphasize the most important dimension to those implementing the EBP in their system.

The problem of practice specific to GISD was that no process or framework had been identified for leading implementation of the designing engaging work initiative or for EBPs. This study showed a systematic approach to implementation that systemically guided leaders' actions toward authentic uptake of innovations. The process can be summed up as follows:

1. Survey implementers utilizing the instrument in this study adapted from the ILS in order to gain insight into participants' perceptions as well as whether or not the IS framework might be a viable vehicle for leading change.
2. Train leaders on the IS framework so that it can be used and supported as needs arise.
3. Adopt the facilitative role described in the IS framework beginning with the proactive leadership dimension when a need becomes clear in the system.
4. Utilize the IS framework to guide implementation.
5. Survey implementers again after the implementation reaches the fourth phase and after the perseverant leadership dimension has taken hold. Conduct the survey using the instrument from this study that was adapted from the ILS to gain insight into the current implementation and to inform future implementations. This step then becomes Step 1 in a cyclical process.

The current education climate requires leaders with an ability to effectively lead change to ensure organizational success. At the same time, change leadership can be opaque and subjective. Every voyage across the sea is different. It is the voyager who skillfully uses the sails, the rope, the hull of the boat, the stars, and their instruments that

successfully completes the journey. In the same way, this process provides the means by which a leader can navigate change.

Recommendation for Future Studies

Researchers in future study efforts should adopt the same research design but with a larger number of participants. The added responses will provide more insight into the viability and credibility of the process studied. In addition to broadening the participant pool, future study efforts should include a qualitative part utilizing explanatory mixed methods. This could provide further insight into the viability and credibility of the process by including focus group data from interview questions asked to respondents.

Additionally, future study efforts could utilize an experimental approach, possibly utilizing dependent variables such as student achievement. An example of this type of design could be a longitudinal study focused on differences in student achievement data before and after training district leaders on use of the IS framework. Another example of an experimental approach utilizing student achievement as the dependent variable would be to identify two districts that had both implemented the same EBP, one where leaders had been trained to use the IS framework and the other without such training.

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