

## ABSTRACT

### Learning Together: A Quantitative Examination of Inter-District Collaboration in a Community of Practice

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This quantitative study examined school district leaders' engagement in a community of practice and reported the relationship between inter-district collaboration and school district leaders' learning and changes in professional learning efficacy. The theoretical framework involved Wenger's (1998) Community of Practice theory and the Standards for Professional Learning (Learning Forward, 2011). The study participants were members of Learning Forward's Design Professional Learning for a Virtual World (DPLV): A Redesign Professional Development Community of Practice. They shared a commitment to addressing systemwide teaching and learning challenges.

This study answered three questions. First, what is the relationship between the community of practice dimensions (shared repertoire, joint enterprise, mutual engagement) and individual school district leaders' learning? Second, do school district leaders' perceptions of shared repertoire, joint enterprise, and mutual engagement change after CoP participation? Third, do school district leaders' professional learning efficacy (knowledge, skills, and leadership behaviors) change after CoP participation? The

researcher hypothesized that each asset of the CoP positively associated with individual school district leaders' learning. Also, after CoP participation, school district leaders would demonstrate increased shared repertoire, joint enterprise, mutual engagement, and professional learning efficacy.

The researcher used a non-probabilistic purposive sampling procedure and conducted the quantitative analysis using Pearson's  $r$  and paired-samples  $t$ -tests. Data collection occurred using a 20-item survey distributed in December 2020 at the beginning of the CoP and in May 2021 after participation. The survey measured the link between CoP engagement and learning (Neufeld et al., 2013), CoP experience (RFL, 2016, 2017), and professional learning efficacy (Hirsh et al., 2018; Killion, 2013, 2013a; Learning Forward, 2011, 2013).

Analysis revealed strong and statistically significant correlations between shared repertoire, joint enterprise, mutual engagement, and individual school district leaders' learning. School district leaders' perceptions of each CoP characteristic showed a statistically significant increase with very large effect sizes. The statistically significant changes in school district leaders' professional learning efficacy also had a very large effect size. This study demonstrated that an inter-district CoP provided participating district leaders with the necessary focus, guidance, and shared accountability to improve their professional learning knowledge, skills, and leadership behaviors.

*Keywords:* collaboration, community of practice, correlation, inter-district, network, professional learning

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Learning Together: A Quantitative Examination  
of Inter-District Collaboration in a Community of Practice

by

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A Dissertation

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## LIST OF ABBREVIATIONS

BMGF: Bill & Melinda Gates Foundation

CoP: Community of Practice

DPLV: Design Professional Learning for a Virtual World

LTCOP-S: Learning Together: An Examination of Inter-District Collaboration in a  
Community of Practice Survey

PLC: Professional learning community

RFL: Resources for Learning

RPDC: Redesign Professional Development Community of Practice

RQ: Research question

SEA: State Education Agencies

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## DEDICATION

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To my nephews, Alex, Steven, and Benjamin, and all my “children,” as an example and reminder to pursue excellence in all things

To African American women of all ages, there is no barrier that can keep you from everything in God’s plan

## CHAPTER ONE

### Introduction to the Problem of Practice

#### *Introduction*

Education reform requires sustained and systemic change, including the system of educator learning. An effective system for educator learning that improves teaching and learning changes educators' knowledge, skills, leadership behaviors and leads to changes in student learning (Learning Forward, 2011). Internally-motivated adult learners, teachers and leaders can change their practices and gain new knowledge and skills (Knowles, 1980). The shift in teaching and learning removes inequities in students' access to opportunities, leading to their success as productive adults and citizens (Hirsh & Brown, 2018; Lindsey et al., 2009; National Equity Project, 2020). Implementing such a professional learning system is a multifaceted process.

School districts that prioritize learning for adults and students implement a system to change and improve teaching, learning, and leadership practices. The leaders that operationalize the professional learning system serve as district administrators (central office) or school-based leaders (principals). They work to “embed professional learning into the organization’s vision by communicating that it is a core function for improvement and by establishing and maintaining a public and persistent focus on educator professional learning” (Learning Forward, 2011, p. 28). Unfortunately, school district leaders working to implement a sustainable professional learning system often work alone. School district leaders working alone cannot design and implement a

complete approach to provide teachers and leaders with effective professional learning that contributes to student success.

Professional learning differs from professional development. Often used interchangeably, the two terms describe distinct actions. Professional development is the individual activities within an education system (Easton, 2008; Hirsh, 2017; Learning Forward, 2011). Easton (2008) explained that development focuses on increasing, growing, progressing, or advancing existing knowledge or skills. Development is often insufficient. New learning requires different actions. Professional learning is the process and system for educators' continuous learning (Easton, 2008; Hirsh, 2017; Learning Forward, 2011). Powerful and effective professional learning "honors the professionalism, expertise, experiences, and skills of staff members" (Easton, 2008, p. 757). Implementing an effective professional learning system fuels systemic change, improving teacher practice and student learning (Darling-Hammond et al., 2009; Fullan & Hargreaves, 2016; Jensen et al., 2016; Learning Forward, 2011).

For the past 25 years, research studies have reported a strong link between student learning and teaching practices. In education, professional learning is the "most powerful strategy" to improve teachers' knowledge, skills, and instructional practices (Hirsh, 2017, p.2). Studies demonstrated that teacher practice affects student learning, and teacher learning affects teacher practice (Darling-Hammond et al., 2009; Hirsh, 2017; Jensen et al., 2016). As teachers regularly engage in high-quality professional learning, they develop their knowledge and skills, modeling the importance of learning and creating a culture of learning (Mizell, 2010a). Research studies about effective schools indicated a focus on collaboration and professional learning increased student learning (Learning

Forward, 2011; McLaughlin & Talbert, 2001; Stoll et al., 2006). Improving teacher professional learning occurs at the center of many education reforms.

A substantial body of literature supports and validates learning in a community as an effective structure for professional learning. Professional learning that involved collaborative structures showed strong correlations with teacher satisfaction and their capacity to address common instructional challenges (Bill & Melinda Gates Foundation, 2015; Jensen et al., 2016; Darling Hammond et al., 2009, Hirsh, 2017; Hirsh & Crow, 2018). Educators participating in a learning community designed to cultivate individual and collective growth changed their teaching and leadership practices (Hargreaves & O'Connor, 2018; Hord, 1997; Katz et al., 2009; Vescio et al., 2008).

A community of practice (CoP) is a way to facilitate community learning. It is a deliberately designed learning community useful for solving shared problems, managing collaborative knowledge, and directly linking learning and performance (Wenger et al., 2002). A CoP exhibits specific and essential characteristics, and research demonstrates their importance. The three essential elements are shared repertoire, a joint enterprise, and mutual engagement (Wenger, 1998; Wenger & Trayner, 2015; Wenger et al., 2002). These characteristics enable the CoP members to share expertise, resources, and knowledge, pursue a common purpose, and learn from one another.

Various studies and scholarly writings demonstrated the value of a CoP structure (Azukas, 2018; Corso et al., 2009; Hite et al., 2010; Neufeld et al., 2013; Parsley, 2018; Psencik & Brown, 2018; Pyrko et al., 2017). CoP structures exist broadly in education, PK–16, but there is little research to date about how a CoP supports school districts committed to improving their professional learning system. For example, Hite et al.



(2010) and Parsley (2018) discussed networks of rural school districts. The networks brought together school district leaders and teachers from multiple school districts in the same geographic region. The participants engaged in job-alike groups, shared resources, co-developed instructional resources and shared the costs of professional development expenses. Despite the specific actions, clearly articulated and measured professional learning was not part of the network's charter.

A gap in the literature also exists regarding the impact of inter-district collaboration, where the focus is on the professional learning system. Inter-district collaboration means two or more school districts or charter management organizations working together on a shared problem. For example, inter-district collaboration occurred with four secondary schools in two urban Rhode Island school districts. The school districts united to develop secondary English as a second language curriculum (Short et al., 2012). In addition to writing and piloting the curricula, the school districts collaborated to provide teacher professional development. The rural networks and the secondary English as a second language curriculum development collaboration are examples of inter-district collaboration. However, the districts did not center their joint work on their professional learning systems. The literature failed to examine how the essential CoP structures (Wenger, 1998; Wenger et al., 2002) impact individual and system learning and inter-district collaboration. A need exists for research connecting a CoP and advancing systemwide learning priorities for educators and students.

The current quantitative research study addressed these gaps and accomplished two things. First, the research examined the relationship between CoP engagement and school district leaders' professional learning efficacy. Second, the study described how

the CoP supported school district leaders' ability to lead the implementation of a sustainable professional learning system.

### *Statement of the Problem*

School districts faced with the challenge of designing and implementing a comprehensive professional learning system for adult learners often fall short. The school district leaders often work alone. For two reasons, individuals or teams in a single school district may take on the problem and establish professional learning opportunities but fail to design and implement a sustainable professional learning system. First, leaders and practitioners do not fully understand the impact of professional learning on teaching and leadership practices or student learning. Second, there is limited application of a collaborative structure for inter-district learning, focused on professional learning systems.

One reason school district leaders do not work together to create professional learning systems is an incomplete understanding of the impact of professional learning on teaching and leadership practices and student learning. They lack in understanding the role and value of collaboration and learning in a community. A gap exists in the literature regarding the effects of professional learning on teaching and leadership practices. Few studies about professional learning use an experimental or quasi-experimental approach (Darling-Hammond et al., 2009; Learning Forward, 2011). The lack of experimentally designed studies minimizes the ability to support a causal inference. Although multiple studies confirmed that teachers participate in development activities on average from 9–19 days per school year, the findings presented limited evidence that teachers and teaching improved (Bill & Melinda Gates Foundation [BMGF], 2015; Darling-Hammond

et al., 2009; Gulamhussein, 2013; TNTP, 2015). This deficit in research contributes to the knowledge gap about the impact of professional learning on teachers, teaching practices, and ultimately students' results.

When studies report the value of professional learning and development, they usually focus on participant reactions about the perceived quality of learning or satisfaction level with the learning activities. However, the literature and research frequently fail to report measurable changes in educator knowledge, skills, or behaviors (Guskey, 2000; Guskey et al., 2014; Killion, 2018). The reliance on limited research enables professional learning critics to continue their criticism and advocate redirecting resources (Fullan & Hargreaves, 2016). The limited availability of scholarly writing about the impact of professional learning on teacher learning, teaching and leadership practices, and outcomes for students allows speculation about the importance and value of professional learning.

A second reason school district leaders trying to develop a sustainable professional learning system remain isolated is the limited evidence about the benefits of shared accountability to improve professional learning systems. There is a scarcity of literature about CoPs focused on the professional learning system. The CoPs described in the literature focused on learning in a single school, district leadership development, content-specific teacher learning, educator practice and performance, and student learning (Azukas, 2018; Hite et al., 2010; Psencik & Brown, 2018; Psencik et al., 2016). In each case, the communities facilitated collaborative problem solving and knowledge sharing on a limited scale (BMGF, 2019; Breen, 2015; Cambridge et al., 2005; Celeste, 2016; Hite et al., 2010; Lee-Kelley & Turner, 2016; Neufeld et al., 2013; Pyrko et al.,

2016; Wenger, 1998; Wenger et al., 2002). A few studies and articles described group learning and collaboration in a CoP that changed how school districts made decisions about teacher professional learning (Azukas, 2018; Breen, 2015; King, 2016; Lotter et al., 2012; Psencik et al., 2016). Other studies reported that a CoP strengthened collegial relationships (Hite et al. 2010; Lee-Kelley & Turner, 2016). But limited scholarly writing exists where multiple school districts identify a shared dilemma and organize themselves to leverage continuous improvement practices and prioritize systemwide learning.

An exception to the pattern of the lack of inter-district initiatives, the Redesign Professional Development Community (RPDC) provided an example of a CoP established to advance professional learning (Celeste, 2016; King, 2016). Initiated by Learning Forward, the RPDC addressed systemwide educator and student learning as priorities and identified complex professional learning challenges that presented barriers to “excellence and equity in teaching and learning” (Hirsh & Brown, 2018, p. 8). Intentional structures and processes in the CoP enabled the participating school districts to collaboratively “wrestle with their most vexing concerns” (Celeste, 2016, p. 15). The RPDC served as the foundation for the current study. The details appear in Chapter Two. The education literature scarcely discusses the impact of an inter-district CoP on professional learning. This study offered an opportunity to demonstrate the power of inter-district collaboration in a CoP focused on systemwide learning.

### *Purpose of the Study*

This quantitative research studied inter-district collaboration in a community of practice and served two purposes. First, in the context of K–12 education, the study analyzed the CoP operation and structure using the three practice-based dimensions in

Wenger's (1998) Community of Practice theory: shared repertoire, joint enterprise, and mutual engagement. Second, the study explored the impact of inter-district collaboration in a CoP on school district leaders' learning and professional learning efficacy. Based on the Standards for Professional Learning (Learning Forward, 2011), I defined the school district leaders' professional learning efficacy as knowledge, skills, and leadership behaviors for professional learning.

Members of Learning Forward's Design Professional Learning for a Virtual World (DPLV) network provided the participants in this study. The school district teams participating in this CoP shared a commitment to addressing systemwide teaching and learning challenges. Study participants responded to a survey near the beginning of the CoP in December 2020 and their cohort's conclusion in May 2021. The survey items measured perceptions about the CoP characteristics, CoP experience, and professional learning efficacy.

This study addressed three questions. First, research questions one (RQ1): What is the relationship between the community of practice dimensions (shared repertoire, joint enterprise, mutual engagement) and individual school district leaders' learning? Next, research question two (RQ2) asked: Do school district leaders' perceptions of shared repertoire, joint enterprise, and mutual engagement change after CoP participation? Finally, research question three (RQ3): Does school district leaders' professional learning efficacy change after CoP participation?

I hypothesized that shared repertoire, joint enterprise, and mutual engagement positively associate with school district leaders' learning. I also conjectured that participation in the inter-district CoP changes school district leaders' perceptions of the

CoP characteristics and their professional learning efficacy as defined by knowledge, skill, and leadership behaviors about professional learning.

### *Theoretical Framework*

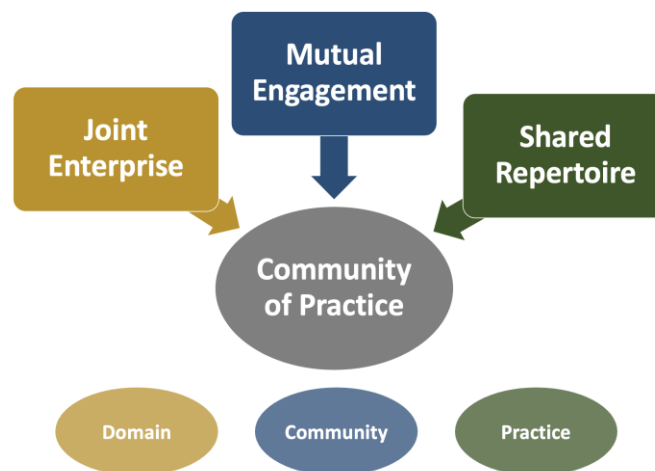
Wegner introduced the term “community of practice,” a social learning concept, in 1998. A community of practice is a group of people who share a concern or a passion for something they do. Members interact in a cadence that supports knowledge management and continuous improvement, learning, and working collaboratively on a shared problem or problem of practice to fulfill individual and collective goals (Cambridge et al., 2005; Wenger et al., 2002). CoP members come together intentionally or as a matter of incident; however, not every community is a community of practice. Wenger and Trayner (2015) explained three crucial elements that define a community of practice. The *domain* unites the members for shared inquiry. The *community* rests on respectful and mutually beneficial relationships and social unity or belonging. The knowledge, tools, frameworks, documents, and cases developed are the *practice*. Learning networks, PLCs, or thematic groups function as a type of CoP when they evidence the three elements of a domain, a community, and practice (Cambridge et al., 2005; Wenger, 1998; Wenger et al., 2002). The three essential characteristics describe how a group comes together for a common pursuit.

Shared repertoire, joint enterprise, and mutual engagement defined the application of the three essential characteristics (Wenger, 1998; Wenger & Trayner, 2015; Wenger et al., 2002). The *shared repertoire* includes the meaning, expertise, resources and tools, knowledge, and stories shared among community members. The “common social infrastructures” (Neufeld et al., 2013, p. 619) develop through ongoing interpersonal

exchanges. For example, K–12 education leaders’ shared repertoire indicates using typical data analysis tools and processes, fluency with one another using specific and technical language, and stories describing previous practices. CoP members develop a history together (Wenger, 1998).

*Joint enterprise* occurs because the CoP collectively determines to pursue a common purpose. The unified domain allows members to share information and build relationships that enable learning with and from one another. (Cambridge et al., 2005; Neufeld et al., 2013; Pyrko et al., 2016; Wenger & Trayner, 2015; Wenger et al., 2002).

*Mutual engagement* explains the collective and collaborative actions, formal and informal, of CoP members exposed to shared problems. The common problem defines the shared commitment (Neufeld et al., 2013). Individuals or groups seek membership because they value and contribute to the collective expertise. Figure 1.1 illustrates the community of practice theory. A CoP activates and cultivates all three elements.



*Figure 1.1.* Community of practice theoretical framework (Wenger, 1998).

For this study, the CoP framework provided the foundational organizational infrastructure for the multiple systems or sites that dedicated time and personnel to learning and collaboration. The members collaborated on shared problems of practice, identified best practices, and supported each other to implement reform efforts to improve student outcomes. The community in this study had a central “hub,” one or more external organizations typically responsible for the management or sponsorship of the CoP. As the hub, Learning Forward offered expertise to facilitate collaboration, supported members to implement new learning, and demonstrated and coordinated knowledge management techniques enabling the CoP to codify and share notable practices within and beyond the community (Learning Forward, 2016; MacConnell & Caillier, 2016; Wenger et al., 2002).

Within a CoP, members learn from one another to accomplish shared goals (Neufeld et al., 2013). In this study, each participating school district had a core team of at least three school district leaders with professional learning oversight, referred to as the professional learning leadership team or district team. The core team committed to deep engagement and possessed the authority and purview necessary to set a vision for success and assess the current status of the professional learning system. Together they wrote a vision for a successful professional learning system and analyzed the situation in their district system against the intended future state. Next, the team set goals, identified milestones, and drafted short-term activity plans.

The core team regularly engaged with an “executive sponsor” and provided updates on soliciting support for implementing change. The executive sponsor had district leadership responsibilities, the authority to set systemwide priorities, and made



decisions on behalf of the system. A member of the school system's cabinet, such as the Superintendent, Deputy Superintendent, or Chief Academic Officer, the executive sponsor, actively supported the CoP team's work and willingly helped ensure coherence and alignment with the district's strategic initiatives.

The CoP in this study organized as a learning community and focused on improving school districts' professional learning systems. The community design had six core principles: "a clear focus on a shared problem of practice," "active learning through inquiry," "collective ownership," "an appropriate mix of partners," "sufficient commitment to support implementation," and "an effective structure of governance and decision-making" (King, 2016). This improvement process engaged CoP members in a deliberate method to work on the shared problem of practice.

The CoP engaged an improvement process that provided "focus, guidance, expertise, and shared accountability" (Learning Forward, 2021a, para. 4). Through collaborative inquiry, each school district established a vision of success in their local context and hypothesized their theory for change. After setting the vision, the four-stage inquiry cycle began with assessing the current state against the vision. Next, the gap between the current state and the vision exposed the learning necessary for planning and prioritizing action during the third stage. The core team set three to five goals to attain their vision and resolve their dilemma. They identified milestones and planned the first set of innovative ideas and practices for each goal. Implementation and data collection and reflection occurred in stage four. The disciplined inquiry and problem-solving process led to improved practice. Further discussion of the core principles and the inquiry cycle appear in the literature review. This study investigated a CoP that utilized the

previously described CoP framework and worked through the improvement cycle stages leading up to the implementation.

### *Research Design and Methods*

The study utilized a quantitative research design approach. The population for this study used Learning Forward's DPLV network, Cohort 1 (Bowman, 2020). Seven school districts, one state education agency, and a multi-state team of Learning Forward Affiliate Leaders, made up the 52-member DPLV network. DPLV members from each school district self-selected a cross-functional core team of school district leaders responsible for various aspects of the professional learning system. Some school district teams also included school-based leaders (principals). The DPLV operated from September 2020–June 2021. Eligible research participants worked in a school district. This study took place from December 2020–June 2021.

The DPLV teams addressed their current challenges related to the design, implementation, and measurement of professional learning in virtual and digital models. As a community, DPLV convened three times from September 2020 to May 2021. The COVID pandemic shaped the DPLV problem of practice. The shared problem centered on leveraging the current environment to develop an equitable and sustainable professional learning system and maximizing the potential and impact of digital-mediated learning.

The DPLV provided opportunities for deliberate and structured collaboration. As the teams joined together, they shared knowledge, collaborated to generate ideas and strategies to solve the common problem, and gave and received feedback (Bowman, 2021; Celeste, 2016; King, 2016; Katz et al., 2009; Wenger et al., 2002). DPLV

Facilitators (Learning Forward staff and consultants) hosted three convenings, held monthly webinars, and provided customized coaching. The convenings and monthly webinars offered intentionally designed collaborative learning where DPLV members worked within and across teams. DPLV members shared resources and organizational management tools. Teams collaboratively engaged using structured feedback protocols, acting as critical friends for one another (Ellis & Castle, 2010; Fullan 2001; Rinçon & Fullan, 2018). Monthly customized coaching supported each team to create a contextualized, comprehensive professional learning plan that worked across departments and focused on outcomes with solutions aligned to their district and state strategic plans. The professional learning plans also aimed to support ongoing success in virtual and hybrid learning environments, responding to maximize learning during the school year, and reinventing professional learning to acknowledge and embrace new learning models (Bowman, 2021). The DPLV provided an example of a CoP focused on improving school districts' professional learning systems.

The sample applied a purposive sampling technique, limiting participation to DPLV members who worked in a single school district. A survey in December 2020 and May 2021 captured participant level of agreement using *Likert*-type scaled items (Croasmun, 2011; Jamieson, 2004) in four categories. The categories were the essential characteristics of a CoP—shared repertoire, joint enterprise, and mutual engagement (Neufeld et al., 2013; Wenger, 1998; Wenger et al., 2002), individual learning, CoP experience (RFL, 2016, 2017), and professional learning efficacy (knowledge, skills, and leadership behaviors; Hirsh et al., 2018, Killion, 2011, 2013a; Learning Forward, 2011, 2013).

I used descriptive statistics such as mean and survey item frequency to summarize the data collected. Correlational analysis using Pearson's  $r$  tested the relationship between shared repertoire, joint enterprise, mutual engagement, and school district leaders' learning. Dependent  $t$ -tests calculated changes in school district leaders' perceptions of the CoP characteristics and the differences in their professional learning efficacy from December 2020 to May 2021 (Creswell & Creswell, 2018; Field, 2018).

### *Definition of Key Terms*

*Central hub or hub.* An organization with the capacity and capabilities to facilitate a collaboration process, codify and share best practices, and provide implementation support (Learning Forward, 2016).

*Collective responsibility.* Collective responsibility refers to learners' or community members' sustained mutual commitment to one another (Hargreaves & O'Connor, 2018; Learning Forward, 2011; Vescio et al., 2008).

*Community of practice (CoP).* A community of practice is a group of people who share a concern or a passion for something they do and regularly learn and work collaboratively as peers interacting on the shared problem to fulfill individual and collective goals (Wenger, 1998). An organizational infrastructure for multiple systems or sites that dedicate time and personnel to learn, collaborate on shared problems of practice, identify best practices, and support each other in implementing reform efforts designed to improve student outcomes. The CoP elevates learning as an intentional step to understand the problem and consider interventions. A CoP can contribute to advancing a professional learning system. (Hirsh, 2016; Learning Forward, 2016).

*Core team (school district professional learning leadership team).* The school district professional learning leadership team comprises three to five school district leaders with professional learning oversight. The team commits to deep engagement and has the authority (Learning Forward, 2016).

*Continuous improvement.* An inquiry-driven process with specific goals and benchmarks. Continuous improvement applies a cycle to engage in “inquiry, action research, data analysis, planning, implementation, [progress monitoring], reflection, and evaluation” (Learning Forward, 2011, p. 24).

*Executive sponsor.* The district leader, with authority to set systemwide learning priorities and make decisions on behalf of the system. The executive sponsor actively supports the CoP work to ensure coherent alignment with other strategic initiatives (Learning Forward, 2016).

*Learning organization.* Learning organizations occur “where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together” (Senge, 1990, p. 3).

*Problem of practice.* A problem of practice for improvement is a user-centered, specific, meaningful, relevant issue embedded in the work of the CoP members. The dilemma centers on improving equity—outcomes, access, environment (BMGF, 2019; Bryk et al., 2015; King, 2016; Wenger et al., 2002).

*Professional development.* The learning activities for educators, teachers, principals, and district leaders within an education system that provide the knowledge, skills, and

leadership behaviors necessary to facilitate students' personal growth and academic success (Every Student Succeeds Act, 2015; Learning Forward, 2011).

*Professional learning.* Professional learning is a comprehensive and coherent system to develop educator capacity and capability (Learning Forward, 2011).

*Professional learning community (PLC).* A PLC is a professional community of educators (teachers and administrators) actively sharing learning and engaging in continuous inquiry to enhance their professional effectiveness in the service of student learning goals (Hord, 1997; Stoll et al., 2006).

*Professional learning system.* A comprehensive and coherent professional learning system is “the infrastructure for developing individual, school, team, school system capacities needed to ensure success for all educators and their students... ‘the way professional learning works’ (Killion, 2013, p. 5). The professional learning system “ensures that policies, practices, resources, and management align to provide equity, efficiency, and effectiveness, and achieve identified results for educator effectiveness and student learning” (Killion, 2013, p. 7).

*School district leaders.* School district leaders are education professionals who work in a K-12 school district. They serve as district administrators (central office) or school-based leaders (principals). The district administrators' job titles may include superintendent, assistant superintendent, executive director, coordinator, or specialist.

### *Conclusion*

Learning in a community provides a helpful structure for professional learning, facilitating change, and sustaining change in education. Unfortunately, the literature inconsistently documents the impact of systemwide professional learning efforts.

Opponents of professional learning leverage the lack of reported effect to signal that professional learning is unnecessary. The literature supports engaging in a CoP for joint learning, problem-solving, and accelerating solution-finding. However, a void exists connecting the CoP with inter-district collaboration to address systemwide educator and student learning priorities and professional learning efficacy. This study demonstrated that an inter-district CoP provided participating district leaders with the necessary focus, guidance, and shared accountability to improve their professional learning knowledge, skills, and leadership behaviors. Chapter Two reviews the literature and demonstrates the importance and value of professional learning and a community of practice.

## CHAPTER TWO

### Literature Review

#### *Introduction*

Redesigning professional learning to implement and sustain school improvements requires prioritizing a sustainable professional learning system. Chapter One established the need for school districts to collaborate to address the challenge of redesigning professional learning. This literature review argues that teachers' and students' learning outcomes improve when school districts participate in a community of practice (CoP) focused on addressing systemwide educator and student learning.

Chapter Two has three sections. First, the chapter explores the challenges of implementing and sustaining systemic change and improvement to demonstrate the need for a professional learning system and inter-district collaboration. Second, the literature review indicates that an equitable and sustainable professional learning system and learning in a community improves teaching and learning. Third, the literature review explains how a CoP provides a beneficial structure and environment for inter-district collaboration and addressing a shared problem or problem of practice—developing an equitable and sustainable professional learning system.

#### *Implementing and Sustaining Systemic Change and Improvement*

Implementing change and continuous improvement is difficult. A review of the literature on change management and continuous improvement revealed two related challenges. First, the continuous improvement required leaders to behave differently,



demonstrating an explicit belief that different results necessitate system changes (Ellis & Castle, 2010; Fullan, 2001; Leithwood et al., 1999; Senge, 1990). Second, implementing long-term change thrived on collaboration (Fullan, 2001; McLaughlin & Talbert, 2001). Change leaders do not shy away from the challenges of implementing change and continuous improvement.

First, the literature demonstrated that change leaders communicated a belief in the espoused change and behaved and interacted with others to engender their commitment to change. Successful change leaders shared and operationalized a moral purpose for continuous improvement and committed to engaging in learning to change the system (Fullan, 2001; Senge, 1990). The learning-based approach to change and the path of continuous and systemic improvement involved asking people to do things differently. Mindful of the consequences, leaders knew that asking people to behave differently and enacting changes stirs resistance. Change leaders utilized the opposition to check for missed opportunities, engaged in learning, and deepened commitments to the outcome by sharing the moral imperative with others (Fullan, 2001). Soliciting and receiving feedback (Ellis & Castle, 2010; Fullan, 2001) brought transparency to the change process and demystified the goals and outcomes. Leading change required understanding change and committing to long-term solutions and resources.

Leaders also strategized to organize, mobilize, and resource people for action (Fullan, 2001). A leader operationalizing a learning-based change initiative creates a place where people continually expand their capacity to create what Senge (1990) described as a learning organization. Within a learning organization, the leader nurtured new and expansive thinking patterns, emphasized collective aspiration, and continually

learned to see the whole together, a systems' thinking approach. The change leader successfully managed the system and used improvement structures to facilitate learning across the organization (Fullan, 2001). When districts and schools leveraged a comprehensive learning system for adults, educator practices changed, and student results improved (Learning Forward, 2011). The approach furthered organizational learning by engaging critical stakeholders across the system for a common purpose (Senge, 1990). Sustaining continuous improvement was not the responsibility of a single individual. Successful change leaders engaged others to actualize systemic changes.

The second challenge to implementing and sustaining systematic change involved the process and practice of collaboration. Continuous improvement necessitated supporting and managing change for the long term. Ensuring quality throughout long-term change required involvement from everyone in the organization (Ellis & Castle, 2010; Fullan, 2001; McLaughlin & Talbert, 2001). Enacting and supporting leaders at all levels to collaboratively facilitate change across a school system markedly increased the likelihood of deep learning and sustaining change (Leithwood, 2010; Mizell, 2010; Seashore Louis et al., 2010). Seashore Louis et al. (2010) conducted a four-year study, surveying over 10,000 participants to review student literacy and mathematics achievement data from 43 school districts in nine states and investigated the links between leadership and student learning. They concluded that superintendents and principals alone could not manage all leadership functions. Leithwood (2010) declared a similar finding in a study about districts demonstrating an exceptional capability to successfully closing achievement gaps. District leaders partnering with school-based leaders, such as principals, instructional coaches, and teacher leaders, to share

responsibility for student achievement ensured the espoused moral imperative remained central to the improvement efforts. Including individuals with the most intimate knowledge of the process improved the success of the continuous improvement process (Ellis & Castle, 2010). District, school-based, and teacher leaders partnered to sustain systemic learning, and continuous improvement formed a tapestry of support and an environment that supported regular collaboration. Leaders who understood change recognized that complex problem solving required developing self and others to focus on and implement long-term solutions.

In conclusion, continuous improvement is an ongoing process of change management. The literature review provided two reasons why managing change and continuous improvement are challenging. First, leaders engaged in long-term improvement efforts must decide to behave differently. Successful change leaders recognized the danger in looking for a quick fix, a silver bullet. They “resist[ed] the temptation to focus on short-term gains at the expense of deeper reform where gains are steady but not necessarily dramatic” (Fullan, 2001, p. 63). Leaders of change conveyed the shared moral imperative and used resistance as feedback to improve communication. The second challenge examined the need to collaborate. Successful change leaders included others across all system levels with various knowledge and expertise to find and implement inventive solutions.

In the K–12 education system, reform efforts seek to change outcomes for students. In theory, changing educator practice leads to changes for students—educator practice changes due to effective professional learning. The following section explains

how a comprehensive professional learning system and learning in a community improves teaching and learning.

### *Professional Learning and Learning Communities*

Professional learning is a comprehensive and coherent system to develop educator capacity and capability (Learning Forward, 2011). This section discusses the purpose of professional learning and common challenges associated with professional learning in school systems. Then the discussion builds the case for a comprehensive professional learning system (Killion, 2013) aligned to the Standards for Professional Learning (Learning Forward, 2011). Finally, this section explores learning in a community as a professional learning design to improve teaching and learning.

### *Professional Learning*

Professional learning purposes to improve educator practice and ultimately results for students. This kind of professional learning occurs within a system dedicated to continuous improvement (Killion, 2013; Learning Forward, 2011). According to Mizell (2010), professional learning is “the best strategy for developing the capacity of educators to increase student performance” (p. 47). The professional development activities within an education system are essential to school and district strategy to equip educators, teachers, principals, district leaders with the knowledge, skills, and leadership behaviors necessary to facilitate students’ personal growth and academic success (Every Student Succeeds Act 2015; Darling-Hammond et al., 2017; Hirsh, 2017; Killion, 2013; Killion, 2013a; Learning Forward, 2011). Therefore, school systems are responsible for investing in professional learning that provides high-quality support so that teachers and leaders can “gain new understanding, insights, and ideas” (Learning Forward, 2011, p.

20). The comprehensive professional learning system aims to increase teacher and leader effectiveness.

School systems make significant investments in teacher improvement. National reports confirmed that school systems annually make substantial investments in professional learning (BMGF, 2015; TNTP, 2015). In 2015, the Bill and Melinda Gates Foundation analyzed various data to summarize professional learning and development status. The report combined interviews and survey responses from more than 1,300 teachers, professional development leaders in district and state education agencies, principals, professional development providers, and thought leaders. The data showed that school districts in the United States spent nearly \$18 billion annually on professional learning and development (BMGF, 2015). Another report, *The Mirage* (TNTP, 2015), reviewed literature and data collected from three large school districts and charter management networks. This report found that, on average, these school systems invested \$18,000 per teacher on professional development. Despite the significant resourcing, each report uncovered limited evidence confirming professional development's impact on teaching quality and student learning. Teachers expressed dissatisfaction with most professional development formats, especially learning communities (BMGF, 2015). The TNTP report (2015) included recommendations to “redefine what it means to help teachers improve their teaching; re-evaluate existing professional learning supports and programs; and reinvent how we support effective teaching and learning at scale” (p. 3). These reports catalyzed the need for professional learning system redesign and provided teachers the learning they need to improve.

Before the TNTP (2015) report, education leaders, policymakers, and researchers looked to Darling-Hammond et al. (2009) for details about the status of professional learning. The comprehensive meta-analysis of 1,300 research studies and evaluation reports explored the research base about powerful professional learning that leads to instructional improvement and student learning and described two decades of sustained investments in the United States and abroad for the same. While Darling et al. (2009) discussed teachers' dissatisfaction with their professional development and illustrated the limitations of professional learning in the United States regarding job-embedded learning and building teacher content knowledge, the findings also included recommendations for professional learning design that influences teacher practice.

In addition to indicating the shortcomings of professional learning and development in the United States, the study documented four principles for designing professional learning. First, intensive, ongoing professional learning connected to teaching practices had “a greater chance of influencing teaching practices, and in turn, leading to gains in student learning” (Darling-Hammond et al., 2009, p. 9). Second, professional learning that focused on student learning and addressed specific curriculum content was more effective than isolated instances of learning about teaching methods. Third, aligning professional learning to school improvement goals and reform efforts increased effectiveness. Fourth, professional learning that built strong workplace relationships and professional collaboration had the potential to improve instruction and contribute to greater success in solving problems of practice. Redesigning, resourcing, implementing, and evaluating a professional learning system aligned to the preceding principles requires many considerations. The Standards for Professional Learning

(Learning Forward, 2011) provide a practical, authoritative, and comprehensive explanation of effective professional learning.

The Standards for Professional Learning (Learning Forward, 2011) are the collaborative work of 40 individuals, education associations, and organizations. They provide a common language and a shared understanding of effective professional learning that increases educator effectiveness and student learning. The seven standards cluster under three areas: the context, the process, and the content for professional learning. Table 2.1 provides a summary.

Table 2.1

*Standards for Professional Learning (Learning Forward, 2011)*

Standard	Professional learning that increases educator effectiveness and results for all students
Learning Communities	Occurs within learning communities committed to continuous improvement, collective responsibility, and goal alignment.
Leadership	Requires skillful leaders who develop capacity, advocate, and create support systems for professional learning.
Resources	Requires prioritizing, monitoring, and coordinating resources for educator learning.
Data	Uses a variety of sources and types of student, educator, and system data to plan, assess, and evaluate professional learning.
Learning Designs	Integrates theories, research, and models of human learning to achieve its intended outcomes.
Implementation	Applies research on change and sustains support for implementation of professional learning for long term change.
Outcomes	Aligns its outcomes with educator performance and student curriculum standards.

The Learning Communities, Leadership, and Resources standards define the context or essential conditions for professional learning. The Data, Learning Design, and

Implementation standards clarify professional learning processes, including quality and evaluation. The content for professional learning occurs within the Outcomes standard. Together, the Standards for Professional Learning provide a specific framework for professional learning that leads to effective teaching practices, supportive leadership, and improved student results (Learning Forward, 2011). Although studies reported that educator professional learning inconsistently provided relevant and useful offerings, critics and practitioners agree that strong collaborative learning structures for teachers and leaders contributed to implementing innovative change for improvement (BMGF, 2015; Brown & Duguid, 1991; Darling-Hammond et al., 2009; Darling-Hammond et al., 2017; Hargreaves & O'Connor, 2018; Jensen et al., 2016; Learning Forward, 2011; TNTP, 2015).

### *Learning in Community*

Teachers and school district administrators have similar views on quality professional learning. Both teachers and administrators want professional learning sustained over time and linked to teacher-identified learning goals (BMGF, 2014; Darling-Hammond et al., 2009; Darling-Hammond et al., 2017; Gulamhussein, 2013; Jensen et al., 2016; TNTP, 2015). Darling-Hammond et al. (2009) found that professional learning was more effective when it addressed the challenges most closely related to the daily challenges of teaching and learning rather than “focusing on abstract educational principles taken out of context” (p. 10). The Bill and Melinda Gates Foundation report (2015) also found a correlation between strong collaboration, higher teacher satisfaction, and preparation to face common instructional challenges. Jensen et al. (2016) found similar evidence. They analyzed teacher professional learning programs in four high-



performing school systems—British Columbia (Canada), Hong Kong, Shanghai (China), and Singapore. Each systems’ academic success in mathematics, reading, and science on the Programme for International Student Assessment was, in part, attributed to the collaborative professional learning structures for teachers to work with other teachers to improve curriculum, instruction, and school climate. These countries built and enacted policies and school organizations that promoted, recognized, and rewarded developing teacher expertise and shared responsibility for personal and peer professional learning. Each high-performing system exhibited a continuous improvement culture that included leadership, resources, and accountability to sustain reforms. The systemic approach supported school-based learning communities to utilize the improvement cycle linked to the systemwide strategy (Jensen et al., 2016).

Educators’ professional learning in communities supported continuous growth for teachers and leaders. The collective responsibility (shared and mutual commitment) among professional educators served both individual and communal learning at all levels of the education system (Campbell et al., 2016; Hargreaves & O’Connor, 2018). The educator learning community valued learning and engaged in learner-centered and problem-based experiences that cultivated growth and contributed to changes in teaching and leadership practices. (Hord, 1997; Rincón-Gallardo & Fullan, 2018; Wenger et al., 2002).

### *Professional Learning Communities*

Professional learning communities (PLC) are a common and well-documented collaborative professional learning design to support improvements in teaching and learning (DuFour & Eaker, 1998; Hord, 1997; Stoll et al., 2006; Vescio et al., 2008). A

PLC is a professional community of educators (teachers and administrators) actively sharing learning and engaging in continuous inquiry to enhance their professional effectiveness in the service of student learning goals (Hord, 1997; Stoll et al., 2006). As a learning design, “the professional learning community is the most powerful structure and strategy for enhancing educator effectiveness and increasing students’ successful learning” (Hord, 2015, p. 38). To provide a supportive learning community, Hord (1997) identified five characteristics.

Hord (1997) summarized the literature and first documented attributes or characteristics of thriving professional learning communities. The five attributes were “supportive and shared leadership,” “shared values and vision,” “collective creativity,” “supportive conditions,” and “shared professional practice.” Shared leadership fostered a supportive environment for the learning community. The shared values and vision provided “a particular mental image of what is important to an individual and an organization” (Hord, 2017, p.19). Collective learning also included intentionally applying the learning. The conditions to support learning were structural and personal. Structural conditions included time, location, and materials. Personal or relational conditions explained respectful interactions and trust necessary for productivity (Hord, 2015). Peers sharing professional practice also integrated giving and receiving feedback.

DuFour and Eaker (1998) affirmed Hord (1997) and most notably introduced the PLC concept into mainstream education. They named six characteristics of professional learning communities as a practice to improve schools and build educator capacity: shared mission, vision and values, collective inquiry, collaborative teams, action-orientation and experimentation, continuous improvement, and results-orientation.

According to Dufour and Eaker (1998), the PLC existed as a collaborative and job-embedded learning design for educators to engage in collaborative inquiry resulting in improved student learning.

Stoll et al. (2006) investigated international PLC practices. Their literature review contributed to a deeper conceptual understanding of creating, developing, and sustaining effective PLCs. The synthesis returned five attributes similarly present in previous literature. First, an effective PLC shared values and a vision. The process included guiding decisions about teaching and learning (Vescio et al., 2008) while attending to what was essential to the individual and the organization (Hord, 1997; Learning Forward, 2011). The second attribute, collective responsibility, demonstrated individuals sustained mutual commitment to one another (Hargreaves & O'Connor, 2018; Learning Forward, 2011; Vescio et al., 2008). The third attribute, reflective professional inquiry, included reviewing the shared experiences with curriculum, instruction, and student development (Vescio et al., 2008). Learning Forward (2011) discussed reflection as an aspect of monitoring and adjusting practice within the context of a cycle of continuous improvement. Hargreaves and O'Connor (2018) described collaboration, the fourth attribute, as consistent interdependent and mutually beneficial interactions. Finally, the last characteristic promoted group and individual learning. The team members considered and addressed the professional knowledge identified for the collective as well as the individual. PLCs represent a valuable structure to build teacher capacity.

Furthermore, in a meta-analysis, Vescio et al. (2008) reviewed 11 studies on PLC impact. They reported that “a learning community model can [positively impact] both teachers and students” (p. 88). The PLC existed as a robust structure for teacher learning

(Hord, 1997) and professional collaboration that resulted in intermediate outcomes evidenced by changes in teacher practice. A PLC represents a structured collaborative design that can operate within or between schools or systems.

As an example, Katz et al. (2009) reported the outcomes from a multi-year study of development and research of schools in North America and England. They studied a network of within-school PLCs and found that teachers working in an inter-district community expanded intellectual capacity. The network shared a common purpose: school improvement through shared professional knowledge creation and implementing quality classroom practices. The teachers used a collaborative problem-solving approach to expedite ideation and test new ideas, resulting in improved outcomes. Three conditions enabled the PLCs to generate and co-construct learning across network interactions: establishing a clear and defensible focus, collaborative inquiry, and leadership. Each PLC and school maintained the responsibility for enacting the practices within the school-based PLC network.

The first practice, establishing a clear and defensible focus, combined the belief about learning needs and data. Teams created evidenced-based goals attending to the most significant student learning needs. For example, one PLC leader said, “I think that we should review our school assessment results together to figure out the priority issue that should be our focus” (Katz et al., 2009, p. 25). The second principle, collaborative inquiry to challenge thinking and practice, mirrored the learning community attributes of collaboration and exploration (DuFour & Eaker, 1998; Hargreaves & O’Connor, 2018; Hord, 1997; Stoll et al., 2006; Vescio et al., 2008). Katz et al. (2009) found that “[r]elational trust is a necessary condition for developing the kind of professional

commitment that contributes to school improvement” (p. 40). Because of shared commitment, teams moved from using inquiry as a discrete event to a way of thinking and working (Katz et al., 2009). Trusting relationships opened the door to authentic collaboration. The researchers described this collaboration as a key ingredient that enabled knowledge creation. Meaningful collaboration appeared as more than an “inventory of group-based activities” (p. 45). Network participants learned with and from one another.

Leadership in PLCs, the third principle, echoed an essential attribute for a learning community and a learning organization—shared or distributed leadership (Hord 1997; Senge, 1990). Formal leadership roles often facilitated the network and PLCs within schools. These leaders encouraged and motivated others to implement changes in thinking and practices. Formal leaders set and monitored learning agendas to protect and endorse “the needs-based focus by helping (or giving permission to!) those around them to prioritize” (Katz et al., 2009, p. 55). Also, formal leaders shared leadership with informal leaders. Informal leaders influenced others through relationships. They often coordinated activities, provided resources, and supported colleagues through implementation by coaching (Katz et al., 2009). The three practices, establishing a clear and defensible focus, collaborative inquiry, and leadership, demonstrated a model that aided in sustaining the within- and between-school and school district PLC structure and maintaining the focus on learning. A PLC model contributed to teachers’ overall positive impact and advancing student achievement (Hargreaves & O’Connor, Hord, 1997; 2018; Katz et al., 2009; Stoll et al., 2006; Vescio et al., 2008). PLCs are an essential and beneficial type of learning community.

Professional collaboration contributed to advancing student achievement, teacher retention, and implementing innovative change (Darling-Hammond et al., 2009; DuFour & Eaker, 1998; Fullan & Hargreaves, 2016; Hargreaves & O'Connor, 2018; Hord, 1997; Katz et al., 2009, McLaughlin & Talbert, 2001; Stoll et al., 2006; Vescio et al., 2008). A learning community committed to continuous improvement and collective responsibility is an essential and synergistic characteristic of the professional learning system. Learning in a community, educators increased their capability to implement teaching practices and provided supportive leadership that led to effective teaching practices and improved student results (Learning Forward, 2011). The need to demonstrate that an inter-district CoP, a type of between-school district PLC, positively impacts school district leaders' efficacy concerning professional learning and systemwide learning priorities for educators and students remains.

Collaborating within and across schools or school systems improved learning and student achievement (Fullan & Hargreaves, 2016; Katz et al., 2009). Studies in the United States and internationally demonstrated an increasing interest in team learning and networks (Hargreaves & O'Connor, 2018; Rincón-Gallardo & Fullan, 2018). Standard team learning configurations were the PLC (DuFour & Eaker, 1998; Hord, 1997) and the CoP (Wenger, 1998). Both models have positively impacted organizational development, teaching practice, and student achievement (Hite et al., 2010; Neufeld et al., 2013; Stoll et al., 2006; Vescio et al., 2008). The PLC or CoP worked together to establish a purposeful learning agenda that supported the acquisition of new knowledge and skills and fulfilled both individual and collective goals (Hirsh & Hord, 2010; Wenger et al.,

2002). The CoP or PLC evidenced self-management and self-monitoring through the practice of goal setting (Garrison, 1997).

### *Community of Practice*

A CoP is a learning community. The members share a common problem, learn and think together, and collectively solve the shared problem, accelerating solution finding (Pyrko et al., 2017; Wenger, 1998). Multiple studies and scholarly literature established that learning in a deliberately designed CoP positively impacts organizational learning. Recent studies focused on the school campus and school district leadership development, teacher learning, practice and performance, and student learning (Azukas, 2018; Hite et al., 2010; Parsley, 2018; Psencik & Brown, 2018; Psencik et al., 2016).

For example, school principals from four Galveston County (TX) school districts convened as a CoP to design effective professional learning for teacher teams at their respective schools (Psencik et al., 2016). Researchers documented principals aligning their work on a common district goal—accelerating teacher and student learning and implementing district initiatives. In another example, Azukas (2018) studied a CoP focused on K–12 teacher professional learning. The shared problem of practice centered on implementing personalized learning. The study looked at how participation in the CoP affected teacher implementation of personal learning and the value of CoP participation for the individual learner. Overall, teachers’ confidence and self-efficacy in planning and implementing personal learning increased. The district benefitted because learning transferred to individual classrooms and other teachers (Azukas, 2018). These examples evidenced the benefit and value of a CoP with a professional learning focus and the potential for inter-district collaboration.

For more than a decade, scholars studying the structure and characteristics of a CoP utilized various methods. Through case studies, personal experiences, and review of research focused primarily on documenting evidence of change in educator practice and organizational and student learning, the literature concluded that a deliberately designed CoP contributed to successfully addressing a shared problem of practice (Cambridge et al., 2005; Celeste, 2016; Katz et al., 2009; King, 2016; Wenger & Trayner, 2015; Wenger et al., 2002). This section explained the core elements and structure of a CoP and the benefits of learning in the CoP.

### *Core Elements of a Strong CoP*

In 2015, Learning Forward summarized the findings from a broad review of academic and industry literature, including analyzing critical standard organizational practices that contributed to both the success and failure of a CoP. Six critical factors of success for a CoP in education surfaced (King, 2016), forming the foundation for The Redesign Professional Development Community of Practice (RPDC; Celeste, 2016). First, A CoP convenes based on a shared problem of practice. The work represents a clearly articulated shared focus for inquiry. Second, a CoP applies active learning anchored in a continuous improvement process. The active inquiry, a cadence for interactions and continuous improvement, supports knowledge management of tools, resources, cases, and protocols. (Cambridge et al., 2005; Wenger et al., 2002). The third characteristic, collective ownership, establishes and clarifies expectations and values of the high intrinsic motivation necessary to participate in the collaboration process among and between members and partner organizations (Wenger & Trayner, 2015; Wenger et al., 2002). The fourth factor, an appropriate mix of partners, illuminates the CoP



members' commitment to active participation. The fifth factor, a sufficient commitment to supports the implementation of new ideas, focuses on the individual and organizational capacity to do the work well—the authority to enact decisions. Last, the CoP must have sound governance and decision-making structure to ensure the CoP has a plan for convening. When necessary, to make decisions together, there is a transparent process to include everyone. Table 2.2 summarizes the six core principles.

Table 2.2

*Six Core Elements of a Successful Community of Practice (King, 2016)*

Characteristic	Detail
Shared problem of practice	Alignment on the clearly articulated problem of practice and impact goals shared by all affiliated systems. This shared focus and expertise amplify efforts.
Active learning anchored in a continuous improvement process	Process and support in place to engage in a cycle of inquiry to implement improvements, capture key lessons learned, and share best practices.
Collective ownership	Partners and hub organizations have clear expectations of one another and personal ownership of the collaboration process.
An appropriate mix of partners	Includes the right mix of committed systems and engaged personnel to participate actively.
A sufficient commitment to supports the implementation of new ideas	System partners have sufficient dedicated capacity to participate meaningfully and actively; the hub has sufficient capability to facilitate.
An effective structure of governance and decision making	Systems engage in standard processes that enable continuous improvement and effective decision-making.

*CoP Process for Continuous Improvement*

A CoP that applies research about organizational change and supports sustaining implementation for long-term change uses a deliberate and iterative process for

continuous improvement (Bryk et al., 2015; Learning Forward, 2011). As a collective, the CoP members identify a problem of practice and engage in the process of inquiry, supporting each other to test and implement reforms intended to lead to changes in educators' practice and results for students (Bryk et al., 2015; King, 2016; Pyrko et al., 2016). The shared problem of practice addresses an important and valuable issue for CoP members—a dilemma or a significant problem (BMGF, 2019; Bryk et al., 2015; King, 2016; Wenger et al., 2002). After identifying the problem, each learning team sets an ambitious vision for success that clearly articulates what the system aims to achieve, including key goals. The vision or aim statement summarizes a specific outcome to achieve over a specific period and includes why success matters (Bryk et al., 2015; Hirsh et al., 2018). After setting a vision for success, the CoP engages in active learning through a process of inquiry. The inquiry process consists of four stages: assess the current state, learn to inform action, plan and prioritize action, and implement and gather data (Redesign PD Community, 2020).

During the first phase, the CoP studies the system to understand the current reality concerning the identified goal (Bryk et al., 2015; Russell et al., 2017). Analyzing the current status is critical before ideating interventions, solutions, or planning actions to achieve the desired state. Activities include identifying and collecting essential data about the system and problem, organizing and displaying the data for analysis, examining trends, issues, and opportunities, and summarizing the data (Hirsh et al., 2018; King, 2016).

Phase two, learn to inform action, involves taking steps to augment CoP member knowledge. Learning includes gaining new knowledge and skills and examining

aspirations, assumptions, and beliefs. The CoP sets learning priorities and writes team and individual learning agendas (Hirsh & Crow, 2018). This phase includes time to engage in and practice new learning.

Phase three, plan and prioritize action, may incorporate phase two learning. However, the main components are the milestones associated with the detailed plan to reach the milestone scale, including the plans to gather data to monitor progress. The plan identifies roles and responsibilities for each task, the timeframe, and other stakeholders who need to be informed (Bryk et al., 2015; George et al., 2019; Hirsh & Crow, 2018; Hirsh et al., 2018; King, 2016).

The last phase, implement action and gather data, actualizes the working theory of improvement—planning a test of the hypothesis, executing a test, and collecting data on implementation and determining whether improvements occurred (Bryk et al., 2015). The data analysis determines what deviated from the prediction and aids in deciding what to do next based on the learning (George et al., 2019; Hirsh & Crow, 2018; Hirsh et al., 2018; Killion, 2018; King, 2016). The inquiry cycle helped the CoP members address their defined problem of practice. CoP members developed, tested, and refined promising solutions or change ideas specific to the local context and used various data to document progress against outcomes or indicators predictive of longer-term success (RFL, 2017). The four-stage cycle ensured continuous improvement, the sharing of best practices, and capturing critical lessons learned. The continuous improvement cycle supported collaboration, mutual accountability, knowledge sharing, hub support, and feedback (RFL, 2017).

The CoP progressed through various developmental stages. Wenger et al. (2002) described the early stages of community development, documenting short-term benefits for partner organizations. The list included the opportunity to hear multiple perspectives on nascent ideas, sharing resources for implementation strategies, and support for risk-taking. Corso et al. (2009) also contributed to the literature on CoP development. They conducted empirical research involving seven cases and secondary source analysis of three best practice cases. Their study revealed evidence about the evolution of a CoP in terms of effectiveness in knowledge management. Corso et al. (2009) concluded that every community evolves uniquely and at its own pace. Some communities formed because individuals shared an interest. The interest in engaging might be a sign of perceived community value or usefulness. The researchers went on to say that demonstrating how members can and do share knowledge within the community helps individual members identify the personal value for participation.

As the CoP matured, partner systems more rapidly shared expertise and lessons learned (Wenger et al., 2002), and the community became a place for rapid solution finding (Celeste, 2016). More shared expertise led to more significant opportunities for knowledge transfer across organizations, sparking innovation, promoting a broader range of solution testing, and improving decision-making quality. The RPDC referred to the effect as “net less work” (RFL, 2016, 2017). The CoP represented a comprehensive learning design helpful in solving problems quickly, managing collaborative knowledge, and directly linking learning and performance.

The RPDC satisfied all conditions to successfully implement and sustain continuous improvement and address systemwide learning priorities for educators and

students. The CoP supported change management and provided an intentional process for sustaining implementation. The inquiry cycle supported the continuous improvement process. By design, the CoP included regular collaboration. Members collaborated to generate and test interventions and possible solutions to the shared problem of practice. As evidenced in the inquiry cycle, learning was central to the CoP structure and operations. The CoP was not just another network or PLC. The CoP had intentional structures and processes to accelerate school districts working together to address too few educators experiencing effective professional learning.

### *Conclusion*

This chapter reviews the literature and argues that outcomes for students improve when districts prioritize educator learning. The redesign of the professional learning system required school district leaders to behave differently, focusing the organization on learning. The literature concluded that successful change leaders do not engage in this type of work alone. Instead, they collaborate with others who share the vision of the learning organization, who have varied expertise, are willing to seek inventive solutions, and implement them.

Reorienting a system to focus on learning requires rethinking the current professional learning system. The literature confirmed the need for systematic and systemic change to professional learning in U.S. school districts. The Standards for Professional Learning clearly articulate the essential characteristics of high quality and effective professional learning (Learning Forward, 2011). Redesigning professional learning utilizing the Standards means attending to the context, process, and professional learning content. Changing the context suggests that districts can no longer work in

isolation. Instead, school districts need to learn in a community. Organized by a hub, a learning community structured as a CoP ensures that members maintain a focus on the shared problem, accelerating the improvement process. The CoP inquiry process serves to organize the data, learning, and results of interventions. The unique quality of intentional learning and knowledge sharing among the members strengthens intervention planning and implementation.

This study answers three research questions. First, what is the relationship between the community of practice dimensions (shared repertoire, joint enterprise, mutual engagement) and individual school district leaders' learning? Second, do school district leaders' perceptions of shared repertoire, joint enterprise, and mutual engagement change after CoP participation? Third, does school district leaders' professional learning efficacy (knowledge, skills, and leadership behaviors) change after CoP participation? The literature reviews suggested that the CoP structure increases a school district's capacity to improve educator and student learning by redesigning the professional learning systems to implement and sustain school improvement. Chapter Three explains the methodology for this quantitative study.

## CHAPTER THREE

### Methodology

#### *Introduction*

This study investigated school district leaders' engagement in a community of practice (CoP) and how the CoP influenced their learning and professional learning efficacy. Using a quantitative research methodology and a survey design, I investigated the relationship between the CoP practice-based dimensions: shared repertoire, joint enterprise, and mutual engagement (Neufeld et al., 2013; Wenger, 1998; Wenger et al., 2002) and school district leaders' learning. I also analyzed the changes in school district leaders' perceptions of the CoP dimensions and examined differences in school district leaders' professional learning efficacy. Chapter One established that school district leaders often work in isolation to redesign professional learning systems. Benefits of a CoP such as collaborative learning, problem-solving, and accelerated solution-finding have not been widely extended to include inter-district collaboration focused on systemwide learning priorities. In Chapter Two, the literature review examined the challenges of sustaining systemic change, the importance of professional learning as a system to improve educator practice, and the benefits of learning in a community, including a CoP for inter-district collaboration. The CoP in this study involved leadership teams from multiple school districts with a shared commitment to developing an equitable and sustainable professional learning system in their local context. The school district leaders from each school district team became the research participants in the study.

### *Research Questions*

School district leaders working to implement a sustainable professional learning system often work alone. The variables in the quantitative study were Wenger's (1998) three CoP dimensions (shared repertoire, joint enterprise, and mutual engagement), learning, and professional learning. This research answered three questions. Research question one (RQ1) inquired about the relationship between the community of practice dimensions (shared repertoire, joint enterprise, mutual engagement) and individual school district leaders' learning. The null hypothesis indicated a statistically significant relationship between shared repertoire, joint enterprise, and mutual engagement and school district leaders' learning. The second research question (RQ2) measured the change in school district leaders' perceptions of shared repertoire, joint enterprise, and mutual engagement after CoP participation. I hypothesized that no statistically significant difference existed in school district leaders' perceptions of shared repertoire, joint enterprise, and mutual engagement after CoP participation.

The study also investigated school district leaders' professional learning efficacy. Guided by the Standards for Professional Learning (Learning Forward, 2011), professional learning efficacy included three components: knowledge, skills, and leadership behaviors. The third research question (RQ3) assessed the change in school district leaders' professional learning efficacy after CoP participation. The null hypothesis indicated no statistically significant difference existed in school district leaders' professional learning efficacy measured after CoP participation.

This chapter provides the rationale for using a quantitative methodology to understand the relationship between inter-district CoP participation and school district leaders' learning and professional learning efficacy. First, I clearly articulate my purpose



and positionality as a researcher with significant experience in professional learning and community of practice facilitation. Next, based on the literature discussion, I stipulate a rationale for applying the CoP theoretical framework (Wenger, 1998) and connect it to the research design. In a thorough description of the methodology, I connect the quantitative research methodology, the research questions, hypotheses, and the theoretical framework. I detail the research site and the sampling procedures, and the data collection and analysis methods. After fully describing the processes and procedures to ensure ethical practices, the chapter concludes with a brief discussion of the conditions that restrict my methodology.

#### *Researcher Perspective and Positionality*

A researcher's personal experiences, ideologies, and practices influence problem identification, research questions, data gathering, and interpretation in a study (Creswell & Creswell, 2018; Creswell & Poth, 2018). Disclosing my perspectives and knowledge of school district leadership, professional learning, and my relationship to the CoP brings awareness to any ontological or epistemological issues I introduced to the research process (Creswell & Poth, 2018). My philosophical assumptions aligned with postpositivist positionality influenced selecting the quantitative research design methodology (Phillips & Burbules, 2000). In service of transparency, this section reveals the effects of my 30 years of experience in K–12 education and non-profit education leadership that shaped my beliefs and may bias my viewpoint about the impact of professional learning on teaching and leadership practices and learning in a CoP.

### *Researcher Perspective*

In 2015, I began working as the Vice President of Networks and Continuous Improvement for Learning Forward, the only professional association exclusively devoted to supporting educators working in professional development (Learning Forward, 2021b) with tools, practices, and programming. As I developed Learning Forward's network strategy, I learned about Wenger's (1998) CoP framework. I used the CoP framework to initiate an innovative network that supported school districts committed to professional development redesign. Before working at Learning Forward, I served in K–12 public education as an executive director of professional learning, a school-based administrator, a K–12 curriculum director, and a middle grades teacher. My professional pathway shaped who I am as an educator and what I believe about learning.

My leadership experiences, expertise in the Standards for Professional Learning (Learning Forward, 2011), and familiarity with CoP practices and structures influenced my epistemology about learning in the community. As a former school district administrator, I designed and implemented a professional learning system to improve teaching and leadership practices. I focused on creating and supporting organizational conditions and a culture that prioritized systems' thinking, built a shared vision, supported individual learning and team learning, and leveraged a model of shared or distributed leadership (Senge, 1990). I joined professional associations, including Learning Forward, to consult and collaborate with like-minded professionals in formal and informal learning communities.

Learning with other professional learning leaders, I gained new knowledge and left with progressive ideas to implement in the school districts where I worked. I studied with notable researchers and scholars in the field of professional learning and engaged in

collaborative communities. The professional learning and multi-year collaborations informed and confirmed the value of learning in a community. Participating in the learning communities cultivated individual and collective growth and changed my leadership capacity and capability (Hord, 1997; Jensen et al., 2016; Rinçon & Fullan, 2018). Consequently, in the districts where I worked, I advocated for and facilitated developing intentional learning communities.

I possess comprehensive knowledge about the Standards for Professional Learning (Learning Forward, 2011) and embrace them as the framework for effective and high-quality professional learning. Advocating for effective professional learning as a critical lever to strengthen or change teaching and leadership practices influenced my epistemology and rhetorical experience. I developed high-quality professional learning grounded in the Standards for Professional Learning and have led and monitored the continuous improvement process in learning communities. Facilitating learning and enacting coaching protocols developed my epistemology related to the actions evident in leaders influenced and changed by the Standards for Professional Learning.

I managed CoP and network operations and provided direct support to school district teams, developing trusted collegial relationships with research participants. As a coach, I offered personalized support and feedback that promoted reflection and refinement of leadership and professional practices (Killion, 2015; Killion & Harrison, 2017; Learning Forward, 2011; Psencik, 2011). I also coordinated network-wide meetings and wrote protocols for collaboration and critical feedback. Creswell and Creswell (2018) maintained that philosophical assumptions are often developed based on

discipline orientation and collegial and research relationships. My experiences influenced my beliefs and led to selecting a quantitative research approach.

### *Positionality*

Disclosing my epistemology and ontology helps explain the chosen research approach. My research approach aligned with my postpositivist worldview (Creswell & Creswell, 2018). I relied on a theoretical framework to govern testing procedures and used empirical data to observe and measure the potential relationships between the variables. Guided by Wenger's (1998) CoP theory, I wanted to understand how active participation in an inter-district CoP focused on systemwide learning and continuous improvement influenced the K–12 education leaders' professional learning knowledge and skills and leadership behaviors. My research question and hypotheses exposed my theory of action while maintaining a conjectural stance (Phillips & Burbules, 2000). If school district leaders actively participate in an inter-district community of practice focused on systemwide learning and continuous improvement, then they will build their knowledge of professional learning, demonstrate behaviors and attitudes aligned with their organization's professional learning definition, and use the Standards for Professional Learning (2011) to guide designing a comprehensive professional learning system. To evaluate my theory, I chose a methodology that used a single data collection method. Consistent with postpositivist positionality, I explained accurate and relevant statements based on quantifiable evidence (Creswell & Creswell, 2018; Phillips & Burbules, 2000).

The quantitative research design method allowed me to address needs in the field of professional learning research studies. In Chapter Two, I discussed the lack of

empirical evidence about professional learning effectiveness. The quantitative study addressed this need in the field. Wenger's (1998) CoP theory bounded the deterministic and logical structure of the study. Data collection and analysis used inferential statistics to determine correlations and quantify change (Creswell & Creswell, 2018). Although not generalizable due to sampling size, the quantitative research design appealed to me as a method to amplify positive correlations between CoP characteristics (shared repertoire, joint enterprise, and mutual engagement) and school district leaders' learning. I also wanted to obtain empirical evidence to explain changes in school district leaders' learning and professional learning efficacy.

### *Theoretical Framework*

The study applied Wenger's (1998) CoP theory. The well-utilized framework prioritizes learning and has three CoP essential characteristics—shared repertoire, joint enterprise, and mutual engagement. The operationalized community engaged in professional learning together. The CoP realized shared repertoire in this process as they experienced the same tools and resources and developed shared knowledge. Through consultancies, district spotlights, and document sharing, CoP members' joint enterprise built bi-directional relationships that enabled them to learn with and from one another. CoP members united for collective inquiry around a common dilemma. The mutual engagement or shared problem of practice specifically focused on school district leaders developing an equitable and sustainable professional learning system (Cambridge et al., 2005; Neufeld et al., 2013; Pyrko et al., 2016; Wenger & Trayner, 2015; Wenger et al., 2002).

The research questions and Learning Together: An Examination of Inter-District Collaboration in a Community of Practice Survey (LTCoP-S) items used the CoP dimensions (Neufeld et al., 2013; Wenger, 1998) and the Standards for Professional Learning (Learning Forward, 2011). I assessed the relationship of shared repertoire, joint enterprise, and mutual engagement to school district leaders' learning (RQ1, RQ2). The link between school district leaders' professional learning efficacy and CoP engagement (RQ3) corresponded with other studies that demonstrated the CoP positively impacted learning and efficacy (Hite et al., 2010; Lee-Kelley & Turner, 2016; Neufeld et al., 2013; Pyrko et al., 2016; Wenger, 1998; Wenger & Trayner, 2015; Wenger et al., 2002).

I used data from survey responses to answer the research questions. Research questions one and two utilized items Q3.1–Q3.12) that originated from a validated survey. Neufeld et al. (2013) piloted and tested items linking participation in the CoP to individual learning outcomes. The items appeared in four categories or factors— shared repertoire, joint enterprise, mutual engagement, and learning. To answer research question three, I developed items explicitly related to professional learning knowledge, skills, and leadership behaviors (Q5.1–Q5.6; Hirsh et al., 2018; Killion 2013, 2013a; Learning Forward, 2011, 2013).

The inter-school district CoP representing the unit of analysis in this study applied the essential characteristics in Wenger's (1998) theory. The school district teams collectively identified and collaborated on a problem of practice focused on implementing a sustainable professional learning system. They learned and worked within and across teams to generate a vision, goals, and a set of activities to implement reform efforts to improve teaching and leadership practices in their local context. I used

correlational analysis to show the relationship between the CoP characteristics and school district leaders' learning. Using paired-samples *t*-tests, I compared shared repertoire, joint enterprise, mutual engagement, and professional learning items before and after CoP participation (Field, 2018). I applied the CoP theory (Wenger, 1998) in the quantitative research paradigm to explore relationships between participants' experiences and the theoretical elements.

### *Research Design and Rationale*

This study used a quantitative research methodology and a survey design to explore the relationship between school district leaders' shared repertoire, joint enterprise, and mutual engagement (Wenger, 1998), changes in school district leaders' learning, and the change in school district leaders' professional learning efficacy (Learning Forward, 2011) after engaging in an inter-district CoP. This quantitative research design aligned with my postpositivist paradigm (Creswell & Creswell, 2018). It allowed me to determine relationships between and among variables.

The survey design aided in answering the research questions. In this design, I used numerical data to describe the "trends, attitudes, or opinions of a population by studying a sample of that population" (Creswell & Creswell, 2018, p. 12). I chose the survey design because of the efficiency of data collection. Collecting responses to the same questions from all participants enabled reporting objective results from the statistical analysis. Neither an experimental nor a quasi-experimental design were appropriate for this study. Randomizing CoP participation was not ethical (Creswell & Creswell, 2018; Fields, 2017); therefore, I chose a non-experimental design. Time limitations prevented including a qualitative component to this quantitative research.

I collected and analyzed survey data to answer the research questions and hypotheses (Creswell & Creswell, 2018). The quantitative data measured concepts aligned to Wenger's (1998) CoP theory and provided quantifiable information about school district leaders' CoP engagement (Bergin, 2018). My research study's central issue focused on school district leaders working in silos to implement and sustain a comprehensive professional learning system. A second problem was limited or insufficient knowledge about effective professional learning and its impact on teaching and leadership practices. The questions explored the associations among the CoP dimensions (shared repertoire, joint enterprise, and mutual engagement; RQ1), the change in school district leaders' perceptions of the CoP dimensions (RQ2), and school district leaders' professional learning efficacy (RQ3; Bergin, 2018; Creswell & Creswell, 2018; Field, 2018). The quantitative research approach helped me answer the research questions and expand scholarly writing about the CoP in K–12 education research.

I collected data using a survey and performed inferential statistical analysis to determine relationships between variables. School district leaders responded to 20 Likert-type items in December 2020 and May 2021. On the 5-point scale, five represented strongly agree, and one indicated strongly disagree. The first 12 items came from a previously validated instrument (Neufeld et al., 2013). They measured school district leaders' learning associated with Wenger's (1998) CoP dimensions—shared repertoire, joint enterprise, and mutual engagement. Two items asked about school district leaders' perceptions of their CoP experience (RFL, 2016, 2017). The final six items focused on professional learning efficacy (Hirsh et al., 2018; Killion, 2013, 2013a; Learning Forward, 2011, 2013). My analysis concentrated “on numbers and the quantification of



concept or relationships between concepts” (Bergin, 2018, p. 19). To explore the associations between shared repertoire, joint enterprise, and mutual engagement (RQ1), I used Pearson’s  $r$  for correlational analysis. Changes in school district leaders’ perceptions of the CoP dimensions (RQ2) and school district leaders’ professional learning efficacy (RQ3) utilized paired-samples  $t$ -tests (Field, 2018).

The findings and interpretations drawn from within the quantitative paradigm allowed me to make inferences. These inferences helped me answer the research questions and respond to the hypotheses (Creswell & Creswell, 2018). By design, the study collected data and examined the relationship between the CoP dimensions (shared repertoire, joint enterprise, and mutual engagement) and school district leaders’ learning. The study also compared professional learning efficacy before and after CoP participation. Table 3.1 shows a summary of the research method design components.

Table 3.1.

*Quantitative Research Method Design Components*

Research Design Component	Detail
Population	DPLV members ( $N = 42$ ), school district leaders
Sample	Non-probabilistic purposive sample (Alvi, 2016)
Data Collection: Survey	Learning Together: An Examination of Inter-district Collaboration in a Community of Practice Survey (LTCOP-S)
Data Analysis Methods	Frequency and correlational analysis (RQ1) Paired-samples $t$ -test (RQ2, RQ3; Field, 2018)

### *Site Selection and Participant Sampling*

Learning Forward implements networks to support improvement in school systems and education agencies. In 2015, Learning Forward structured The Redesign Professional Development Community of Practice (RPDC) informed by Wenger's (1998) essential elements of a CoP (Celeste, 2016; King, 2016) and the Standards for Professional Learning (Learning Forward, 2011). The RPDC supported school districts and charter management organizations that prioritized systemwide educator and student learning (Celeste, 2016; Hirsh, 2016). In March 2020, because of the COVID-19 pandemic, school district and state education agencies (SEA) faced new challenges. They rapidly shifted to virtual and digitally mediated educational models for student and adult learning. Learning Forward responded with a new RPDC-type of CoP for school district and SEA leaders—Design Professional Learning for a Virtual World (DPLV) network (Bowman, 2020). The DPLV, Cohort 1, was the site for this study. The inaugural DPLV cohort existed from September 2020–June 2021.

The DPLV network is a professional service available only from Learning Forward. The inaugural DPLV members represented seven school districts, one SEA, and one Learning Forward Affiliate Leaders team. Affiliate leaders build professional learning capacity among educators in their local state or province (Learning Forward, 2021). The United States involved were Alaska, Florida, Indiana, Oklahoma, Texas, Virginia. The school districts and the SEA that joined the DPLV paid for a 10-month membership. The Affiliate Leaders' team received membership status as an in-kind contribution from Learning Forward. A scope of work outlined membership benefits (see Appendix A). Examples include the following: facilitated development of an ongoing professional learning plan or the school district or state, support to compile data and share

with the district or state team to inform the professional learning planning, virtual engagement, and access to resources through an online community, and Learning Forward memberships and complimentary registrations to the Virtual Conference for core team members. This study excluded the SEA and Affiliate Leaders because they did not work in a single school district. I obtained permission from Learning Forward's President and CEO to conduct the study in the DPLV network. The results and findings provided documentation for the organization's goal attainment and informed programmatic strategy review. Table 3.2 shows DPLV membership by organization type.

Table 3.2

*DPLV Members by Organization Type*

Organization Type	Count
School District Leaders	42
State Education Association Leader	5
Learning Forward Affiliate Leader	5
Total	52

*Participant Sampling*

This eligible study population included the school districts leaders from the DPLV ( $N = 42$ ). Each DPLV-member school district self-selected a professional learning leadership team (core team) of at least five school district leaders, including district administrators and school-based leaders. The core team members had responsibility and oversight of curriculum and instruction, professional learning, leadership development, organizational equity, human resources, technology, and research and evaluation. Core team members held various job titles, including but not limited to the superintendent, assistant superintendent, executive director, coordinator, and school-based leader

(principal). They self-reported their roles and titles. For the study, I combined similar job titles and levels of responsibility to form two leadership groups: district administrators and school-level leaders. Of the 42 invited participants, 35 were school district administrators, and 7 were school-based leaders. I chose the non-probabilistic purposive sampling method to ensure participants met specific criteria (Alvi, 2016; Daniel, 2012; Trochim, 2020). I identified two eligibility requirements: DPLV membership and a role as a school district leader. The non-probabilistic sample limited generalizability (Bergin, 2018; Rossi et al., 2019). Table 3.3 summarizes the core team members' self-reported role and assigned leadership group.

Table 3.3

*DPLV Core Team Member by Leadership Group*

Leadership Group	Department	Count
District Administrator	Superintendent, Assistant Superintendent, Executive Director	8
	Director	15
	Coordinator, Manager, Supervisor	8
	Specialist	4
Total		35
School-based Leader	School-based Administration	7
Total		7
Grand Total		42

*Data Collection Procedures*

The quantitative study's data collection and analysis uncovered relationships about the association between the CoP dimensions, and school district leaders' learning, and professional learning efficacy (Bergin, 2018; Creswell & Creswell, 2018). I constructed the survey in Qualtrics (2020) to facilitate efficient distribution and data

exports. All eligible DPLV members received an email invitation to participate in the study (see Appendix B). Inviting members of an existing Learning Forward network aided access to the research participants. The data comparing invitations extended and actual survey completion appear in Chapter Four.

### *Instrumentation*

The survey for data collection was the LTCoP-S. I distributed the survey in December 2020 and May 2021 (see Appendix C). The first item block (Q1.1) collected informed consent as part of the initial distribution. I used the second item block in December 2020 and May 2021 to gather demographic data. In December 2020, I collected information about the participants' school district department (Q2.1) and leadership role (Q2.2). In May 2021, the second item block asked for the school district. This data helped me match participant responses from December 2020. The items in the third block (Q3.1–Q3.12) used items previously validated by Neufeld et al. (2013) to measure school district leaders' learning associated with shared repertoire, joint enterprise, and mutual engagement. The fourth block of items explored school district leaders' CoP experience (Q4.1 and Q4.2). The final item block examined school district leaders' professional learning efficacy (Q5.1–Q5.6). Table 3.4 shows the items by factor and the alignment to the research questions.

I labeled the third item block "Community Characteristics—individual." Items in this block replicated items from a valid instrument. Neufeld et al. (2013) developed and validated 12 items after an initial pilot study in a large Canadian university and then field-tested the survey in a non-profit organization.

Table 3.4

*Learning Together: An Examination of Inter-District Collaboration in a Community of Practice Survey (LTCOP-S) Items by Factor and Research Question Alignment*

Factors		Items	RQ
Shared repertoire (3 items)	Q3.1	Members of this community share a common vocabulary.	RQ1
	Q3.2	Individuals in this community know each other's mental models.	RQ2
	Q3.3	I quickly understand what community members are trying to say without too much explanation by them.	
Joint enterprise (3 items)	Q3.4	I feel a positive sense of achievement when this community thrives.	RQ1
	Q3.5	I have a strong sense of belonging to this community.	RQ2
	Q3.6	When I am with members of this community, I feel I am "at home."	
Mutual engagement (2 items)	Q3.7	People in this community frequently interact with one another to solve common problems.	RQ1
	Q3.8	I frequently interact with members of this community to do my job.	RQ2
Learning (4 items)	Q3.9	The things I learn from this community frequently affect my job activities.	RQ2
	Q3.10	This community provides an important source of my overall learning.	
	Q3.11	I am constantly learning new things from this community.	
	Q3.12	The things I learn from members of this community stick with me for a long time.	
CoP experience (2 items)	Q4.1	The work within this community is resulting in "net less work" for me.	
	Q4.2	I believe that the work of this community will result in "net less work" for me in the future.	
Professional Learning (6 items)	Q5.1	I can articulate the meaning, purpose, and importance of the Standards for Professional Learning to staff and student success.	RQ3
	Q5.2	As a school district leader, I know my roles and responsibilities to ensure effective, efficient, and equitable professional learning for all educators.	
	Q5.3	My professional learning leadership behaviors align with my organization's professional learning definition.	
	Q5.4	I use the Standards for Professional Learning to guide designing a comprehensive professional learning system.	
	Q5.5	I use the Standards for Professional Learning to guide implementing a comprehensive professional learning system.	
	Q5.6	I used a thoughtful assessment plan to regularly and systematically evaluate professional learning's effect on educator and leader practices and student results.	

Note: RQ = research questions; items Q3.1 – Q3.12 (Neufeld et al., 2013). Items Q 4.1, Q4.2 (RFL, 2016). Q5.1–Q5.6 (Hirsh et al., 2018; Killion, 2013, 2013a; Learning Forward, 2011, 2013)

Organized as four factors, the 12 items measured the connection between the three essential characteristics and the outcome of CoP engagement espoused in Wenger's (1998) Communities of Practice theory—shared repertoire, joint enterprise, and mutual engagement—and individual learning. The items ask school district leaders to report their level of agreement using the same 5-point response scale as the original survey. Five represented strongly agree, and one indicated strongly disagree. The items align with the four factors as follows: shared repertoire (Q3.1, Q3.2, and Q3.3), joint enterprise (Q3.4, Q3.5, and Q3.6), mutual engagement (Q3.7 and Q3.8), and learning (Q3.9, Q3.10, Q3.11, and Q3.12).

In block four, I used items from a previous CoP program evaluation (RFL, 2016; 2017). The two items explored “Community Experience.” By asking research participants to reflect on their CoP experience, the items measured school district leaders’ perceptions of the benefit of their system’s intentional time and energy in the CoP. The community experience questions (Q4.1 and Q4.2) focused on the concept of “net less work.” This concept first appeared in the Redesign Professional Development Community of Practice (RPDC) initiative post-convening reflection (RFL, 2016). “Net less work” suggested that although CoP commitment required intentional time and energy, “ultimately it would create less work for system teams, with the power of the collective thinking being more efficient and effective than solving problems in isolation” (RFL, 2016, p. 23). Since its first appearance, the “net less work” questions occurred in reflection questionnaires for Learning Forward’s networks.

The final six items in block five asked about “Professional Learning—knowledge, skills, behaviors.” I created the items using resources aligned to Standards for

Professional Learning and their implementation (Hirsh et al., 2018; Killion, 2013, 2013a; Learning Forward, 2011, 2013). These questions concentrated on the knowledge and application of the Standards for Professional Learning (2011). The items also drew from Learning Forward publications dedicated to developing learning systems—school districts and school campuses committed to continuous learning and collective responsibility for student and adult learning (Hirsh et al., 2018; Killion, 2013, 2013a). Collecting quantitative data produced numeric data that allowed me to statistically infer evidence about the relationship between the CoP dimensions and individual learning and changes in school district leaders’ professional learning efficacy after CoP participation (Field, 2018).

#### *Validity, Reliability, and Trustworthiness*

Quantitative researchers use various terms to assess the data’s quality, the results, and the interpretation. They discuss validity and reliability and focus on trustworthiness (Bergin, 2018; Creswell & Creswell, 2018; Creswell & Poth, 2018). The LTCoP-S items included psychometrically valid and reliable items (Neufeld et al., 2013; Q3.1–Q3.12) and researcher-developed items (Hirsh et al., 2018; Killion, 2013, 2013a; Learning Forward, 2011, 2013; RFL, 2016; Q4.1–Q5.6).

Neufeld and colleagues (2013) developed and validated the items after an initial pilot study in a large Canadian university and then conducted a field test in a non-profit organization. The 12-items demonstrated initial construct validity through a “two-stage conceptual validation card sort procedure” (Neufeld et al., 2013, p. 626) and then through statistical analysis. Construct validity showed the degree to which the items measured the participant responses in a meaningful way for the specific indicator (Bergin, 2018).



The internal reliability described the consistency of the items to measure the indicator. In the pilot and field study, the internal reliability was satisfactory. Neufeld et al. (2013) reported satisfactory internal reliability—shared repertoire (.76), joint enterprise (.89), mutual engagement (.81), learning (.93)—in the field study. The reliability was important because this means the instrument consistently measured what it intended to measure. The intercorrelation constructs met acceptable validity levels, see Table 3.5. The copyright holder and lead author authorized the use of the items (see Appendix D).

The researcher-developed items assessed professional learning efficacy. During item development, to determine content validity (Bergin, 2018; Creswell & Creswell, 2018), I consulted with established and experienced leaders in professional learning to align the research questions and clarity. Reviewers included the authors of the Learning Forward publications cited here. Validity and reliability judged the quantitative methodology in this study.

Table 3.5

*CoP Factors Intercorrelational Construct Validity*

Factor	Shared repertoire	Joint enterprise	Mutual engagement
Shared repertoire	-	-	-
Joint enterprise	0.62	-	-
Mutual engagement	0.32	0.56	0.83

Trustworthiness concerns “credibility” and “transferability” (Guba & Lincoln, 1982). Although the study lacks generalizability, documenting and describing the methodology and the research context contributed to overall credibility. Clear and thorough articulation of the data collection and analysis procedures addressed

dependability and confirmability. I also articulated my methods to aid the possible replication of the study. Replicating this study with another group or in a different context would promote dependability and potential transferability (Bergin, 2018; Creswell & Poth, 2018; Guba & Lincoln, 1982). Confirmability depended on the data. I secured all data in a restricted access cloud-based file. I also maintained a password-protected file on my computer, backed up the data on an external drive, and secured written material in my home office.

### *Data Collection*

The DPLV membership agreement included general consent for data collection as a regular practice after convenings and coaching sessions. After receiving the Institutional Review Board (IRB) and Baylor School of Education approval, I emailed the eligible DPLV members to invite them to participate in the web-based survey.

Online survey methods are a type of e-research (International Test Commission [ITC], 2006). I observed the regulations for good practices to control measurement conditions and engender trust between researcher and participants (Klej, 2017; ITC, 2006). Survey administration occurred through email distribution. The electronic distribution of the survey in this study meets the ITC Guidelines (2006) for a controlled mode because of direct contact through email to known research participants. I chose a controlled distribution to align with the purposive sampling methods (Alvi, 2016; Daniel, 2012; Trochim, 2020). I did not want a convenience sample; therefore, I did not allow uninvited participants to access the web-based link (Schonlau et al., 2002).

The research participants were a known group of people that took the survey unsupervised. Klej (2007) discussed participant honesty during online survey completion,

indicating that “honesty of respondents seems to depend on their will of participation, not on a measurement method—standard or electronic” (Klej, 2007, p. 37). In other words, comparable reliability and validity existed between tests administered online and those managed more traditionally (Grieve & de Groot, 2011). Participant honesty in a digital survey is no more fallible than in traditional in-person testing.

Using a web-based survey had advantages and disadvantages. I had the benefit of existing access to participant emails. Using the Qualtrics (2020) distribution feature, I emailed each eligible DPLV member and invited them to participate in the study (see Appendix B). Each DPLV member received a unique link to the LTCOP-S (see Appendix C). Informed consent was the first item in the December 2020 survey. If a recipient declined consent, their survey ended. Research participants that agreed to the informed consent answered the same 20 questions in December 2020 and May 2021.

Research participants were not anonymous to me. I had direct contact with participants during DPLV events such as convenings and webinars and through collaborative documents. I maintained a record of participants’ names and district affiliations. The unique identifier was each participants’ email address. I offered no incentives for completing the survey. The informed consent agreement included as part of the initial survey disclosed the degree of anonymity.

Sending the invitations via email expedited survey distribution; however, this did not guarantee responses from invited participants (Schonlau et al., 2002). I scheduled reminders as a countermeasure for low response rates. For efficiency, I sent follow-up reminders using the Qualtrics (2020) distribution widget. I also composed and automatically distributed emails to thank respondents at the close of each distribution

timeframe. By inviting DPLV members to participate in the study, I simplified the process to obtain a non-probabilistic purposive sample. Table 3.6 provides the data collection and analysis timeline.

Table 3.6

*Data Collection and Analysis Timeline*

Date	Action or Activity
December 21, 2020	Send Learning Together: An Examination of Inter-District Collaboration in a Community of Practice Survey to prospective survey participants
Week of January 3, 2021	Send first reminder email to survey participant prospects (due January 30, 2021)
Week of January 24, 2021	Send second reminder email to survey participant prospects (due January 30, 2021)
February 1, 2021	Send thank you to survey respondents
February 1–April 30, 2021	Clean data and conduct initial analysis
May 24, 2021	Send second administration of Learning Together: An Examination of Inter-District Collaboration in a Community of Practice Survey to prospective survey participants
Week of June 1, 2021	Send first reminder email to survey participant prospects (due June 25, 2021)
Week of June 14, 2021	Send second reminder email to survey participant prospects (due June 25, 2021)
June 30, 2021	Send thank you to survey respondents
June 28–July 2, 2021	Clean data and conduct analysis

*Data Analysis Procedures*

This quantitative research applied statistical analysis to identify possible correlations between variables based on the survey data (Field, 2018) and changes after CoP participation. Quantitative data analysis procedures numerically represented research participants' CoP experience. I analyzed the data three ways. First, I examined the strength of the connections between shared repertoire, joint enterprise, mutual engagement, and school district leaders' learning (RQ1). Next, I analyzed the changes in

school district leaders' perceptions of shared repertoire, joint enterprise, and mutual engagement after CoP participation (RQ2). Finally, I investigated the difference in school district leaders' professional learning efficacy after CoP participation (RQ3). The complete list of variables and statistical procedures is in Table 3.7.

Table 3.7

*Data Analysis Schema*

RQ	Variables	Statistical Procedure
1	CoP dimensions and school district leaders' learning	Pearson's $r$
2	CoP dimensions	Paired-samples $t$ -test
3	Professional learning efficacy	Paired-samples $t$ -test

*Note:* CoP dimensions—shared repertoire, joint enterprise, mutual engagement.

Research participants self-reported survey responses to the same 20-item survey in December 2020 and May 2021, providing the data for analysis. Numerical data supported determining the relationships between the variables, a postpositivist tendency (Bergin, 2018; Creswell & Creswell, 2018). The statistical analysis aided in understanding the relationships between CoP engagement and school district leaders' learning and changes in professional learning efficacy.

I prepared the data for input before conducting the analysis. After each survey administration, I exported the research participant responses from Qualtrics (2020) to a spreadsheet file. To maintain participant confidentiality, I replaced identifiable information such as participant names, email addresses, and the school district with a participant code. Then, I imported the data into IBM® SPSS® (v.27). To distinguish participant responses for each survey distribution, I updated variable names to reflect the number of the distribution. I calculated categorical variables by summing participants'

responses to the set of items corresponding to the essential elements of a CoP (shared repertoire, joint enterprise, and mutual engagement), CoP experience, learning, and professional learning (see Table 3.5). I minimized the threat to validity by coding missing data as -99, an impossible value for the data set (Bergin, 2018). The analysis software produced tables and graphs such as histograms, normal probability plots, and partial plots to analyze the data's shape. I generated calculations of common descriptive statistics and verified the assumptions of linearity and approximate normality using IBM® SPSS® (v.27; Field, 2018). I visually inspected boxplots for outliers (Field, 2018).

To conduct the bivariate correlation for RQ1, I examined the relationship between factor-level variables: shared repertoire, joint enterprise, mutual engagement, and school district leaders' learning (Field, 2018; Wenger, 1998). The data met the assumption of approximate normality; therefore, I used the inferential parametric statistic of Pearson's correlational coefficient to interpret the effect size for RQ1 (Bergin, 2018; Creswell & Creswell, 2018; Field, 2018).

This study measured the same group of respondents at the beginning of the CoP and after participation. I tested the CoP dimensions (RQ2) changes and differences in school district leaders' professional learning efficacy (knowledge, skill, leadership behavior; RQ3). Therefore, to examine whether the mean values were significantly different, I used a dependent-samples or paired-samples *t*-test applied (Bergin, 2018; Field, 2018). Comparing the change in means for the study sample to what I would expect to find for the population allowed me to infer practical significance after CoP participation (Field, 2018). I reported Cohen's *d* to quantify the effect between changes

before and after CoP participation (Field, 2018). After analyzing the data, I summarized the results according to the research questions and hypotheses (Bergin, 2018).

### *Ethical Considerations*

Designing, conducting, and analyzing data in this study foregrounded ethical research conduct. I attended to the three guiding principles for ethical research—respect for the person, concern for welfare, and justice (American Evaluation Association, 2018). After receiving the university IRB and School of Education approval, I contacted DPLV members. I provided the informed consent documents to establish and support respectful and honest participant relationships. The DPLV membership agreement included general consent for data collection as a regular practice after convenings and coaching sessions. However, the informed consent letters detailed specifics about the study, including the participants’ role, the researcher’s identity, the study’s sponsor, the study objectives, use of the results, and dissemination plans (Creswell & Creswell, 2018). The letter also communicated the strategies to protect research participants’ personal information within the design, removing identifiers and details of people, places, and organizations—reassuring participant anonymity and confidentiality. I wanted to ensure that participants had sufficient information to make an informed decision about their participation.

Another ethical consideration was my role as an internal participatory researcher. I held primary responsibility for designing and facilitating the CoP and directly supported DPLV teams through coaching. My existing trusted relationships with the CoP members benefited access to invite participants. Having specific and detailed knowledge about the CoP, educator professional learning, school district leadership practices, and participants added credibility that potentially biased data analysis. I logged written and digital notes

to reflect on the research participants' experiences (Creswell & Poth, 2018) after CoP activities such as convenings, coaching sessions, and professional learning webinars.

### *Limitations*

The quantitative research design method presented a robust strategy that utilized statistical analysis to determine possible associations between CoP engagement and school district leaders' professional learning knowledge, skills, and leadership behaviors. However, the approach had limitations that threatened external validity (Bergin, 2018; Creswell & Creswell, 2018). Limitations included a non-experimental design, measures of unknown reliability, participant sampling, response rate, and study duration (PhDStudent.com, 2021; Price & Murnan, 2004).

First, the methodology was a non-experimental design study with no randomization or control group. Without a control group or pre-determined manipulation, I could not claim causation (Creswell & Creswell, 2018). Thus, the findings only claimed correlations between variables and explained relationships among CoP engagement and school district leaders' professional learning efficacy. Also, the study did not have a pre-test. Due to the timing of IRB approval, the initial survey occurred after the start date of the CoP.

Second, the survey included researcher-developed items. Although content experts reviewed and confirmed content validity, the lack of psychometric validity and reliability properties threatened internal validity (Price & Murnan, 2004). Third, participation presented limitations. The research design limited the eligible participants because of the required membership in the DPLV and a focus on specific leadership roles within a school district. The membership requirements restricted the sample size and



impacted the opportunity for generalizability. The participants self-reported on the surveys and could drop out at any time.

A fourth limitation was the response rate. Only seventeen out of 42 eligible participants responded. I had no way to know what additional responses would indicate. A larger sample size and higher participation rate in more diverse research contexts would further improve external validity. Finally, although the study collected data over time, the duration was less than a year. The short term presented a snapshot of CoP engagement and perceptions (Creswell & Creswell, 2018). To see a complete view of changes over time would require multi-year CoP engagement.

The research study also included delimitations that set boundaries for the study. I consciously chose three boundaries. First, I defined the research problem within K–12 education and professional learning to serve my research interests. Second, I chose to focus on the community of practice structure defined by Wenger’s (1998) CoP theoretical framework, which limited the focus and scope of the research. Third, I bounded the study based on the population of interest, school district leaders. Deliberately setting parameters allowed me to study the inter-district community of practice as a robust organizational infrastructure for multiple school systems. I assessed school district leaders’ engagement, experience, and collaboration as they focused on a common problem—reforming their professional learning systems and connecting teacher learning to classroom challenges.

### *Conclusion*

This quantitative study examined school district leaders’ learning and engagement in an inter-district CoP. The methodology described in this chapter surveyed CoP

members at the beginning of the CoP (December 2020) and after participation (May 2021). Through correlational analysis, I measured the relationship between CoP engagement and school district leaders' learning. I also measured changes in CoP dimensions and school district leaders' professional learning efficacy through the lens of Wenger's (1998) CoP theory.

The results of this study have implications for education leaders. The field of professional learning lacks empirical evidence about professional learning effectiveness. The findings and interpretations of this study leverage statistical evidence. Insight into the structures, practices, and impacts of the CoP on learning and leadership practices will inform establishing a new CoP or possibly redesigning an existing community or network already working on a shared problem. Also, the results demonstrated the associations of inter-district collaboration in an intentional community, the process of developing collective ownership in the community, the benefits of knowledge sharing, and the value of network participation for school district leaders. Chapter Four examines the results and discusses the implications of the research findings.

## CHAPTER FOUR

### Results and Implications

#### *Introduction*

Illuminating the impact of a community of practice (CoP) on school district leaders' learning and professional learning efficacy offers an opportunity to demonstrate the power of inter-district collaboration. The literature review established that successful school district leaders learn and collaborate with others to implement systemic change. There were three conclusions from the literature review. First, school district leaders partnered with others to operationalize learning-based change initiatives (Ellis & Castle, 2010; Fullan, 2001, Leithwood, 2010; McLaughlin & Talbert, 2011; Seashore Louis et al., 2010; Senge, 1990). Second, they prioritized learning structures such as professional learning communities to advance innovative change and continuously improved (Darling-Hammond et al., 2009; DuFour & Eaker, 1998; Fullan & Hargreaves, 2016; Hargreaves & O'Connor, 2018; Hord, 1997; Katz et al., 2009, McLaughlin & Talbert, 2001; Stoll et al., 2006; Vescio et al., 2008). Third, when teams of school district leaders engaged in a community of practice (CoP) with a shared problem and used intentional structures for inquiry and problem-solving, their collective efforts accelerated solution finding (Azukas, 2018; Bryk et al., 2015; Celeste, 2016; Corso et al., 2009; George et al., 2019; Hite et al., 2018; Katz et al., 2009; King, 2016; Rincón-Gallardo & Fullan, 2018; Wenger et al., 2002).

This chapter reveals the relationship between the three attributes of an effective CoP, shared repertoire, joint enterprise, and mutual engagement, and individual learning.

The chapter also discusses the change in school district leaders' professional learning efficacy after CoP participation. The data collection occurred in December 2020 after the CoP began and in May 2021 at the end of the program. The presentation of results and implications includes four sections. First, I briefly describe the research design and instrumentation. Second, I report the procedures applied to prepare the data for analysis. Third, I present the quantitative findings, including descriptive statistics and the statistics for each research question. Finally, I conclude with a discussion of key takeaways related to the theoretical framework and the literature review, followed by recommendations for key stakeholders.

### *Research Design and Instrumentation*

The education sector lacks empirical studies with a focus on professional learning. This quantitative research study examined the influence of school district leaders' engagement in a deliberately designed inter-district CoP. A deliberately designed CoP includes three dimensions: shared repertoire, joint enterprise, and mutual engagement. The research questions focused on school district leaders' learning and professional learning efficacy. I used Pearson's  $r$  to study the correlations between shared repertoire, joint enterprise, mutual engagement, and school district leaders' learning. I also tested the changes in the CoP dimensions and the difference in school district leaders' professional learning efficacy (knowledge, skill, and leadership behavior for professional learning) using paired-samples  $t$ -tests. I conducted the study with a purposive sample (Alvi, 2016; Daniel, 2012; Trochim, 2020).

### *Participants*

The population for the study participants was composed of members of Learning Forward's Design Professional Learning for a Virtual World (DPLV) network. Amid the COVID-19 pandemic, the network involved teams from multiple school districts that prioritized systemwide educator and student learning. The school district teams leveraged the opportunities resulting from the rapid shift to virtual and digitally-mediated educational models to address immediate challenges to designing and implementing effective professional learning (Bowman, 2020). To meet the requirements of a non-probabilistic purposive sample, I limited participation to DPLV members who were also school district leaders working in a single school district. The eligible DPLV members ( $N=42$ ) worked in seven school districts in Florida, Indiana, Oklahoma, Texas, and Virginia. They worked as school district administrators ( $n=35$ ) and school-level leaders ( $n=7$ ). Within the inter-district CoP, the participants engaged in collaborative learning, problem-solving, and accelerated solution-finding. Their survey responses in December 2020 and May 2021 provided the data for analysis.

### *Instrumentation*

Research participants answered a 20-item survey in December 2020 and May 2021. The Learning Together: An Examination of Inter-District Collaboration in a Community of Practice Survey (LTCOP-S; see Appendix C) asked participants to rate their CoP participation, learning, and professional learning knowledge and behaviors. Each question used a *Likert*-type scaled item with numerical values—strongly agree (5), agree (4), neither agree nor disagree (3), disagree (2), strongly disagree (1). The first 12 items emanated from a previously validated survey. Neufeld et al. (2013) investigated the

correlations between shared repertoire, joint enterprise, mutual engagement, and individual learning. Three items measured shared repertoire, the “common social infrastructures” (Neufeld et al., 2013, p. 619). Three items assessed joint enterprise or the pursuit of a collectively determined problem (Neufeld et al., 2018, Wenger & Trayner, 2015; Wenger et al., 2002). Two items measured mutual engagement or a shared commitment to the common problem. Participants responded to four items regarding their learning in the CoP. Two items explored participants’ CoP experience framed as “net less work” or the perception that over time the collective problem-solving and collaborative learning would create less work for teams (RFL, 2016). The final six items examined participants’ professional learning efficacy (Hirsh et al., 2018; Killion 2013, 2013a; Learning Forward, 2011, 2013).

The quantitative data analysis strategy used descriptive statistics such as mean and item frequency to summarize the data collected. A Pearson’s  $r$  tested the strength of the relationship between shared repertoire, joint enterprise, mutual engagement, and school district leaders’ learning. A paired-samples  $t$ -test determined the practical significance of changes in school districts leaders’ perception of the three CoP dimensions from December 2020 to May 2021. Similarly, a paired-samples  $t$ -test determined if a statistical significance in professional learning efficacy existed among district leaders after CoP participation (Creswell & Creswell, 2018; Field, 2018). Quantifying participants’ survey responses enabled inferential statistical analysis to study the relationship between the CoP dimensions and individual learning and changes in school district leaders’ professional learning efficacy after CoP participation (Field, 2018).

### *Preparing Data for Analysis*

Preparing the data for the analysis required multiple steps. First, I verified survey completion. Next, I checked the data against the assumptions of the linear model necessary for correlational analysis. I verified normality assumptions before comparing the difference in survey responses from December 2020 and May 2021.

After the December 2020 and May 2021 surveys, I confirmed that each participant responded to all questions. If a participant did not complete both surveys, I eliminated the case from the analysis. I invited 42 DPLV members to take the December 2020 survey. Twenty-one DPLV members (50%) consented to participate in the study and began the initial survey. Eighteen DPLV members who started the survey (85%) completed the December 2020 survey. I sent the May 2021 survey to the 18 DPLV members who completed the December 2020 survey. Ninety-four percent of the December 2020 respondents completed the May 2021 survey. Overall, 40% of the DPLV population finished the December 2020 and the May 2021 surveys. Table 4.1 summarizes the participant completion rates.

Table 4.1

#### *School District Leader Survey Completion*

	Invitations	Started	% Started <sup>a</sup>	Completed	% Completed <sup>b</sup>
Distribution	N	N <sub>1</sub>	%	N <sub>2</sub>	%
December 2020	42	21	50	18	85
May 2021	18	17	94	17	94
Both				17	40

Note: a. % started =  $N_1 / N$ ; b. % completed =  $N_2 / N$ .

### *Factor-Level Variables*

Before using the sample data to make statistical inferences, I computed factor-level variables and verified their reliability. The classification of individual items into the factor-level variables matched the original survey instrument (Neufeld et al., 2013). I computed the factor-level variables for shared repertoire, joint enterprise, mutual engagement, and professional learning. Using the transform function in IBM® SPSS® (v.27), I summed the respective *Likert*-type scale item scores from the individual items for each category.

There were five factor-level variables. Shared repertoire included three questions that asked about shared vocabulary (Q3.1), mental models (Q3.2), and understanding (Q3.3). Questions about a sense of achievement (Q3.4), belonging (Q3.5), and feeling “at home” (Q3.6) combined to represent the joint enterprise. The factor-level variable mutual engagement included two questions about community interaction (Q3.7 and Q3.8). Learning as a factor-level variable resulted from four questions (Q3.9, Q3.10, Q3.11, Q3.12). To obtain a single variable for professional learning efficacy, I summed responses to six items. I asked school district leaders about their knowledge and use of the Standards for Professional Learning (Q5.1, Q5.4, Q5.5, Q5.6; Learning Forward, 2011). Respondents also answered questions about their leadership practices related to professional learning (Q5.2 and Q5.3). Table 4.2 displays the equations for the factor-level variables. I obtained reliability statistics and reported Cronbach’s  $\alpha$  for each factor.

Measuring the reliability of the factor-level variables helped confirm that they consistently reflected the defined construct. I interpreted Cronbach’s  $\alpha$  as a measure of reliability and looked for values of about 0.7–0.8 to indicate good reliability (Field, 2018;



Vogt & Johnson, 2016). The shared repertoire (Cronbach's  $\alpha = .871$ ) and mutual engagement (Cronbach's  $\alpha = .935$ ) factors had high reliability. The overall  $\alpha$  for joint enterprise was .871. Learning had very high reliability, Cronbach's  $\alpha = .971$ . The reliability statistic for CoP impact and professional learning were Cronbach's  $\alpha = .787$  and Cronbach's  $\alpha = .751$ , respectively. Cronbach's  $\alpha$  demonstrated reliability for each factor level variable (Field, 2018; Vogt & Johnson, 2016). The next section presents the results of the data analysis.

Table 4.2

*Equations for the Computed Predictor and Outcome Variables*

Factor-level predictor variable	Individual Items summed
Shared Repertoire	SharedRep = Q3.1 + Q3.2 + Q3.3
Joint Enterprise	JointEnt = Q3.4 + Q3.5 + Q3.6
Mutual Engagement	MutualEng = Q3.7 + Q3.8
Learning	Learning = Q3.9 + Q3.10 + Q3.11 + Q3.12
Professional Learning	ProfLearn = Q5.1 + Q5.2 + Q5.3 + Q5.4 + Q5.6

*Results*

This section presents the findings from the survey data. First, I provide the descriptive statistics, including survey item response frequencies for December 2020 and May 2021. Next, I report the mean, median, standard deviation, and range to summarize the CoP factor-level variables (Bergin, 2018). Last, I describe the results for each research question.

*Descriptive Statistics*

Descriptive statistics provide an overview of the data collected. I used IBM® SPSS® (v.27) to calculate each factor-level variable's mean, standard deviation, and

range. The number of items per factor varied; therefore, I could not compare the average response ratings. Instead, the descriptive statistics provided the mean response with the possible range of scores and changes in the mean for each factor in December 2020 and May 2021. Table 4.3 summarizes the means, standard deviations, and range of scores for shared repertoire, joint enterprise, mutual engagement, individual learning, CoP impact, and professional learning.

Table 4.3

*Means, Standard Deviations, and Range of Scores for December 2020, and May 2021*

Factor	# of Items	Range of Scores	December 2020		May 2021	
			<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Shared Repertoire	3	3.00–15.00	6.12	1.90	12.59	2.12
Joint Enterprise	3	3.00–15.00	5.06	2.22	12.24	3.01
Mutual Engagement	2	2.00–10.00	3.76	1.30	7.47	2.18
Learning	4	4.00–20.00	6.47	2.53	15.59	4.62
CoP Impact (“Net less work”)	2	2.00–10.00	4.59	2.12	4.82	2.27
Professional Learning	6	6.00–30.00	10.12	3.52	26.00	3.35

Note: *N* = 17; *M* and *SD* represent mean and standard deviation, respectively.

On the initial survey, regardless of the number of items, school district leaders’ average responses were near the minimum in the range of scores. For example, the scores for the three shared repertoire items and the joint enterprise items could range from 3.00–15.00. In December 2020, school district leaders’ average shared repertoire response was 6.12 (*SD* = 1.90), and joint enterprise was 5.06 (*SD* = 2.22). Their survey responses for the two mutual engagement items averaged 3.76 (*SD* = 1.30). The average response for the four learning factor items was 6.47 (*SD* = 2.53). CoP impact measured as “net less work” had an average response of 4.59 (*SD* = 2.12) on two items. School district leaders’ mean response on the six professional learning efficacy items was 10.12 (*SD* = 3.52). The

mean response for each factor tended toward the minimum in the score range, indicating that school districts leaders expressed disagreement about their CoP engagement.

School district leaders' average rating in each factor-level variable increased after CoP participation. In May 2021, the mean responses for the three shared repertoire items increased to 12.59,  $SD = 2.12$ ). On average, the responses to the three joint enterprise items ( $M = 12.24$ ,  $SD = 3.01$ ) were near the maximum in the range in May 2021. The mutual engagement factor responses averaged 7.47 ( $SD = 2.18$ ). Learning had an average of 15.59 ( $SD = 4.62$ ). As a factor-level variable, the average response on the two CoP impact items had minimal change ( $M = 4.82$ ,  $SD = 2.27$ ). The six professional learning items' mean was 26.00 ( $SD = 3.35$ ).

The means for each factor in May 2021 were greater than the means in December 2020, demonstrating that, on average, participants perceived a greater sense of shared repertoire, joint enterprise, and mutual engagement after CoP participation. However, the increased standard deviations in May 2021 demonstrated that school district leaders had more variability in their response after CoP participation compared to their earlier responses. Apart from CoP Impact, the mean responses shifted toward the maximum possible score in the range. The shift indicated that school districts leaders expressed greater agreement about their CoP engagement after participating in the program. The following sections report and interpret the response frequency for individual items by factor-level variable for December 2020 and May 2021.

### *December 2020 Survey Results*

School district leaders took the LTCoP-S at the beginning of the CoP. The December 2020 survey established the baseline for school district leaders' CoP

experience. Initially, across the CoP factors, participants expressed high levels of strong disagreement. This section reports the frequencies for the individual items that comprise each factor. The results occur in the same order the factors appear in the survey: shared repertoire, joint enterprise, mutual engagement, learning, CoP impact, and professional learning.

*Shared repertoire.* In December, the items measuring shared repertoire had high response rates for disagree and strongly disagree. Across all three items, most school district leaders neither shared a common vocabulary (Q3.1; 56%) nor understood one another's mental models (Q3.2; 50%). All respondents either disagreed (69%) or strongly disagreed (31%) that they quickly understood what others said with little explanation (Q3.3). These high levels of disagreement demonstrated that most school district leaders had no "common social structure" (Neufeld et al., 2013, p. 619). They had not developed shared knowledge yet.

*Joint enterprise.* Joint enterprise measured the sense of achievement, belonging, and feeling "at home" in the CoP. School district leaders disagreed (25%) and strongly disagreed (75%) that they shared a sense of achievement within the CoP (Q3.4). Their disagreement suggested that they worked independently rather than together. Forty-one percent of individuals strongly disagreed that they experienced a sense of belonging in the CoP (Q3.5), and 47% strongly disagreed that they felt "at home" (Q3.6). School district leaders' dissenting views on the benefits relationships in December may result from a lack of familiarity with one another.

*Mutual engagement.* Collectively, study participants responded identically to both mutual engagement questions. Most participants expressed disagreement regarding frequent interaction with community members to solve common problems (Q3.7). Also, they disagreed that they interacted with the CoP to perform their job (Q3.8). At the beginning of the CoP, there was limited collaborative engagement. Only 6% expressed any level of agreement about collective action. Initially, school district leaders did not depend on one another to solve shared problems.

*Learning.* When asked about individual learning in the CoP, few school district leaders showed high levels of strong disagreement. More than half of the school district leaders strongly disagreed that the learning in the CoP affected their job (Q3.9; 53%). Furthermore, they expressed considerable disagreement and strong disagreement (88%) about the CoP as an important source of overall learning (Q3.10), a place to learn new things (Q3.11; 94%), and that they retained the learning (Q3.12; 88%). The responses to the items in the learning factor connect logically. If the CoP did not offer new learning, then learning about other individuals' job activities creates limitations. Similarly, if a school district leader is not learning new things, there is nothing to retain.

*CoP experience.* School district leaders' perceptions varied about the concept of "net less work" (RFL, 2016, 2017). Many school district leaders showed ambivalence (47%) toward currently experiencing "net less work" (Q4.1). CoP members mostly disagreed that CoP participation would lead to "net less work" in the future. The responses indicated that in December, school district leaders perceived their time and

energy in the CoP did not result in more efficient and effective problem solving (RFL, 2017). They were not experiencing the benefits of collective thinking and action.

*Professional learning.* Study participants' December responses predominantly disagreed or strongly disagreed on items associated with the professional learning factor. Most school districts leaders (77%) could not articulate the meaning, purpose, and importance of the Standards for Professional Learning (Q5.1; Learning Forward, 2011) to staff and student success. The Standards for Professional Learning describe school district leaders' knowledge and actions to ensure effective, efficient, and equitable professional learning for all educators (Learning Forward, 2011). Thus, the strong disagreement (77%) surrounding school district leaders' knowledge of their roles and responsibilities regarding professional learning (Q5.2) and the misalignment of leadership behaviors to an explicit professional learning definition (Q5.3; 71%) followed logically. The lack of knowledge about professional learning standards likely contributed to school district leaders' strong disagreement (59%) about guiding the design (Q5.4) and implementation (Q5.5) of a comprehensive professional learning system. Similarly, most school district leaders disagreed that they regularly and systematically evaluated professional learning's effect on educator and leader practices and student results (Q5.6). Overall, the December 2020 survey responses mostly dissented.

#### *May 2021 Survey Results*

In May 2021, after CoP participation, school district leaders responded to the LTCoP-S again. After CoP participation, study participants' perceptions changed. Participants showed high levels of agreement across all factors. The following section

reports item frequencies for school district leaders' survey responses after CoP participation.

*Shared repertoire.* In May 2021, the shared repertoire items showed greater levels of agreement. Different from December 2020, there were no dissenting responses about shared vocabulary (Q3.1). Most school district leaders strongly agreed (59%) that community members shared a common vocabulary. Seventy-one percent agreed or strongly agreed that CoP members knew one another's mental models (Q3.2). Eighty-eight percent of school district leaders agreed or strongly agreed about their ability to quickly understand other CoP members with little explanation (Q3.3). The change in district leaders' perception of shared repertoire after CoP participation suggested that the CoP members shared language, experiences, stories, and resources (Wenger, 1998; Wenger & Trayner, 2015; Wenger et al., 2002).

*Joint enterprise.* At least 70% of participants confirmed feeling a sense of achievement (Q3.3), having a strong sense of belonging (Q3.4), and feeling "at home" in the CoP (Q3.5). Compared to December 2020, school district leaders perceived their relationships in the CoP as vastly different. The high levels of agreement reflected their engagement in joint activities and discussions. The changes in items measuring joint enterprise suggested that the school district leaders developed beneficial relationships, shared language, and shared competence (Neufeld et al., 2013; Wenger, 1998).

*Mutual engagement.* Study participants' responses to the mutual engagement items shifted toward greater agreement. Most school district leaders responded with a level of agreement (71%) that they frequently interacted with others in the CoP to solve

common problems (Q3.7). Sixty-four percent agreed about frequently interacting with community members to perform their job (Q3.8). Although perceptions of mutual engagement in May 2021 exceed those in December 2020, almost a third of the school district leaders were neutral or disagreed with the statements about collective engagement. Perhaps their existing knowledge and competence “reduced [their] desire to interact with others” (Neufeld et al., 2013, p. 624). Nevertheless, considering the primary purpose of the CoP was to engage with others to solve a common problem, the results disappointed.

*Learning.* The level of agreement among school district leaders about their learning shifted toward agreement. The learning from the CoP in relation to school district leaders’ jobs (Q3.9) varied among school district leaders. The distributed responses may result from the difference in roles and responsibilities. Even so, 53% of school district leaders strongly agreed that the CoP provided an important source for their overall learning (Q3.10), they constantly learned new things from the community (Q3.11), and that they retain the learning gained from other CoP members (Q3.12). Most school district leaders responded favorably about their learning in the CoP.

*CoP experience.* Perceptions about how participating in the CoP results in “net less work” remained disparate. Thirty-six percent of school district leaders strongly agreed or agreed that the CoP was currently resulting in “net less work” (Q4.1). While these results signaled a more positive perception of the benefits of devoting individual time and energy for the sake of short-term collective action, the limited agreement suggested school district leaders focused on the wrong thing. Their involvement in the



details of solving the problem distracted them from recognizing the current benefits of the CoP experience. As they projected into the future, slightly more than half of the school district leaders (59%) believed that the work of the CoP would result in “net less work” (Q4.2). Perceiving future benefits from the CoP acknowledged the lasting value of their current work and commitment and the transferability. The factor related to CoP experience had the least positive change from December 2020 to May 2021.

*Professional learning.* Study participants’ responses to items about professional learning efficacy dominated agreement or strong agreement in May 2021. School district leaders evidenced dramatic change from December 2020 with their ability to articulate the meaning, purpose, and importance of the Standards for Professional Learning to staff and student success (Q5.1; 88%). They also increased their agreement about their knowledge of their role and responsibilities to ensure effective, efficient, and equitable professional learning for all educators (Q5.2; 95%)

Similarly, school district leaders confirmed that their behaviors aligned with their school district’s professional learning definition (Q5.3; 83%). After participating in the CoP, school districts agreed they could guide the design (Q5.4; 88%) and implementation (Q5.5; 88%) of a comprehensive professional learning system. Also, most school district leaders agreed (59%) that they regularly and systematically evaluated professional learning’s effect on educator and leader practices and student results (Q5.6). School district leaders’ highly positive responses gave the impression that school district leaders’ professional learning efficacy changed. Overall, school district leaders’ survey responses in May were more unified and tending toward high levels of agreement.

### *Summary of Results*

This section provided an overview of the data collected. The descriptive statistics for each factor variable summarized the survey responses revealing any extreme values and patterns in the sample data (Bergin, 2018). Overall, participant responses positively changed after CoP participation. School district leaders' responses generally indicated more agreement regarding their involvement in the inter-district community of practice. They expressed more positive perceptions about their learning and professional learning efficacy. Table 4.4 provides the LTCoP-S response frequencies for December 2020 and May 2021. The bar charts in Appendix E show a side-by-side visual representation of the same data. In the next section, I present the results of the statistical analysis.

### *Quantitative Analysis*

This quantitative study involved school district leaders participating in an inter-district community of practice. Using their survey responses from December 2020 and May 2021, this section presents the statistical analyses and findings organized by the research question. For each research question, I also report the outcome of the null hypothesis.

#### *Research Question 1*

Research question one (RQ1) examined the relationship between community practice dimensions (shared repertoire, joint enterprise, mutual engagement) and individual school district leaders' learning after CoP participation.

Table 4.4

*Learning Together: An Examination of Inter-District Collaboration in a Community of Practice Survey Responses*

Likert-item response (value) Factor Item	December 2020					May 2020				
	Strongly agree (5) %	Agree (4) %	Neither agree nor disagree (3) %	Disagree (2) %	Strongly disagree (1) %	Strongly agree (5) %	Agree (4) %	Neither agree nor disagree (3) %	Disagree (2) %	Strongly disagree (1) %
Shared Repertoire										
Q3.1. Vocab	-	6	6	56	31	56	38	6	-	-
Q3.2. Mental models	6	25	13	50	6	19	50	13	19	-
Q3.3. Understanding	-	-	-	69	31	38	50	13	-	-
Joint Enterprise										
Q3.4. Achievement	-	-	-	25	75	65	12	24	-	-
Q3.5. Belonging	-	6	18	35	41	35	35	12	18	-
Q3.6. At home	-	6	24	24	47	53	18	29	-	-
Mutual Engagement										
Q3.7. Interact to solve	-	6	12	47	35	24	47	12	18	-
Q3.8. Interact for job	-	6	12	47	35	29	35	18	12	6
Learning										
Q3.9. Affect job	-	6	12	29	53	29	35	18	18	-
Q3.10. Source of learning	-	6	6	41	47	53	18	12	12	6
Q3.11. Learn new things	-	-	6	35	59	53	18	12	18	-
Q3.12. Retain learning	-	-	12	35	53	35	29	12	24	-
CoP Impact: Net Less Work										
Q4.1. Current	6	12	41	18	24	12	24	24	35	6
Q4.2. Future	6	6	6	47	35	24	35	18	18	6
Professional Learning										
Q5.1. Articulate the Standards	-	6	12	47	35	41	47	-	12	-
Q5.2. Role and responsibility	-	-	-	24	77	77	18	-	6	-
Q5.3. Leadership behaviors	6	6	6	12	71	65	18	18	-	-
Q5.4. Guide design	-	-	25	19	59	47	41	6	6	-
Q5.5. Guide implementation	-	-	24	18	59	47	41	6	6	-
Q5.6. Evaluate the effect	-	6	18	53	24	29	59	6	6	-

Note: Percentages might differ from 100% due to rounding.

A Pearson's  $r$  quantified the strength of the relationship between the community of practice dimensions (shared repertoire, joint enterprise, mutual engagement) and school district leaders' learning. IBM® SPSS® (v.27) generated histograms with normal probability curves and partial plots to verify the assumptions of linearity and normality for the factor-level variables. The histograms and the P-Plots illustrated normal distributions and linearity for shared repertoire, joint enterprise, mutual engagement, and school district leaders' learning (Field, 2018; see Appendix F).

The data analysis revealed that each CoP dimension had a strong, positive, statistically significant relationship with school district leaders' learning. Shared repertoire significantly and positively correlated with school district leaders' learning ( $r = .688$ , 95% CI [.337, .885],  $p = .002$ ). School district leaders' learning strongly and positively correlated with joint enterprise ( $r = .896$ , 95% CI [.754, .964],  $p < .001$ ) and mutual engagement ( $r = .900$ , 95% CI [.716, .966],  $p < .001$ ). The correlation coefficients for each factor indicated a strong effect (Field, 2018). No significant correlations existed between the CoP dimensions and professional learning efficacy or with any factor and "net less work."

The results of the Pearson's  $r$  correlational analysis reject the null hypothesis for leaders' learning. The positive correlations suggested that as school district leaders' perceptions of shared repertoire, joint enterprise, and mutual engagement increase, their learning increases. Table 4.5 presents the correlation matrix and reports the 95% confidence intervals in square brackets.

Table 4.5

*Correlations Between CoP Dimensions (Shared Repertoire, Joint Enterprise, Mutual Engagement) and Learning, May 2021*

	1	2	3	4	5	6
1. Shared Repertoire	1					
2. Joint Enterprise	.858** [.612, .958]	1				
3. Mutual Engagement	.781** [.529, .921]	.930** [.828, .980]	1			
4. Learning	.668** [.337, .885]	.890** [.737, .962]	.893** [.693, .967]	1		
5. Net Less Work	.198 [-.297, .578]	-.057 [-.599, .395]	-.044 [-.661, .473]	-.317 [-.732, .095]	1	
6. Professional Learning	.644** [.268, .914]	.537* [.159, .845]	.463 [.065, .791]	.429 [-.001, .824]	.236 [-.123, .571]	1

*Note.*  $N = 16$ ; \*\* indicates  $p < 0.01$  (2-tailed); \* indicates  $p < .05$  (2-tailed).  $M$  and  $SD$  represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation.

### *Research Question 2*

Research question two (RQ2) measured the change in school district leaders' perceptions of shared repertoire, joint enterprise, and mutual engagement change after CoP participation. A paired-samples  $t$ -test compared the repeated measure (Field, 2018) for each factor-level variable. I verified normality for the difference in school district leaders' perceptions from December 2020 to May 2021. Shapiro-Wilk values were not significant, except for the differences in joint enterprise (see Table 4.6; Field, 2018). A visual check of the corresponding Q-Q suggested that joint enterprise data met the linearity assumption. Therefore, I proceeded with the paired-samples  $t$ -test analysis.

Table 4.6

*Tests of Normality for the Differences in Shared Repertoire, Joint Enterprise, Mutual Engagement, and Learning between December 2020 and May 2021.*

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Shared Repertoire	.177	17	.161	.921	17	.155
Joint Enterprise	.189	17	.110	.867	17	.019
Mutual Engagement	.128	17	.200*	.957	17	.580
Learning	.203	17	.061	.899	17	.064

Note: \*. This is a lower bound of the true significance. a. Lilliefors Significance Correction

The results in Table 4.7 display the differences for the paired-samples *t*-tests involving school district leaders' perceptions of shared repertoire, joint enterprise, and mutual engagement. School district leaders reported a higher level of agreement of shared repertoire in May 2021 than in December 2020. On average, school district leaders increased their opinion about shared repertoire by 6.47 points from December 2020 ( $M = 6.12$ ,  $SD = 1.90$ ) to May 2021 ( $M = 12.59$ ,  $SD = 2.12$ ). The increase was significant according to paired-samples *t*-test results,  $t(16) = -7.82$ , 95% CI [-8.22, -4.72],  $p < .001$ . The effect size was very large ( $d = 3.41$ ).

There was also a statistically significant increase in school district leaders' average response to survey items about joint enterprise after CoP participation ( $M = 12.04$ ,  $SD = 3.01$ ) compared to December 2020 ( $M = 5.06$ ,  $SD = 2.22$ ),  $t(16) = -6.65$ , 95% CI [-9.46, -4.89],  $p < .001$ . The effect size was very large ( $d = 4.45$ ). In addition, the average reaction to questions about mutual engagement increased from December 2020 ( $M = 3.76$ ,  $SD = 1.30$ ) to May 2021 ( $M = 7.47$ ,  $SD = 2.18$ ). According to a paired-samples *t*-test, the 3.71 point change was statistically significant,  $t(16) = -5.03$ , 95% CI [-2.14, -5.03],  $p < .001$  with a very large effect size ( $d = 3.03$ ).

Each paired-samples *t*-test examined school district leaders' perceptions of the CoP dimensions in December 2020 and May 2021. I rejected the null hypothesis because each comparison found statistically significant differences between shared repertoire, joint enterprise, and mutual engagement after participating in the CoP (Field, 2018).

Table 4.7

*Paired Differences Comparing Shared Repertoire, Joint Enterprise, Mutual Engagement, and Learning in December 2020 and May 2021.*

	<i>M</i>	<i>SD</i>	<i>SEM</i>	95% Confidence Interval		<i>t</i>	df	Sig. (2-tailed)
				Lower	Upper			
Shared Repertoire				-8.22	-4.72			
	-6.47	3.41	.83			-7.82	16	.000
Joint Enterprise	-7.18	4.45	1.08	-9.46	-4.89	-6.65	16	.000
Mutual Engagement	-3.71	3.04	.74	-5.27	-2.14	-5.03	16	.000

Note: *M* and *SD* represent mean and standard deviation, respectively.

### *Research Question 3*

Research question three (RQ3) examined the change in school district leaders' professional learning efficacy after CoP participation. A paired-samples *t*-test determined practical significance in school district leaders' professional learning efficacy after CoP participation. I verified normality for the variable that represented the difference in school district leaders' professional learning efficacy from December 2020 to May 2021 using a Shapiro-Wilk test statistic. The value was not significant (see Table 4.8; Field, 2018).

Table 4.8

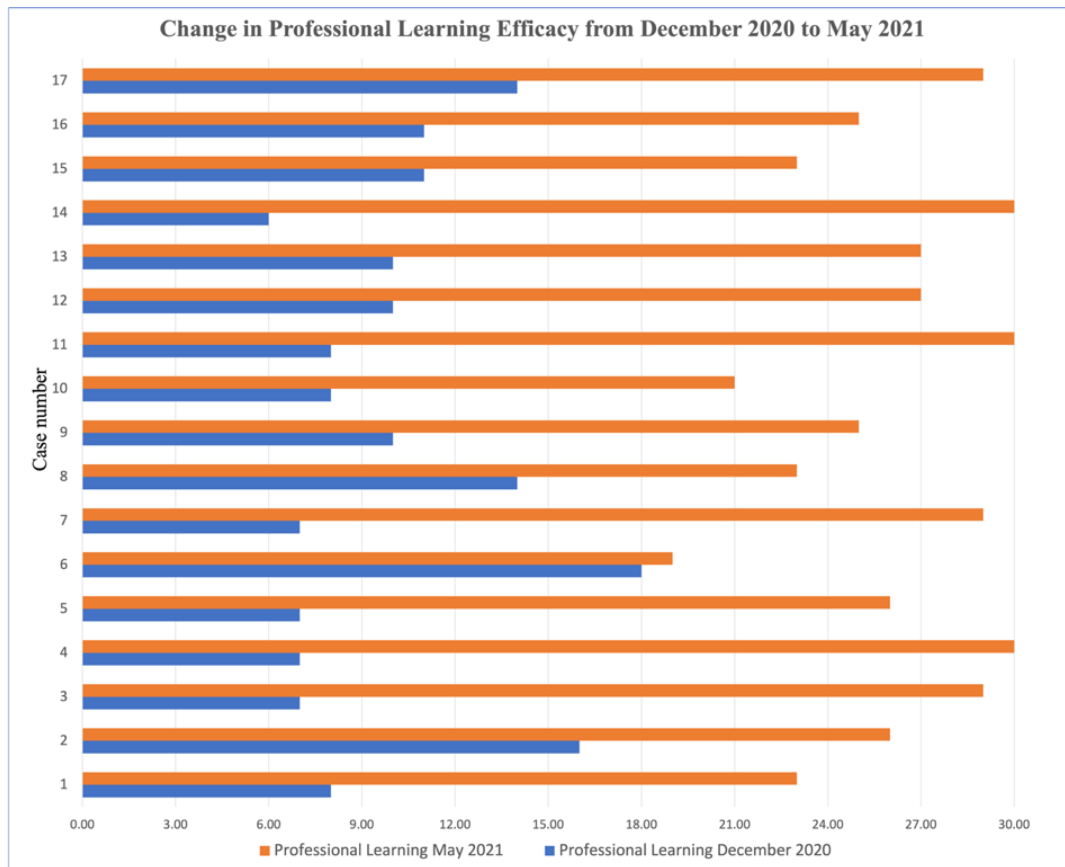
*Tests of Normality for the Difference in Professional Learning between December 2020 and May 2021*

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Professional Learning	.141	17	.200*	.937	17	.283

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Data analysis revealed changes in professional learning efficacy for every participant from December 2020 to May 2021. Figure 4.1 shows case-wise data of the change in professional learning efficacy.



*Figure 4.1.* Change in professional learning efficacy from December 2020 to May 2021.



The greatest change was Case 14 (range = 6–30). The smallest change was Case 6 (range = 18–19). Because every case positively changed, it logically follows that the mean for school district leaders’ professional learning efficacy in May 2021 ( $M = 26.00$ ,  $SD = 3.35$ ) was greater than their professional learning efficacy in December 2020 ( $M = 10.12$ ,  $SD = 3.52$ ). The difference between the two samples was statistically significant,  $t(16) = -10.94$ , 95% CI [-18.96, -12.80],  $p < .001$ . The effect size was very large ( $d = 5.99$ ). Table 4.9 presents the data.

Table 4.9

*Paired Differences Comparing Professional Learning in December 2020 and May 2021*

	Mean	Std. Deviation	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
			Lower	Upper			
Professional Learning December 2020 - May 2021	-15.89	5.99	-18.96	-12.80	-10.94	16	.000

The change in school district leaders’ professional learning efficacy after CoP participation was statistically significant. Therefore, I rejected the null hypothesis. After participating in the CoP, school district leaders indicated a statistically significant difference in their professional learning efficacy.

*Discussion*

The quantitative study of the inter-district collaboration in a CoP served two purposes. First, in the context of K–12 education, I analyzed the CoP operation and structure using the three practice-based dimensions: shared repertoire, joint enterprise, and mutual engagement (Neufeld et al., 2013; Wenger, 1998; Wenger et al., 2002).

Second, I explored the impact of inter-district collaboration on school district leaders' learning and professional learning efficacy. Three research questions aligned with the purposes. The first research question investigated the relationship between shared repertoire, joint enterprise, mutual engagement, and school district leaders' learning. Two additional research questions addressed the change in school district leaders' perceptions of the CoP structures and the difference in school district leaders' professional learning efficacy after participation in a CoP. The analysis explained the apparent increases in survey results from December 2020 to May 2021.

The outcomes in this study supported the assertions that a CoP provides a beneficial structure and environment for inter-district collaboration, addressing a shared problem of practice and changing professional learning efficacy. In this section, I discuss the findings related to the study's purposes.

### *CoP Operation and Structure in K–12 Education*

This study illuminated the relationship between the practice-based CoP concepts (Wenger, 1998) and inter-district collaboration. The findings related to implementing shared repertoire, joint enterprise, and mutual engagement addressed a need for this research study—school district leaders who work in isolation to solve complex problems. First, I associate lessons with a shared repertoire. Next, I discuss joint enterprise. Finally, I make connections to mutual engagement.

*Shared repertoire.* Shared repertoire measured the extent to which CoP members engaged for a collective purpose. A critical success factor for a strong CoP that made it “rewarding for the members, the students they serve, and the education field in general” (King, 2016, p. 12) was the shared problem of practice. Leaders come together around the

things that matter to them (Wenger, 1998). For the DPLV, responses at the beginning of CoP participation indicated that although school district leaders joined the CoP to solve a common problem, they were not yet experiencing a relationship that allowed them to help one another or learn from each other. The DPLV members had budding relationships and limited understanding of other school districts' contexts related to the shared problem. The survey responses in May 2021 seemed to substantiate Wenger's (1998) theory that over time routines, words, actions, and concepts become part of the practice, shared repertoire tends to increase.

In this study, school district leaders' shared repertoire significantly changed after participating in the CoP. Their shared repertoire resembled shared values and a vision, two criteria of an effective professional learning community. The literature and scholarly writings about learning in community and professional learning communities (PLCs) consistently referenced the importance of shared values and a vision (DuFour & Eaker, 1998; Hord, 1997; Stoll et al., 2006; Vescio et al., 2008). Katz et al. (2009) referred to the same concept as a clear and defensible focus. For the school district leaders in the DPLV, this translated to using shared language and communicating more efficiently. In December 2020, school district leaders struggled to understand one another's mental models, such as how different local contexts impact the shared problem. By May 2021, they experienced a greater sense of achievement and felt more a part of a cohesive community. After participating in the CoP, shared repertoire strongly and significantly positively correlated with a joint enterprise. The association between shared repertoire and joint enterprise signaled that CoP members' understanding of their common purpose increased.

*Joint enterprise.* Joint enterprise involves mutual accountability and sense-making among CoP members and directs social energy (Wenger, 1998). The data revealed that from December 2020 to May 2021, CoP members increased their sense of a “common identity” (Neufeld et al., 2013, p. 619) and became “interconnected because they engaged together in joint enterprise” (Wenger, 1998, p. 79). The deepening relationships built stronger bonds. Hargreaves and O’Connor’s (2018) described this type of collaboration as a consistent interdependent interaction.

Awareness of and belief in another’s competence is an aspect of relational trust (Tschannen-Moran, 2004). Rincón-Gallardo & Fullan (2018) named trust and high internal accountability as essential features for an effective network in education. Trust enabled individuals to engage in the challenging conversations required for learning and change management. Katz et al. (2009) studied within-schools PLC networks. They also found that trusting relationships ushered in authentic collaboration. In this study, school district leaders increasingly pursued connections with other CoP members to resolve the shared problem. The longer they worked together on the common problem, the better they got to know each other and their level of competence. Investigating how relational trust contributed to the changes in joint enterprise is an opportunity for further study. Next, I make the connection between the data analysis and mutual engagement.

*Mutual engagement.* The CoP members’ perception of collaborative action to solve problems represented their mutual engagement (Neufeld et al., 2013; Wenger, 1998). According to Wenger (1998), CoP function directly relates to members’ mutual engagement. In this study, the analysis indicated that among the CoP dimensions, mutual engagement and joint enterprise correlated most strongly. Thus, when the school district

leaders voluntarily involved themselves in the community and frequently interacted with others (Neufeld et al., 2013), they espoused more significant agreement with statements about common interests (Brown & Duguid, 1991; Lesser & Stock, 2001) and shared accountability or identity (Gongla & Rizzuto, 2001; Neufeld et al., 2013). In addition, this study's results confirmed findings that cooperative interactions to share knowledge contributed to "high levels of trust and a strong sense of responsibility" (Rincón-Gallardo & Fullan 2018, p.16). By design, the DPLV included strategies to foster mutual engagement.

Network-wide convenings, scheduled peer consultancies, and shared digital documents contributed to interactions focused on the shared problem. Each DPLV network convenings brought the core teams together "to share progress made and lessons learned, engage in new learning, network, and improve network functionality" (RFL, 2017, p. 4). When teams reviewed one another's work products, offered constructive feedback, or accessed shared documents, they came to know how other teams addressed the same problem and one another's progress. The network operating structure guaranteed monthly opportunities for school district leaders to work and think with others instead of working in isolation.

### *CoP Experience*

It takes time to develop shared repertoire, joint enterprise, and mutual engagement. Initially, the survey responses indicated strong dissent with the essential characteristics of an effective CoP, whereas the final survey communicated a more cohesive voice about the CoP characteristics. Corso et al. (2009) noted that every

community uniquely evolves. The formation depends on the individual interest in and perception of the community's value or usefulness.

I expected to find a more remarkable change in school district leaders' perceptions of their CoP experience, reported as "net less work." The concept implies that although network participation and commitment require intentional time and energy, ultimately, it will create less work for system teams because collective thinking is more efficient and effective than solving problems in isolation (RFL, 2016, 2017). The perceived "net less work" change from December 2020 to May 2021 was not statistically significant.

I anticipate that the longer the members engage as a community, the more school districts leaders will document the benefits of the experiences and expertise they share. Wenger et al. (2002) suggested that as a CoP matures and spends more time together, relationships deepen, and partner systems more rapidly share expertise and lessons learned. When CoP members willingly share resources and implementation strategies, they support one another's risk-taking and have the protentional for additional opportunities to transfer knowledge across organizations (Corso et al., 2009). Thus, continued DPLV engagement might result in the community becoming a place for rapid solution finding (Celeste, 2016). More shared expertise could spark innovation, promote a broader range of solution testing, and improve decision-making quality, suggesting a compelling topic for a future longitudinal study.

The quantitative links between the CoP dimensions and individual school district leaders' learning suggested that school districts that organized for learning and shared problem-solving using the three dimensions will have a better opportunity to cultivate a

community of practice (Wenger & Snyder, 2000; Wenger & Trayner, 2015; Wenger et al., 2002). The following section discusses the implications of the CoP on school district leaders' learning.

### *School District Leaders' Learning*

The research study findings demonstrated that individual learning changed after CoP participation. I used survey items from a previous study (Neufeld et al., 2013) to survey school district leaders in a CoP focused on professional learning. The survey results changed dramatically from December 2020 to May 2021. The analysis revealed significant and high correlations between shared repertoire, joint enterprise, mutual engagement, and school district leaders' learning. The individual learning of school district leaders participating in the DPLV increased along with their perception of the CoP characteristics. These findings extended the results from Neufeld et al. (2013) and Katz et al. (2016). Both studies found a strong correlation between the community of practice features and individual learning. The significant correlations affirmed the value of coming together to develop and disperse knowledge (Wenger, 1998).

The CoP is a comprehensive learning design and an effective strategy to improve organizational performance, manage collaborative knowledge, “solve problems, promote the spread of best practices, [and] develop people’s professional skills” (Wenger & Snyder, 2002; p. 140). Most notably, the data acknowledged the significant change in participants’ perspectives about shared repertoire and joint enterprise. According to the data, after participating in the CoP, the DPLV members expressed that they cared more about the same problem or set of topics as other members (Pyrko et al., 2017); simultaneously, they increased their engagement in learning and working to solve the

common problems. Overall, the strong and positive correlation between the CoP dimensions and school district leaders' learning indicates that collective participation around a common problem has a significant connection to learning. As school district leaders engaged in the community of practice, their learning increased.

When individuals learn, systems learn. Senge (1990) explained that a learning organization exists “where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together” (p. 3). In a learning organization, leaders connect with and engage others to inspire, nurture, and implement systems change. They organize and mobilize people for collective action and ongoing learning for a common purpose (Fullan, 2001; Senge, 1990). Although the CoP members came from multiple school districts, they partnered for a common purpose: to develop an equitable and sustainable professional learning system. The collective aspiration and intentional organization of the CoP gave each core team a supportive environment to seek and test solutions and strategies to implement local changes to a shared problem. DPLV members pursued enterprise together and shared significant learning. Mutual engagement and inter-district collaboration stimulated learning (Wenger, 1998). Learning in the CoP focused on professional learning.

### *School District Leaders' Professional Learning Efficacy*

The CoP represented an ideal context to prioritize professional learning efficacy (Wenger, 1998). School district leaders' knowledge, skills, and leadership behaviors comprised professional learning efficacy (Learning Forward, 2011). The survey data revealed statistically significant changes in school district leaders' professional learning



efficacy. They increased their knowledge about their roles and responsibilities to ensure effective, efficient, and equitable professional learning for all educators (Hirsh & Brown, 2018; Learning Forward, 2013). They also reported statistically significant changes in their leadership behavior related. Examples included viewing leadership as a shared responsibility, considering professional learning as fundamental to student performance, modeling collaboration, deepening knowledge about the Standards for Professional Learning (Learning Forward, 2011), and engaging in professional learning to develop expertise in specific areas of responsibility (Hirsh et al., 2014).

In the supportive and collaborative CoP environment, school district leaders' capacity to use the Standards for Professional Learning (Learning Forward, 2011) to guide the design and implementation of a comprehensive professional learning system changed significantly. One benefit of this evidence is that the leaders developed their own and other's capacity to lead, advocate, and create support systems for professional learning (Hirsh et al., 2018; Learning Forward, 2011, 2013). Throughout the CoP engagement, each core team shared their vision for professional learning, goals, and milestones and served as one another as thought partners to challenge and push thinking forward (Bowman, 2020). This type of joint enterprise modeled mutual commitment and accountability to one another or collective responsibility (Hargreaves & O'Connor, 2018; Hirsh et al., 2014; Learning Forward, 2011; Vescio et al., 2008). In turn, they grew and recognized effective professional learning as a key strategy for supporting significant school and school system improvements to increase results for all students.

### *Implications*

This research studied inter-district collaboration in a community of practice. The purposes were twofold. First, I analyzed the CoP operation and structure using the three practice-based dimensions: shared repertoire, joint enterprise, and mutual engagement (Neufeld et al., 2013; Wenger, 1998; Wenger et al., 2002). Second, I explored the impact of inter-district collaboration on school district leaders' learning and professional learning efficacy. The study contributed to K–12 education and the field of professional learning. First, the study demonstrated that an inter-district community of practice is an effective collaborative learning design to influence individual learning and professional learning efficacy. Second, based on Wenger's (1998) CoP Framework, the study demonstrated that shared repertoire, joint enterprise, and mutual engagement could represent collective aspiration, connectedness, and commitment. This section summarizes the research implications.

### *Collaborative Learning*

Rather than an individual or an internal school district group meeting to solve a complex problem, the CoP suggested the benefits of inter-district collaboration. The statistically significant positive change in school district leaders' professional learning efficacy after participation in a CoP substantiated Learning Forward's network strategy. Engaging with multiple school district leaders in learning teams to design and implement professional learning interventions helped teams address their defined problems (Learning Forward, 2021a).

The study also began making explicit connections between the CoP and more traditional K–12 professional learning communities. Common attributes included

engaging in collaborative learning to address a shared dilemma, mutual commitment, sustained collaboration. Rincón-Gallardo & Fullan (2018) have a parallel concept. They refer to it as “connecting outwards to learn from others” (p. 16). The strategy they describe involved individuals outside the network sparking innovation and keeping the CoP from circulating the same ideas and practices. In both cases, a longitudinal replication will benefit the education sector.

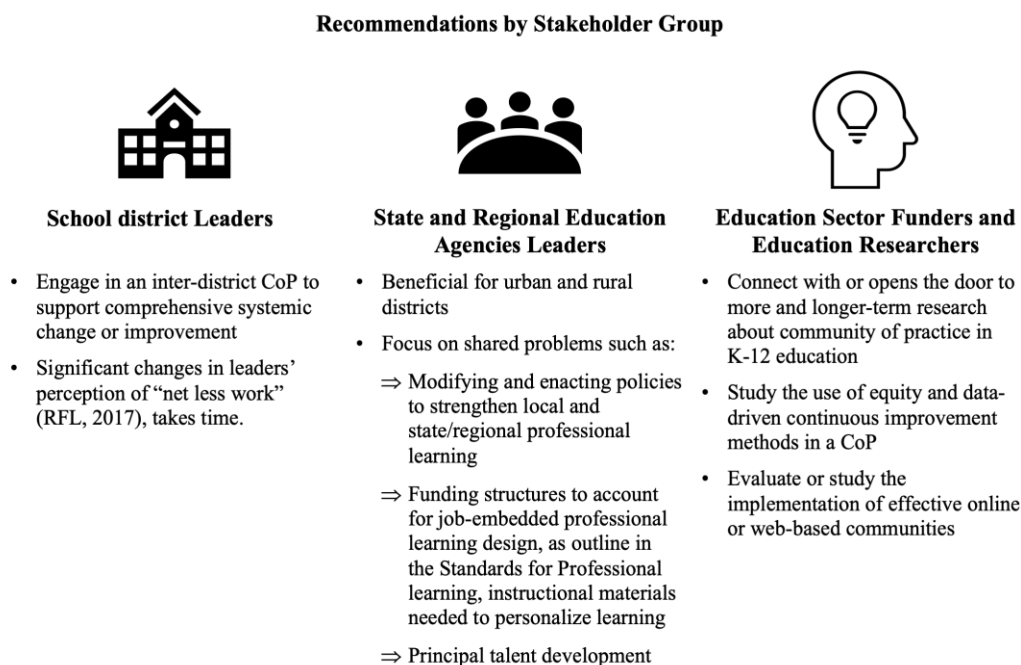
### *Collective Aspiration, Connectedness, and Collective Commitment*

Collective aspiration, connectedness, and collective commitment are more familiar terms in K–12 education than Wenger’s (1998) practice-based dimensions. Collective aspiration or shared repertoire explained how CoP members agreed on the same dilemma and prototyped solutions. Wenger and Snyder (2000) wrote that “people in communities of practice share their experiences and knowledge in free-flowing, creative ways that foster new approaches to problems” (p. 140). This idea reinforced the need for efficient and creative problem-solving. CoP members’ connectedness or joint enterprise widened the aperture for innovations, bringing in other opinions, strategies, and ideas (Wenger, 1998). Collective commitment with action means individuals decidedly work with the group to learn, grow, and implement solutions. Wenger’s (1998) framework described this as mutual engagement. This study built an on-ramp for further investigation to strengthen the evidence base for the CoP purposefully situated in K–12 education.

### *Recommendations*

School districts and external organizations intentionally organizing as CoPs with a dedicated effort and focus on professional learning can benefit from this study.

Redesigning and implementing a professional learning system requires substantive organizational change (Darling-Hammond et al., 2009; Learning Forward, 2011; Mizell, 2010). The literature review affirmed the value of collaboration among school district leaders, especially to successfully manage change (Ellis & Castle, 2010; Fullan, 2001; Leithwood, 2010; McLaughlin & Talbert, 2001; Mizell, 2010; Seashore Louis et al., 2010). Inter-district collaboration in a CoP offers a unique strategy and structure for leading change. Instead of working alone, school districts join with others to solve common and sometimes complicated dilemmas. This section makes recommendations for stakeholders with interest in K–12 education reform. Figure 4.2 summarizes stakeholder group recommendations.



*Figure 4.2. Recommendations by stakeholder group*

### *Recommendations for School District Leaders*

The study provides practical information in a relevant context that school district leaders can use to support engaging in an inter-district community of practice focused on a comprehensive professional learning system. The analysis revealed a significant change in school district leaders' learning. More specifically, their professional learning efficacy significantly changed. These changes in learning and professional learning efficacy suggest that school district leaders interested in comprehensive systemic change or improvement should engage in learning within an inter-district CoP. Although the data did not reveal significant differences in school district leaders' perceptions of "net less work" (RFL, 2016, 2017), this could change with time, as CoP members' connections become a routine collaboration (Wenger, 1998). This study demonstrated that the initiation, continuation, refinement, growth, and development of a community of practice could effectively support multiple school districts pursuing solutions to a common dilemma.

### *Recommendations for State and Regional Education Agencies*

Many state and regional education agencies facilitate efforts between school districts. Both urban and rural school districts would benefit from a state or regionally sponsored CoP education leaders modify and enact policies to strengthen professional learning (Hite et al., 2010; George et al., 2019). Potential problems of practice include funding structures to account for job-embedded professional learning design, as outlined in the Standards for Professional learning, instructional materials needed to personalize learning (George et al., 2019), or principal talent development. This study offers these

leaders confirmation of a successful collaborative professional learning model, including the components of an effective CoP for the inter-district collaboration.

### *Recommendations for Education Sector Funders and Education Researchers*

The study adds to the literature base about a community of practice and K–12 education. Notwithstanding the limitations of sample size and duration, this study can connect with or open the door to more and longer-term research about the CoP in K–12 education, especially where multiple school districts make up the network membership. For example, the Networks for School Improvement (NSI) investments made by the Bill & Melinda Gates Foundation use equity and data-driven continuous improvement methods (BMGF, 2020). Independent education researchers or organizations interested in evaluating or studying the implementation of effective communities of practice could also use the findings with this study. Additional research could explore similarities and differences in the CoP and NSI models or examine the use of technology to enhance learning and connecting people. Further research may result in a hybrid approach.

### *Conclusion and Summary*

Reorienting a system to focus on learning requires rethinking the professional learning system. Implementing a professional learning system is a multifaceted process. However, individuals may lack the knowledge, skills, and leadership behaviors to lead changes resulting in a redesigned sustainable professional learning system. In attempts to provide teachers and leaders with effective professional learning that contributes to student success, school district leaders often work alone. Yet, they cannot design and implement a complete approach. The literature confirmed the importance and value of professional learning and a community of practice. Successful change leaders

collaborated with others who share a common vision for a learning organization and professional learning. They engaged with others willing to seek inventive solutions and implement them.

The unique qualities of intentional learning and knowledge-sharing among the members in the CoP provided a collaborative structure for joint learning and problem solving and strengthened intervention planning and implementation. This study investigated an inter-district CoP and gave participating district leaders the necessary focus, guidance, and shared accountability to improve their professional learning knowledge, skills, and leadership behaviors.

The quantitative study results indicated that inter-district collaboration in the CoP changed school district leaders' learning and professional learning efficacy. I invited a purposive sample of school district leaders from Learning Forward's Design Professional Learning for a Virtual World (DPLV) network. The survey instrument included a combination of previously validated (Neufeld et al., 2013) and researcher-developed items (Hirsh et al., 2018; Killion 2013, 2013a; Learning Forward, 2011, 2013; RFL, 2016, 2017). Analyzing the responses from December 2020 and May 2021, I measured the correlation between CoP dimensions (shared repertoire, joint enterprise, and mutual engagement) and school district leaders' learning. Additionally, I measured the change in school district leaders' perceptions of the CoP dimensions and differences in their professional learning efficacy. The findings and interpretations of this study leveraged statistical evidence.

The results of this study have implications for education leaders. The insight into the structures, practices, and impacts of the CoP on school district leaders' learning and

changes in professional learning efficacy will inform establishing a new CoP or possibly redesigning an existing community or network. School district leaders should engage in an inter-district CoP to receive support to enact comprehensive systemic change or improvement. Urban and rural districts will benefit from state and regional education agencies leaders facilitating inter-district communities of practice that focus on modifying and enacting policies to strengthen local and state/regional professional learning. For example, a CoP might focus on funding structures to account for job-embedded professional learning design, as outlined in the Standards for Professional Learning (Learning Forward, 2011). The education sector funders should use this study's findings to connect with current investments or when drafting criteria in the future.

This research study sought to answer three questions. The first question: What is the relationship between the community of practice dimensions (shared repertoire, joint enterprise, mutual engagement) and individual school district leaders' learning? The second question asked: Do school district leaders' perceptions of shared repertoire, joint enterprise, and mutual engagement change after CoP participation? The third question: Does school district leaders' professional learning efficacy change after CoP participation? The study's findings revealed statistically significant results positively associating the CoP dimensions with individual learning. School district leaders' perception of the CoP and their professional learning efficacy also changed significantly. Chapter Five presents an Executive Summary of this study and a proposal for distributing the findings from this research.



## CHAPTER FIVE

### Distribution of Findings

#### *Executive Summary*

An effective system for educator learning that improves teaching practices and leadership behaviors leads to changes in student learning (Darling-Hammond et al., 2009; Jensen et al., 2016; Learning Forward, 2011). Designing and implementing a sustainable educator professional learning system presents a challenge for school districts and their leaders. To lead this change, successful school district leaders behave differently. They partner with other leaders, sharing responsibility to operationalize learning-based change (Ellis & Castle, 2010; Fullan, 2001; Senge, 1990). Various studies support and validate professional collaboration for individual and collective learning and problem solving (Darling-Hammond et al., 2009; DuFour & Eaker, 1998; Fullan & Hargreaves, 2016; Hord, 1997; Jensen et al., 2016; Learning Forward, 2011; McLaughlin & Talbert, 2001; Stoll et al., 2006; Vescio et al., 2008); however, school districts leaders often work alone. A community of practice (CoP) offers a useful structure to solve a common problem (Azukas, 2018; Corso et al., 2009; Hite et al., 2010; Parsley, 2018; Pyrko et al., 2017; Neufeld et al., 2013; Wenger, 1998; Wenger & Trayner, 2015; Wenger et al., 2002). This study filled a gap in the literature regarding inter-district collaboration where the shared problem focuses on designing and implementing a professional learning system.

### *Overview of Data Collection*

This study used a quantitative research methodology and a survey design to explore school district leaders' experience in a CoP. Research studies involving a CoP in K–12 education (Azukas, 2018; Hite et al., 2010; Parsley, 2018; Psencik & Brown, 2018; Psencik et al., 2016) have not been widely extended to include inter-district collaboration focused on professional learning systems. Wenger's (1998) CoP theory provides the theoretical framework for the study. The framework explains how a group of people intentionally interact and work collaboratively on the shared problem to fulfill individual and collective goals (Wenger & Trayner, 2015; Wenger et al., 2002). Three practice-based concepts—shared repertoire, joint enterprise, mutual engagement—align with the crucial elements that define a CoP. Shared repertoire measured CoP members' engagement related to a defined collective purpose. Joint enterprise assessed mutual accountability and social energy among CoP members. CoP members' perception of collaborative action to solve problems and related work explained their level of mutual engagement (Neufeld et al., 2013; Wenger, 1998).

Data collection occurred within an existing CoP, Learning Forward's Design Professional Learning for a Virtual World (DPLV; Bowman, 2020) network. The school district leaders in the DPLV provided a non-probabilistic purposive sample (Alvi, 2016; Daniel, 2012; Trochim, 2020). In the survey design, school district leaders responded to the Learning Together: An Examination of Inter-District Collaboration in a Community of Practice Survey (LTCOP-S). The LTCOP-S items asked participants to rate their CoP participation, learning, and professional learning efficacy (skills, knowledge, and leadership behaviors). The 20 *Likert*-type items used a scale with values ranging from strongly agree (5) to strongly disagree (1). Participants gave informed consent and took

the LTCoP-S at the beginning of CoP participation in December 2020 and in May 2021 after participation. Data analysis used inferential statistics, Pearson's  $r$ , and paired-samples  $t$ -tests (Field, 2018).

### *Summary of Key Findings*

This study answered three research questions: 1) What is the relationship between the community of practice dimensions (shared repertoire, joint enterprise, mutual engagement) and individual school district leaders' learning?; 2) Do school district leaders' perceptions of shared repertoire, joint enterprise, and mutual engagement change after CoP participation?; and 3) Does professional learning efficacy (knowledge, skills, and leadership behaviors) among school district leaders change after CoP participation? The survey analysis rejects each null hypothesis.

First, the analysis indicated a significant correlation between shared repertoire, joint enterprise, mutual engagement, and school district leaders' learning. Consistent with Neufeld et al. (2013) and Katz et al. (2016), school district leaders' learning increased positively with their perception of the CoP characteristics. The study affirmed the value of the CoP for knowledge development (Wenger, 1998). After participating in the CoP, school district leaders increased their energy and commitment to design and implement a professional learning system. The school district leaders demonstrated their belief in organizing and mobilizing a core team for collective action and a common purpose (Fullan, 2001; Senge, 1990).

Next, school district leaders' perceptions of each CoP characteristic showed a statistically significant increase with very large effect sizes after CoP participation. The CoP provided a beneficial structure and environment for inter-district collaboration. The

successful CoP enabled school district leaders to come together to solve a problem they cared about (King, 2016; Wenger, 1998). Their commitment to a common problem or shared repertoire stimulated the mutual accountability (Wenger, 1998) necessary to initiate the type of interdependent interactions that benefit collaboration (Hargreaves & O'Connor, 2018). As the CoP members interacted more frequently, joint enterprise increased, and members engaged in more challenging conversations (Katz et al. 2009). School district leaders became more interconnected (Wenger, 1998) and aware of others' competence, which is essential for developing relational trust (Rincón-Gallardo & Fullan, 2018; Tschannen-Moran, 2004). Joint enterprise and mutual engagement correlated most strongly. The more frequent interactions increased collaborative action, common interests (Brown & Duguid, 1991; Lesser & Stock, 2001), and shared identity (Gongla & Rizzuto, 2001; Neufeld et al., 2013). Analysis also revealed that school district leaders came to know more about professional learning.

Finally, school district leaders' professional learning efficacy changed after CoP participation. The statistically significant change had very large effect. School district leaders remarkably increased their knowledge about their roles and responsibilities to ensure effective, efficient, and equitable professional learning for all educators. In deepening knowledge about their role and responsibilities, these leaders also developed their own and other's capacity to lead, advocate, and create support systems for professional learning (Learning Forward, 2011). Their actions modeled collective responsibility, a commitment, and accountability to one another (Hirsh et al., 2014; Hargreaves & O'Connor, 2011; Learning Forward, 2011; Vescio et al., 2008). Thus, school district leaders increased their capability to recognize effective professional

learning as a key strategy for supporting significant school and school system improvements to increase results for all students.

### *Informed Recommendations*

Studying inter-district collaboration in a community of practice served two purposes. The first purpose was to analyze the CoP structure according to the three practice-based dimensions shared repertoire, joint enterprise, and mutual engagement (Wenger, 1998; Wenger et al., 2002), and individual learning (Neufeld et al., 2013). The second purpose was to explore the impact of inter-district collaboration on school district leaders' learning and professional learning efficacy. School district leaders that successfully manage change lead differently (Fullan, 2001; Senge, 1992). Inter-district collaboration in a CoP offers a unique strategy and structure for leading change. Instead of working alone, school districts join with others to solve common and sometimes complicated dilemmas.

Inter-district collaborative learning involves school district leaders from multiple districts purposefully learning and problem-solving together. School district leaders need to plan for and prioritize CoP participation intentionally; else it will likely not happen. The study demonstrated that mutual engagement is not without purpose or intent. Developing shared identity and a level of trust among school district leaders that leads to cooperative interactions requires time (Rincón-Gallardo & Fullan, 2018). CoP members need to make a formal commitment outlining member agreements, like the DPLV scope of work (see Appendix A). Given that the significant changes in this study occurred over ten months, longer-term CoP participation would expectantly have greater significance. By design, the CoP provides a beneficial structure to engage in collaborative learning to

address a shared dilemma (Wenger 1998; Wenger & Trayner, 2015; Wenger et al., 2002). Working with individuals from different school districts brings in additional perspectives, strengths, and talents.

Education leaders in state and regional education agencies can use this research to help structure CoP that focuses on education policy related to professional learning systems (George et al., 2019). Urban and rural school districts will benefit. The state and regional providers that bring together teams, job-alike, or role-alike groups, can deploy a CoP model and give structure to inter-district interaction and learning. Different districts can prototype solutions, testing in their local context, and report back. Then the work becomes simple short-cycle action research.

Education non-profit leaders and researchers should use the key findings and connect them to existing projects or include them in discussions when planning new projects. For the non-profit leader, many investments focus on education reform. The statistically significant findings in this study suggest that education non-profit leaders should consider drafting new or updated grant criteria and include a CoP as part of their investments that focus on changing school district leaders' learning. For example, where investments involve multiple entities working a similar problem, they can host a CoP for the grantees. The grantees' CoP would provide collaboration and thought partnership that can accelerate work on a common problem.

Given the existing literature connecting teacher learning, professional learning, and student learning, K–12 education relies heavily on case studies and narrative studies. The field needs more empirical evidence to document the impact of professional learning on teacher learning and teaching and leadership practices. Education researchers can use

the findings as an on-ramp for future studies. Due to sample size and duration, the limitations in the current study warrant longer-term investigations involving more participants.

Learning Forward needs to continue studying the CoP as a powerful and effective learning design for inter-district collaboration. Even if the problem of practice shifts away from designing and implementing a comprehensive professional learning system, the shared problem for a CoP will relate to professional learning. Other likely problems of practice would center around transforming professional learning communities, instructional coaching, or instructional materials implementation. Each topic has implications for inter-district collaborative learning and collective aspiration, connectedness, and collective commitment.

### *Findings Distribution Proposal*

Multiple audiences will benefit from the finding in this research study. Leaders in local school districts, such as superintendents and chief learning officers, will benefit from considering the outcomes of inter-district collaboration as they design strategies to engage in complex problem-solving. Education leaders in regional and state education agencies can use the findings and recommendations to plan supports and technical assistance for groups of schools and districts. Similarly, as non-profit education leaders plan for future investments, they should offer opportunities for groups of schools and districts to come together as a CoP and participate collectively to solve a common problem. Education researchers should advantage the empirical data and consider future studies to extend this study beyond sample size and duration limitations.

### *Proposed Distribution Method, Venue, and Materials*

The proposed distribution of the study involves two mediums. First, a forthcoming article about the DPLV in *The Learning Professional* will include the study findings. The article will summarize the purpose and practices of the network, spotlight school districts' professional learning system changes, and make connections to the study's results. Second, I will present the research study in a Learning Forward webinar. The webinar materials will include the executive summary and a slide presentation. Presenting the research and findings in the webinar format allows for national and international participation and an archived recording for future reference. The 60-minute webinar will follow an adaptation of the "What? So What? Now What?" protocol (Hensley & Zimmerman Parrish, 2014, p. 43). To answer "What?", the webinar will begin with Learning Forward's network philosophy, explaining the need for the study, and summarizing the literature review. The "So What?" section will focus on the study's methodology and explaining the analysis, results, and findings. Presenting the study's recommendation and the moderated questions portion will respond to the question "Now What?" If Learning Forward hosts the webinar, invitations will be sent to Learning Forward Trustees, funders, and staff members. Learning Forward members in the key stakeholder groups will also receive an invitation. After the presentation, Learning Forward may publish the research study on their website.

### *Conclusion*

This research studied school district leaders' engagement and learning after participating in an inter-district community of practice. The practice-based concepts of shared repertoire, joint enterprise, mutual engagement (Wenger, 1998) that framed the



structure for the CoP explained how a group of people intentionally interact and work collaboratively on the shared problem to fulfill individual and collective goals (Cambridge et al., 2005; Wenger et al., 2002). This study showed that an inter-district CoP can positively change school district leaders' learning and professional learning efficacy. Leaders in school district, state and regional education agencies, education non-profits, and education researchers should utilize the findings of this research to include the CoP as a learning design and a unique strategy for solving common and sometimes complicated dilemmas

## APPENDICES

## APPENDIX A

### Design Professional Learning for a Virtual World Network Scope of Work



#### **Design Professional Learning for a Virtual World Network**

A Redesign Professional Development Community of Practice

#### **Scope of Work**

**Shared Purpose: Parties entering into this agreement share the following vision and beliefs:**

Learning Forward and Design Professional Learning in a Virtual World (DPLV) partners share a common vision to ensure excellence and equity in teaching and learning. All participants in the network are focused on ensuring that student learning continues as they themselves adapt to online, remote or hybrid learning, capturing lessons learned from the emergency shift to inform the improvement of professional learning utilizing virtual and digital-mediated educational models, and addressing current challenges related to the design, implementation, and measurement of professional learning in virtual and digital models.

**Core Beliefs:**

- *Professional learning that improves educator effectiveness is fundamental to student learning.*
- *All educators have an obligation to improve their practice.*
- *More students achieve when educators assume collective responsibility for student learning.*
- *Successful leaders create and sustain a culture of learning.*
- *Effective school systems commit to continuous improvement for all adults and students.*

**Shared Benefits: This collaborative effort will lead to the following outcomes:**

- *A contextualized, comprehensive professional learning plan focused on outcomes*
- *Sustainable solutions for your district's immediate challenges and for a professional learning infrastructure that transcends COVID Solutions aligned to district and state strategic plans that work across departments*
- *Increased capacity to create policies and practices for effective professional learning*
- *Access to professional learning tools and resources aligned to the Learning Forward Standards for Professional Learning. Collaboration and critical-friend relationships with leaders from like-minded districts*
- *Understanding of how short-term COVID lessons can inform long-term professional learning plans*
- *Professional learning that is focused on equity through innovative strategies*



## Design Professional Learning for a Virtual World Network

A Redesign Professional Development Community of Practice

### Scope of Work

The Design Professional Learning in a Virtual World Network will advance through three stages:

1

Support re-entry in the fall in virtual and hybrid learning environments;

2

Respond, recover and maximize learning during the school year; and

3

Reinvent professional learning to acknowledge and embrace new learning models.

#### Included:

- Development of an ongoing professional learning plan for the district/state
- Integrated needs assessment at each stage including 1:1 interviews, focus groups, and survey instruments
- Support to compile data and share with the district/state team to inform professional learning planning
- Facilitated team and network time for learning and design
- Virtual engagement and access to resources through an online community
- Opportunity to be featured in Learning Forward communications and publications
- Comprehensive Learning Forward memberships for team members

#### Cadence

- Onboarding and at least monthly virtual call with a Learning Forward coach for:
  - Ongoing technical assistance and consultation to review needs assessment
  - Development of district professional learning plan using Learning Forward standards, tools and resources
- Facilitated professional learning related to outcomes aligned to focus areas
- Quarterly virtual, facilitated team and peer-to-peer check-ins
- Quarterly webinars featuring thought leaders tied to network challenges
- Three one-day virtual network convenings
- Dedicated team planning time with facilitator support

#### Membership Fee:

\$19,500 annual membership fee for a team of up to 5 director-level administrators responsible for professional learning, academics, technology integration, assessment, and leadership. Teams will be encouraged to bridge silos and model collaboration. The annual fee for each additional core team over 5 is \$1000.

updated 1 July 2020

## APPENDIX B

### Email Invitation to Participate in the Study

DPLV Participant Name,

As part of my dissertation work, I will be conducting a study beginning December 2020 to measure perceptions of network characteristics and the impact on professional learning knowledge, behaviors, and dispositions among Learning Forward's Design Professional Learning for a Virtual World (DPLV) network members. The information will also inform decision-making and drive continuous improvement of the DPLV network.

If you choose to participate in the study, your privacy will be protected at all times. Data collected from the study will protect names and school district affiliation. There is no risk involved in participating in the study. The study begins in December 2020.

The study involves completing three 10-minute surveys (December, March, and June) regarding your personal thoughts about the learning community, its impact on your learning, and your professional learning knowledge, behaviors, and dispositions. You may also be invited to participate in one 30-minute follow-up interview in June or July 2021 to confirm and understand more deeply information from the surveys. You will be able to view and clarify all the data collected.

If you are interested in participating in this study, please reply to this email. Thanks in advance for your time and consideration in participating in the study.

Michelle A. Bowman

## APPENDIX C

Data Collection Instrument, December 2020, and May 2021

*Learning Together: An Examination of Inter-District Collaboration in a Community of Practice, December 2020*

Q1.1.

Learning Together: An Examination of Inter-district Collaboration in a Community of  
PRINCIPAL INVESTIGATOR: Michelle A. Bowman, Doctoral Candidate  
SUPPORTED BY: Learning Forward and Baylor University

**Purpose of the research:** The purpose of this study is to measure perceptions of network characteristics and the impact on professional learning knowledge, behaviors, and dispositions among Learning Forward's Design Professional Learning for a Virtual World (DPLV) network members. The information will also inform decision-making and drive continuous improvement of the DPLV network. We ask you to participate in this study because you are a school district leader and member of the DPLV network.

**Study activities:** If you choose to be in the study, complete the Network Learning Survey, and if selected, participate in one 30-minute video and audio recorded interview. The 10-minute online survey will be administered three times, December, March, and June. The online survey asks for the following information: School district department Leadership role. Perception of the learning community and its impact on your learning Professional learning knowledge, behaviors, and dispositions Interviewees will be selected after the analysis of the survey response. The Interviews will be conducted using the Zoom platform between June and August 2021. The bulk of the interview will consist of questions about your experiences in the DPLV network and the extent to which COP engagement prepared school district leaders to lead the implementation of a comprehensive professional learning system. The investigator will share all data and results with you before publication.

**Risks and Benefits:** There are no risks to you for taking part in this study to the best of our knowledge. There are no direct benefits to you for completing the survey. There are no incentives for participation. If selected for a follow-up interview, Tell the interviewer at any time if you want to take a break or stop the interview

**Confidentiality:** A risk of taking part in this study is the possibility of a loss of confidentiality. Loss of confidentiality includes having your personal information shared with someone who is not on the study team and was not supposed to see or know about your information. The researcher plans to protect your confidentiality.

The researcher will keep the records of this study confidential. You will receive a unique link that can only be used once. Only the investigator will have access to the data, which will be kept in a secure digital file.

Confidentiality will be maintained to the degree permitted by the technology used. Your participation in this online survey involves risks similar to a person's everyday use of the Internet, which could include illegal interception of the data by another party. If you are concerned about your data security, contact the researcher to schedule a time to complete a printed survey with the same questions.

While the researcher will know your identity, to protect your privacy, personal, identifiable information will be removed from study documents and replaced with a study identifier for all publication of results. Identifying information will be stored separately from data and will be kept separately in a secure digital file. Written material will be kept in a locked cabinet. The investigator will keep all knowledge of participation confidential. Also, all reporting will be done with aggregated data to protect small groups.

Authorized Learning Forward staff and Baylor University may review the study records for quality control or safety purposes.

**Questions or concerns about this research study.** You can contact me with any concerns or questions about the research. My contact information is listed below:

Michelle A. Bowman, [michelle.bowman@learningforward.org](mailto:michelle.bowman@learningforward.org) or [REDACTED],  
Mon.–Sat., 8:00 a.m.–8:00 p.m.

Dr. Sandra Talbert, Baylor University School of Education,  
[REDACTED]

If you have questions about your rights as a research participant or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher, you may contact the Baylor University IRB through the Office of the Vice Provost for Research at [REDACTED]

By continuing with the research and completing the study activities, you are providing consent. Taking part in this study is your choice. You are free not to take part or to stop at any time for any reason. No matter what you decide, there will be no penalty or loss of benefit to which you are entitled. If you decide to withdraw from this study, the information you have already provided will be kept confidential. Information already collected about you cannot be deleted.

- I consent, begin the study (1)
- I do not consent, I do not wish to participate (2)

Q2.1. Please select the department that aligns with your primary professional responsibilities.

- ☐ Curriculum and Instruction / Teaching and Learning (1)
- ☐ Equity (2)
- ☐ Evaluation and Research (3)
- ☐ Human Resources / Talent Development (4)
- ☐ Leadership Development (5)
- ☐ Professional Learning (6)
- ☐ School-based Administration (Principal / Assistant Principal) (7)
- ☐ Technology Administration (8)
- ☐ Other (9) \_\_\_\_\_

Q2.2. Please select the leadership role that aligns with your primary professional responsibilities.

- ☐ Superintendent (1)
- ☐ Executive Director (2)
- ☐ Director (3)
- ☐ Coordinator, Manager, Supervisor (4)
- ☐ Specialist (5)
- ☐ School-based Leader (6)
- ☐ Other (7) \_\_\_\_\_

End of Block: Demographic Information

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Start of Block: Community Characteristics – individual

Q3.1. Members of this community share a common vocabulary.

- ☐ Strongly disagree (1)
- ☐ Somewhat disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Somewhat agree (4)
- ☐ Strongly agree (5)

Q3.2. Individuals in this community know each other's mental models.

- ☐ Strongly disagree (1)
- ☐ Somewhat disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Somewhat agree (4)
- ☐ Strongly agree (5)

Q3.3. I quickly understand what community members are trying to say without too much explanation by them.

- ☐ Strongly disagree (1)
- ☐ Somewhat disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Somewhat agree (4)
- ☐ Strongly agree (5)



- Q3.4. I feel a positive sense of achievement when this community thrives.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q3.5. I have a strong sense of belonging to this community.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q3.6. When I am with members of this community, I feel I am “at home.”
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q3.7. People in this community frequently interact with one another to solve common problems.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q3.8. frequently interact with members of this community to do my job.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q3.9. The things I learn from this community frequently affect my job activities.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q3.10. This community provides an important source of my overall learning.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)

Q3.11. I am constantly learning new things from this community.

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q3.12. The things I learn from members of this community stick with me for a long time.

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

End of Block: Community Characteristics – individual

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Start of Block: Community Experience

Q4.1. The term “net less work” implies that although network participation and commitment require intentional time and energy, ultimately, it will create less work for system teams because collective thinking is more efficient and effective than solving problems in isolation.

Q4.2. The work within this community is resulting in “net less work” for me.

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q4.3. I believe that the work of this community will result in “net less work” for me in the future.

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

End of Block: Community Experience

Start of Block: Professional Learning – knowledge, skills, behaviors

Q5.1. I can articulate the meaning, purpose, and importance of the Standards for Professional Learning to staff and student success.

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

- Q5.2. As a school district leader, I know my roles and responsibilities to ensure effective, efficient, and equitable professional learning for all educators.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q5.3. My professional learning leadership behaviors align with my organization's professional learning definition.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q5.4. I use the Standards for Professional Learning to guide **designing** a comprehensive professional learning system.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q5.5. I use the Standards for Professional Learning to guide **implementing** a comprehensive professional learning system.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q5.6. I use a thoughtful assessment plan to regularly and systematically evaluate professional learning's effect on educator and leader practices and student results
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)

End of Block: Professional Learning – knowledge, skills, behaviors

*Learning Together: An Examination of Inter-District Collaboration in a Community of Practice, May 2021*

Q2.2. Please select the leadership role that aligns with your primary professional responsibilities.

- ☐ Superintendent (1)
- ☐ Executive Director (2)
- ☐ Director (3)
- ☐ Coordinator, Manager, Supervisor (4)
- ☐ Specialist (5)
- ☐ School-based Leader (6)
- ☐ Other (7) \_\_\_\_\_

**End of Block: Demographic Information**

**Start of Block: Community Characteristics - individual**

Q3.1. Members of this community share a common vocabulary.

- ☐ Strongly disagree (1)
- ☐ Somewhat disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Somewhat agree (4)
- ☐ Strongly agree (5)

Q3.2. Individuals in this community know each other's mental models.

- ☐ Strongly disagree (1)
- ☐ Somewhat disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Somewhat agree (4)
- ☐ Strongly agree (5)

Q3.3. I quickly understand what community members are trying to say without too much explanation by them.

- ☐ Strongly disagree (1)
- ☐ Somewhat disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Somewhat agree (4)
- ☐ Strongly agree (5)

Q3.4. I feel a positive sense of achievement when this community thrives.

- ☐ Strongly disagree (1)
- ☐ Somewhat disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Somewhat agree (4)
- ☐ Strongly agree (5)

Q3.5. I have a strong sense of belonging to this community.

- ☐ Strongly disagree (1)
- ☐ Somewhat disagree (2)
- ☐ Neither agree nor disagree (3)
- ☐ Somewhat agree (4)
- ☐ Strongly agree (5)

- Q3.6. When I am with members of this community, I feel I am “at home.”
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q3.7. People in this community frequently interact with one another to solve common problems.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q3.8. frequently interact with members of this community to do my job.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q3.9. The things I learn from this community frequently affect my job activities.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q3.10. This community provides an important source of my overall learning.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q3.11. I am constantly learning new things from this community.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)

- Q3.12. The things I learn from members of this community stick with me for a long time.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)

**End of Block: Community Characteristics - individual**

---

**Start of Block: Community Experience**

- Q4.1. The term “net less work” implies that although network participation and commitment require intentional time and energy, ultimately, it will create less work for system teams because collective thinking is more efficient and effective than solving problems in isolation.

- Q4.2. The work within this community is resulting in “net less work” for me.

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

- Q4.3. I believe that the work of this community will result in “net less work” for me in the future.

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

**End of Block: Community Experience**

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**Start of Block: Professional Learning - knowledge, skills, behaviors**

- Q5.1. I can articulate the meaning, purpose, and importance of the Standards for Professional Learning to staff and student success.

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

- Q5.2. As a school district leader, I know my roles and responsibilities to ensure effective, efficient, and equitable professional learning for all educators.

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

- Q5.3. My professional learning leadership behaviors align with my organization's professional learning definition.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q5.4. I use the Standards for Professional Learning to guide **designing** a comprehensive professional learning system.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q5.5. I use the Standards for Professional Learning to guide **implementing** a comprehensive professional learning system.
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)
- Q5.6. I use a thoughtful assessment plan to regularly and systematically evaluate professional learning's effect on educator and leader practices and student results
- Strongly disagree (1)
  - Somewhat disagree (2)
  - Neither agree nor disagree (3)
  - Somewhat agree (4)
  - Strongly agree (5)

End of Block: Professional Learning - knowledge, skills, behaviors

## APPENDIX D

### CoP Survey Items Permission

**Re: Request for Permission to use survey items**

**Neufeld, Derrick <dneufeld@ivey.ca>**  
Sat 10/17/2020 7:32 PM  
**To:** Bowman, Michelle [REDACTED]  
Hi Michelle,

Please feel free to use the published instrument.

Best wishes with your research!

Derrick

---

**Derrick Neufeld, CPA, CMA, PhD**  
Associate Professor, IS & Entrepreneurship

  
WESTERN UNIVERSITY • CANADA

Ivey Business School at Western University  
519.661.3258 ~ [Ivey Bio](#) ~ [LinkedIn](#) ~ [Google Scholar](#)

On Oct 17, 2020, at 11:47 AM, Bowman, Michelle <[REDACTED]> wrote:

8 October 2020

Dr. Derrick Neufeld [REDACTED]  
The University of Western Ontario  
Richard Ivey School of Business  
Richard Ivey Building, 3368  
1255 Western Road  
London, Ontario, Canada

Dear Dr. Neufeld:

I am a doctoral candidate from Baylor University School of Education writing my dissertation tentatively titled *Learning Together: An Explanatory Sequential Mixed Method Examination of Inter-District Collaboration in a Community of Practice* under the direction of my dissertation committee chaired by Dr. Sandra Talbert.

I would like to use the survey items developed, piloted, field-tested in Neufeld, D., Fang, Y., & Wan, Z. (2013). Community of practice behaviors and individual learning outcomes. *Group Decision and Negotiation*, 22(4), 617-639. doi:10.1007/s10726-012-9284-8.

I would like to use and print your survey under the following conditions:



- I will use this survey only for my research study and will not sell or use it in any compensated or curriculum development activities.
- I will include the copyright statement on all copies of the instrument.
- I will send my research study and one copy of the reports, articles, and the like that make sure of these survey data promptly to your attention.

If these are acceptable terms and conditions, please indicate so by signing one copy of this letter (attached) and returning it to me through email: Michelle Bowman, 

Sincerely,

<Bowman\_signature\_transparentBLACK.png>

Michelle A. Bowman

**Michelle A. Bowman**

Doctoral Candidate, Baylor School of Education



Vice President, Networks & Content Design

**Learning Forward**

The Professional Learning Association

800 E. Campbell Road, Suite 224

Richardson, TX 75081

main | 972-421-0900

[www.learningforward.org](http://www.learningforward.org)

@mibowmanpd

[Virtual Conference Information >>>](#)

<Outlook-41a0e2jr.png>

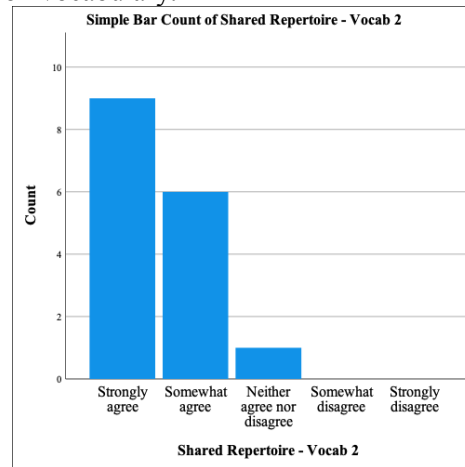
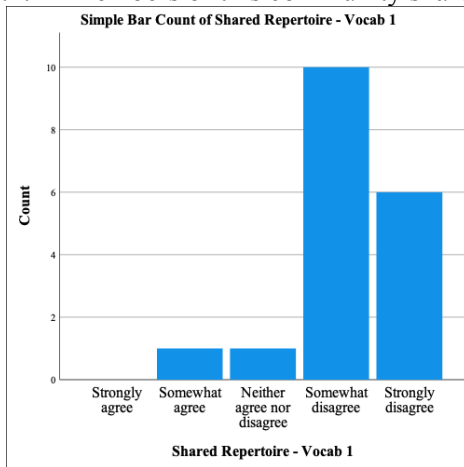
[Schedule an appointment with me](#)

<Permission\_NeufeldSurvey.pdf>

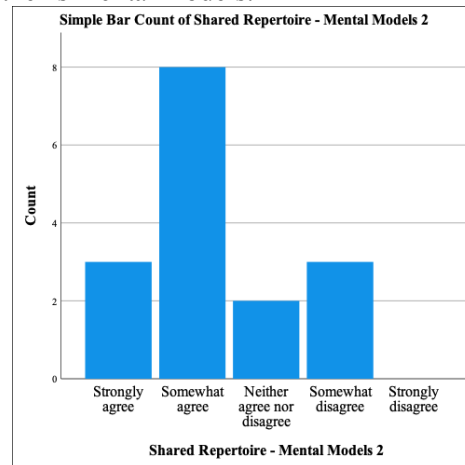
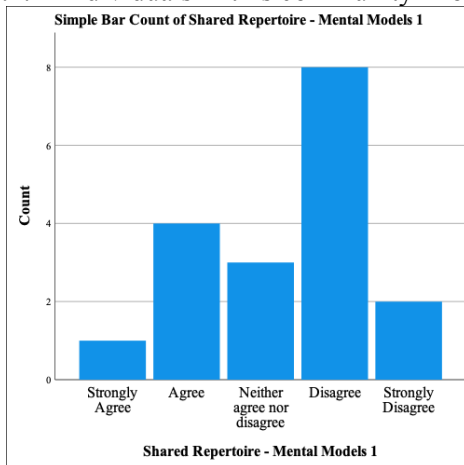
## APPENDIX E

### Learning Together: An Examination of Inter-District Collaboration in a Community of Practice Survey (LTCop-S) Responses, December 2020, and May 2021

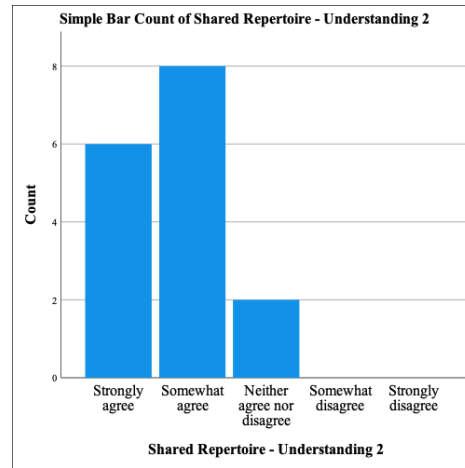
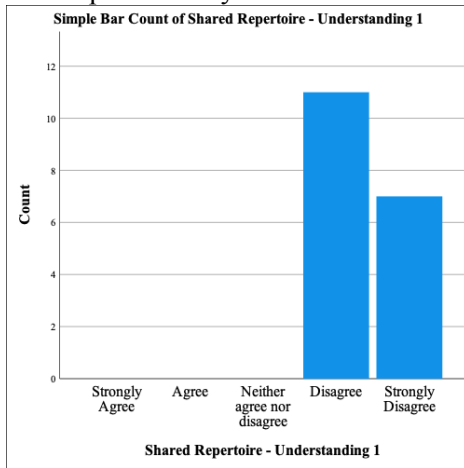
Q3.1. Members of this community share a common vocabulary.



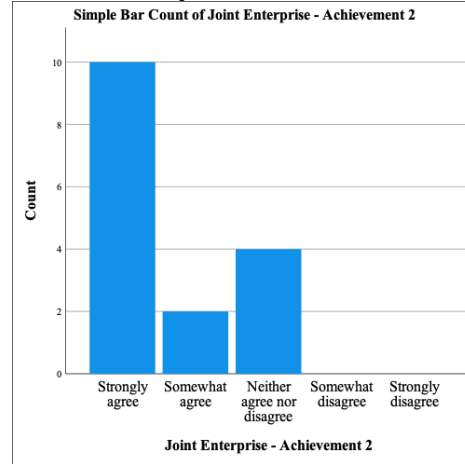
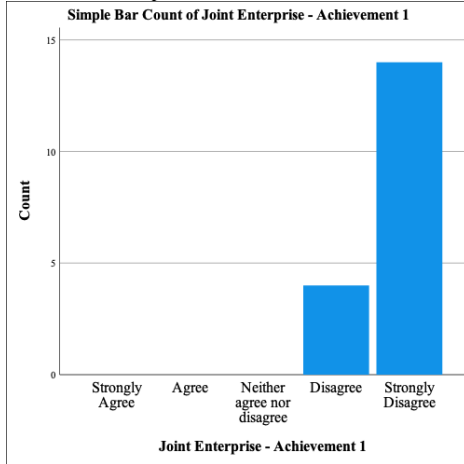
Q3.2. Individuals in this community know each other's mental models.



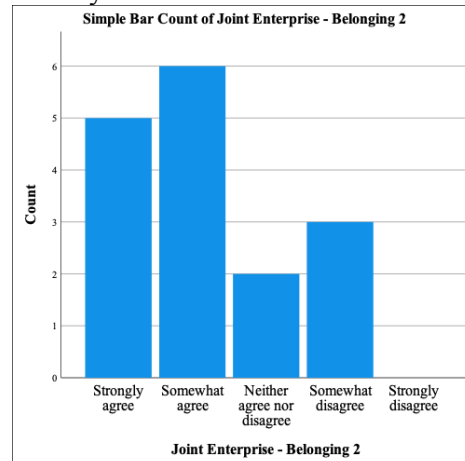
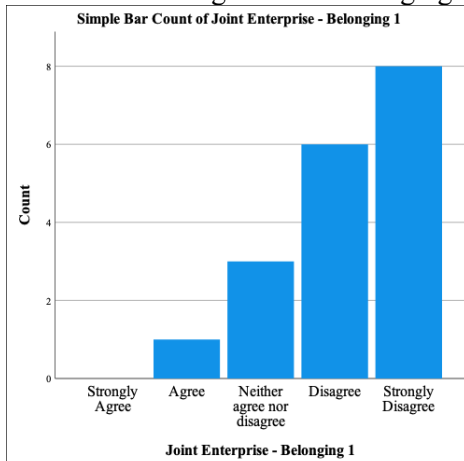
Q3.3. I quickly understand what community members are trying to say without too much explanation by them.



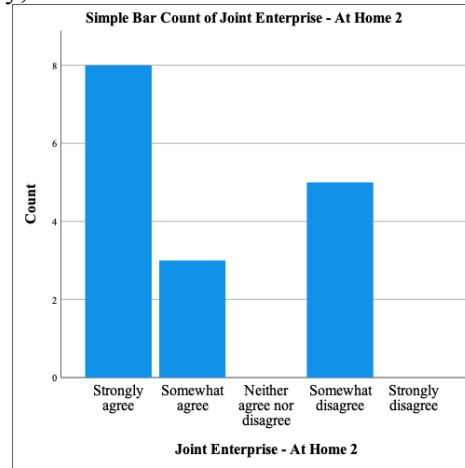
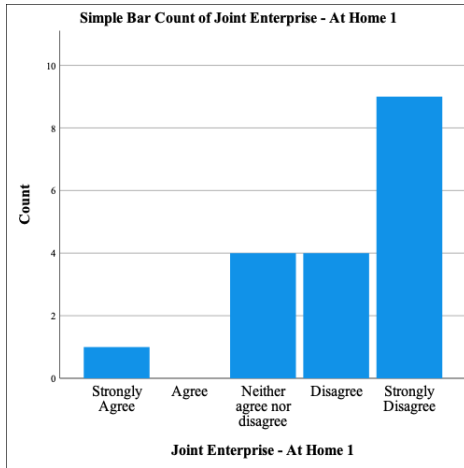
Q3.4. I feel a positive sense of achievement when this community thrives.



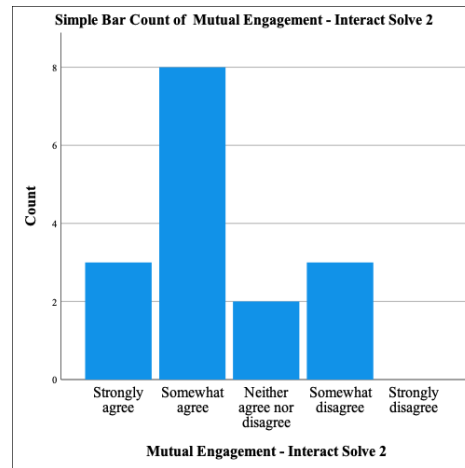
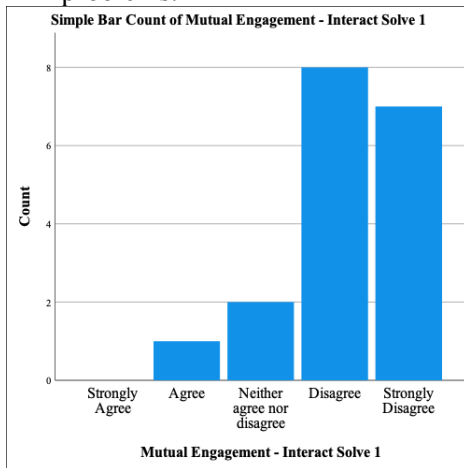
Q3.5. have a strong sense of belonging to this community.



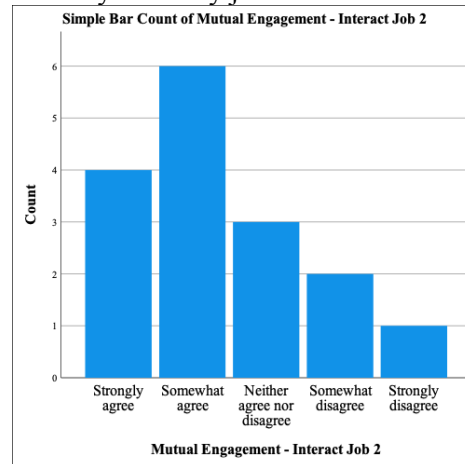
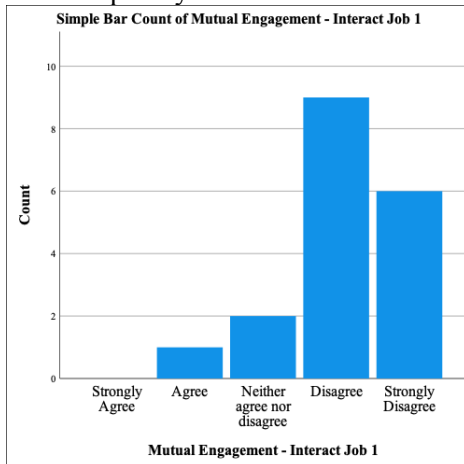
Q3.6. When I am with members of this community, I feel I am “at home.”



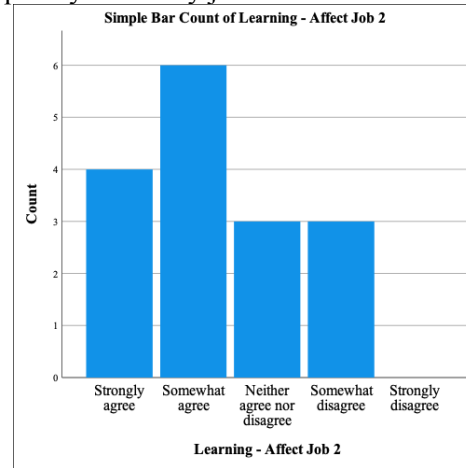
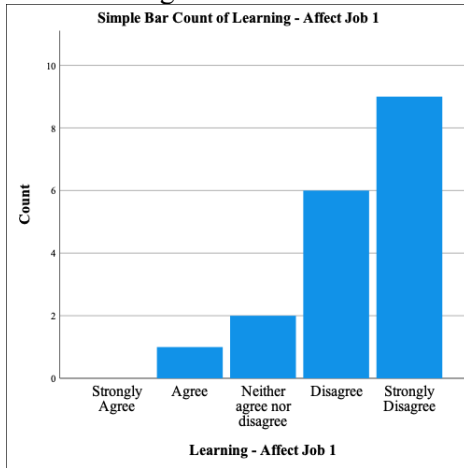
Q3.7. People in this community frequently interact with one another to solve common problems.



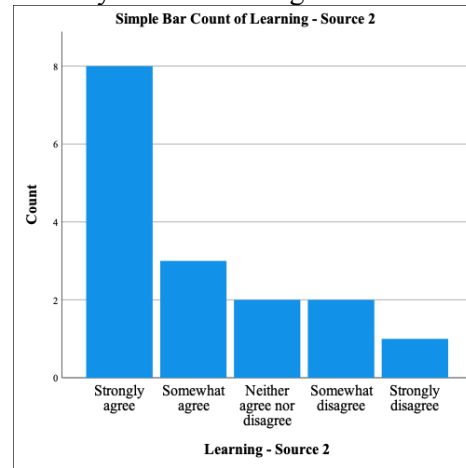
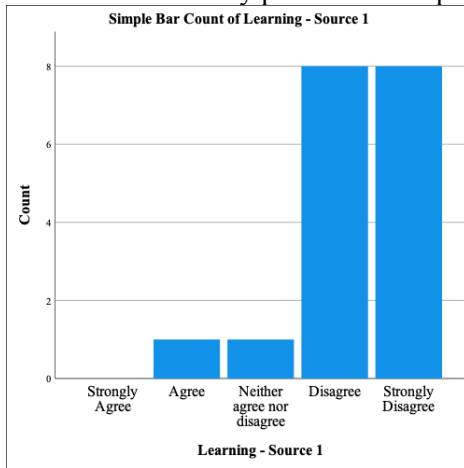
Q3.8. frequently interact with members of this community to do my job.



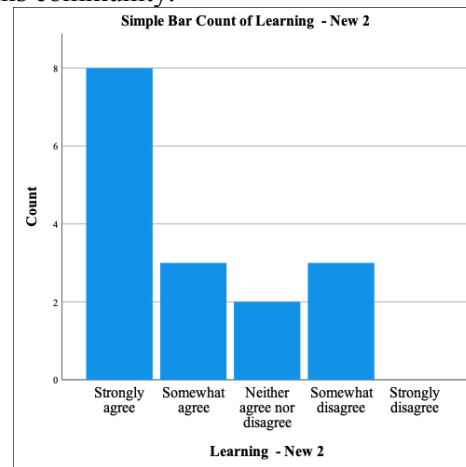
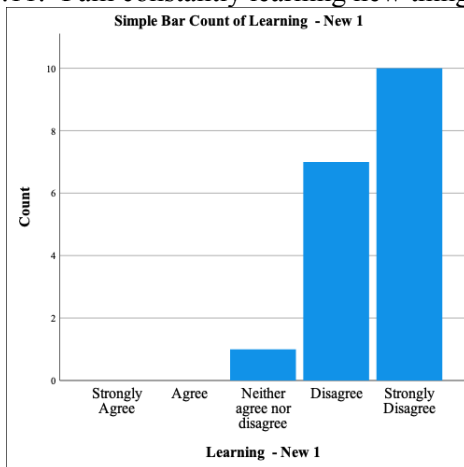
Q3.9. The things I learn from this community frequently affect my job activities.



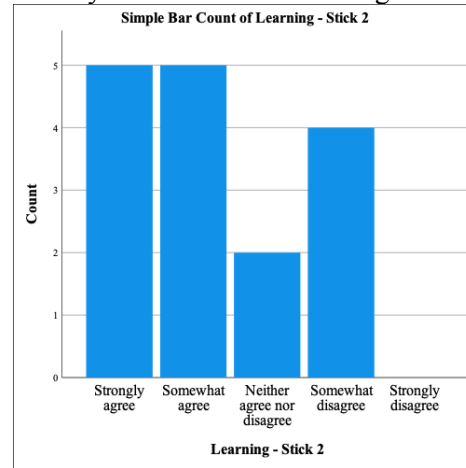
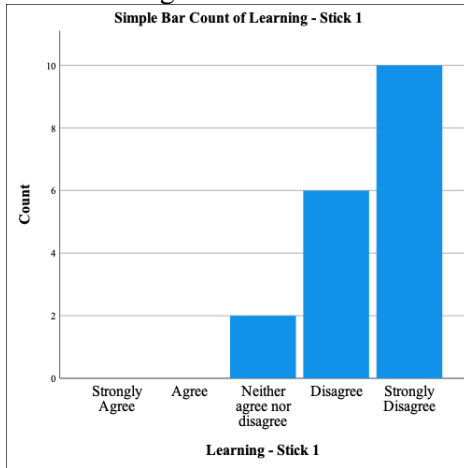
Q3.10. This community provides an important source of my overall learning.



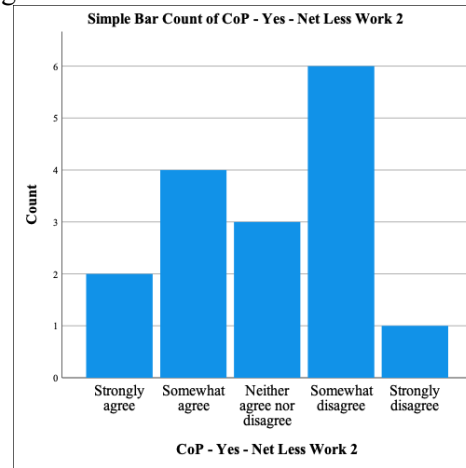
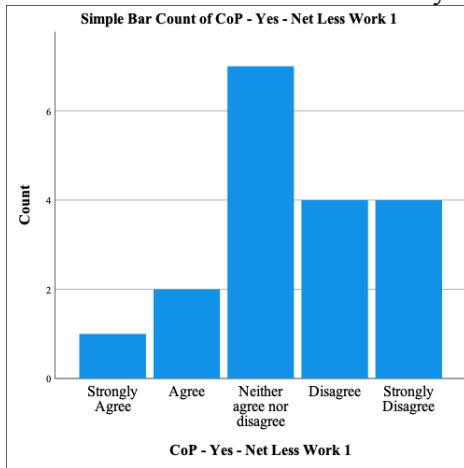
Q3.11. I am constantly learning new things from this community.



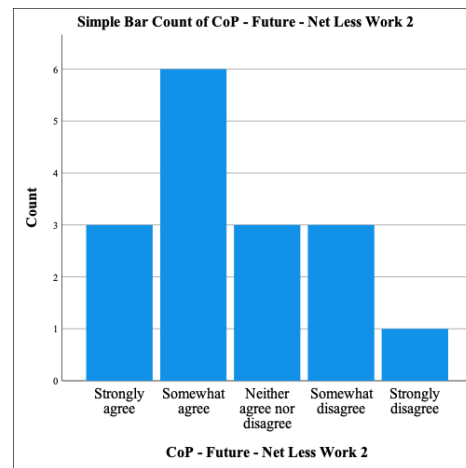
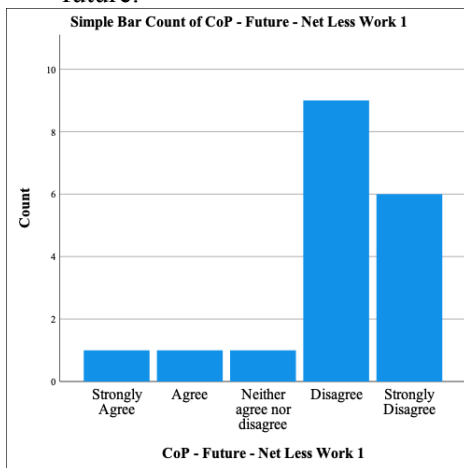
Q3.12. The things I learn from members of this community stick with me for a long time.



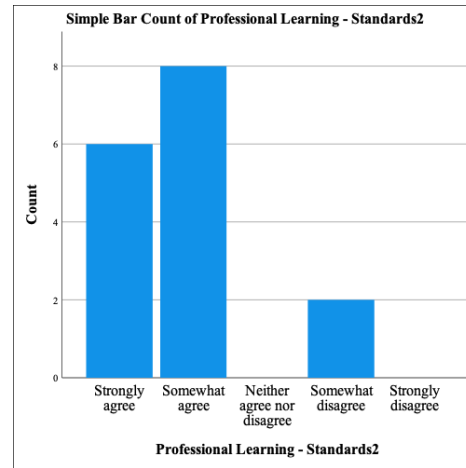
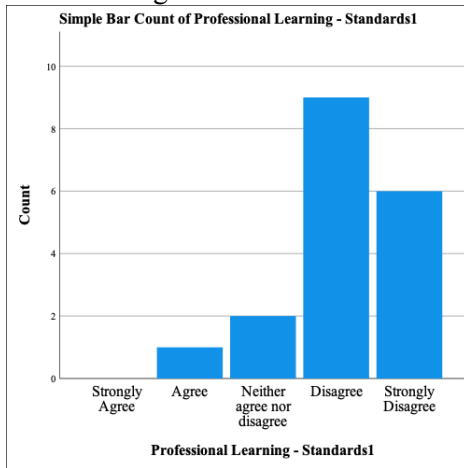
Q4.2. The work within this community is resulting in “net less work” for me.



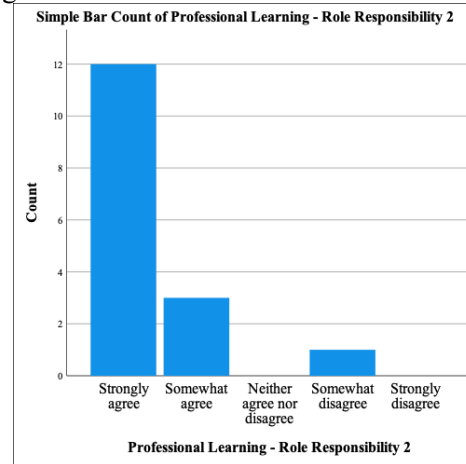
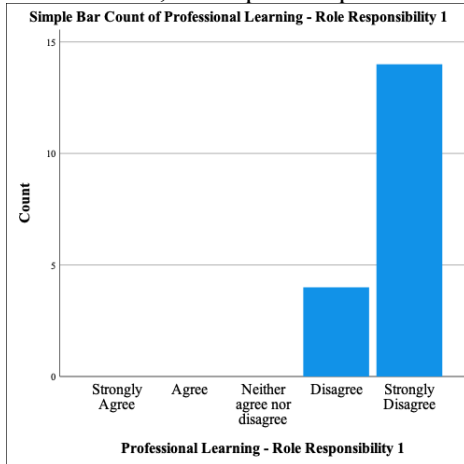
Q4.3. I believe that the work of this community will result in “net less work” for me in the future.



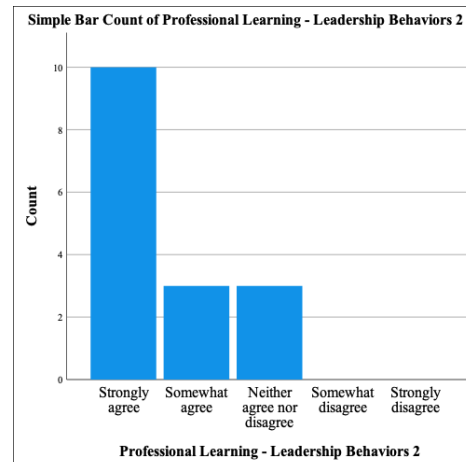
Q5.1. I can articulate the meaning, purpose, and importance of the Standards for Professional Learning to staff and student success.



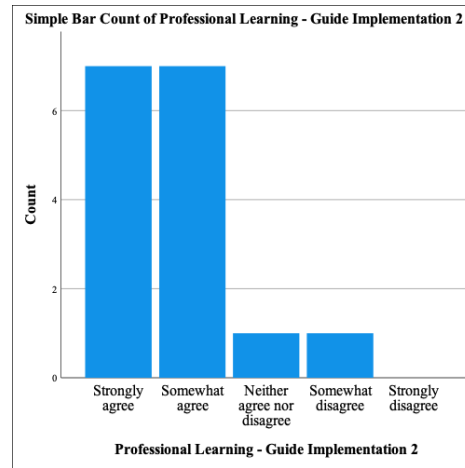
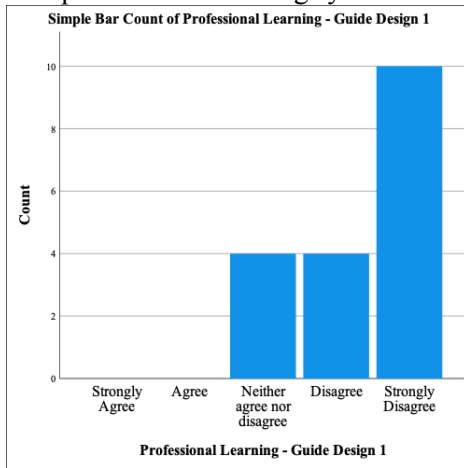
Q5.2. As a school district leader, I know my roles and responsibilities to ensure effective, efficient, and equitable professional learning for all educators.



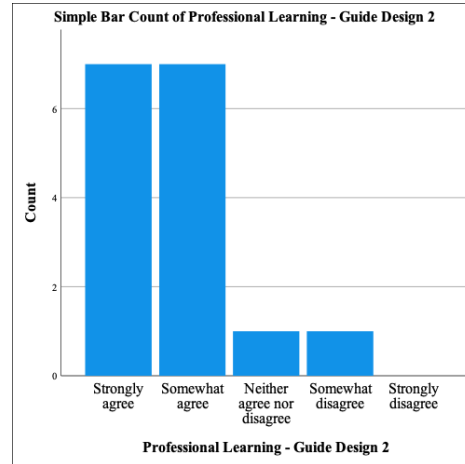
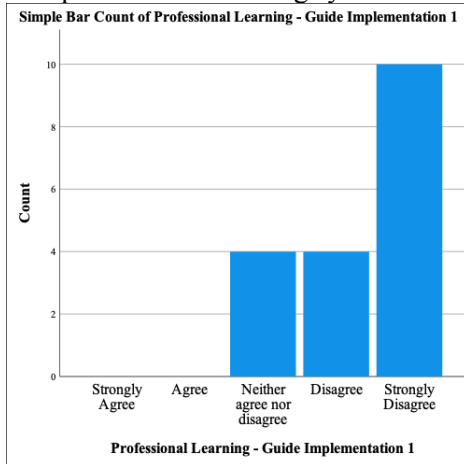
Q5.3. My professional learning leadership behaviors align with my organization's professional learning definition.



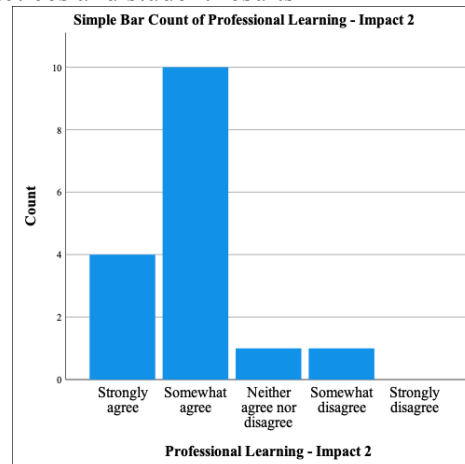
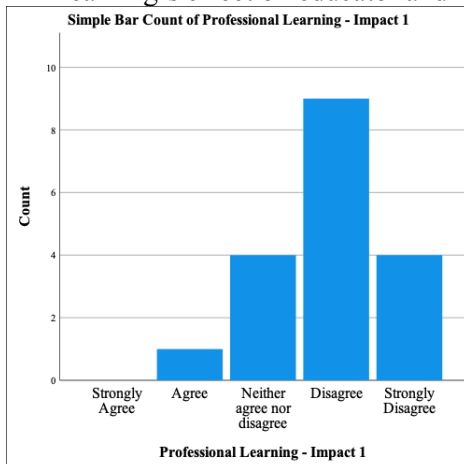
Q5.4. I use the Standards for Professional Learning to guide **designing** a comprehensive professional learning system.



Q5.5. I use the Standards for Professional Learning to guide **implementing** a comprehensive professional learning system.



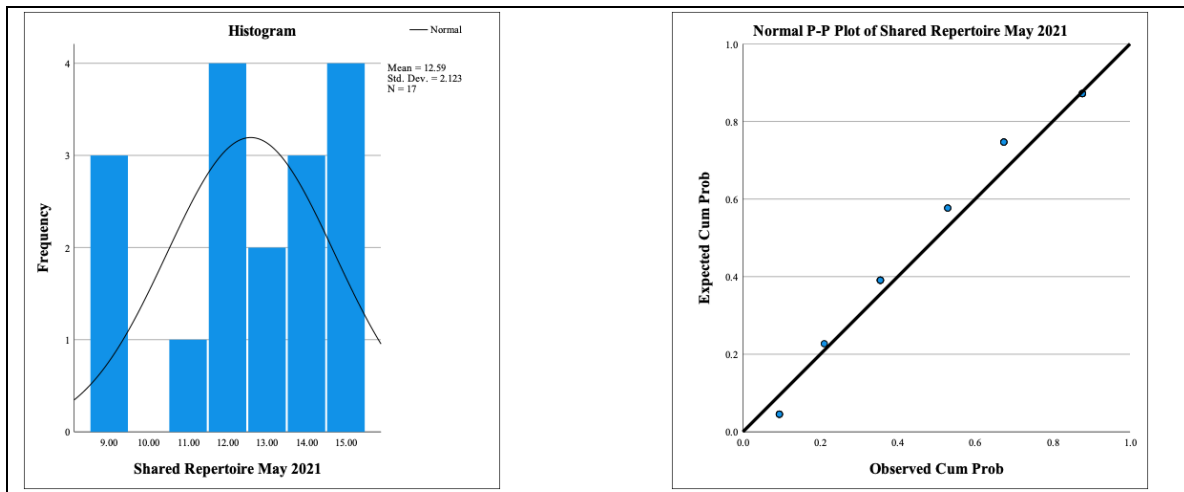
Q5.6. I use a thoughtful assessment plan to regularly and systematically evaluate professional learning's effect on educator and leader practices and student results



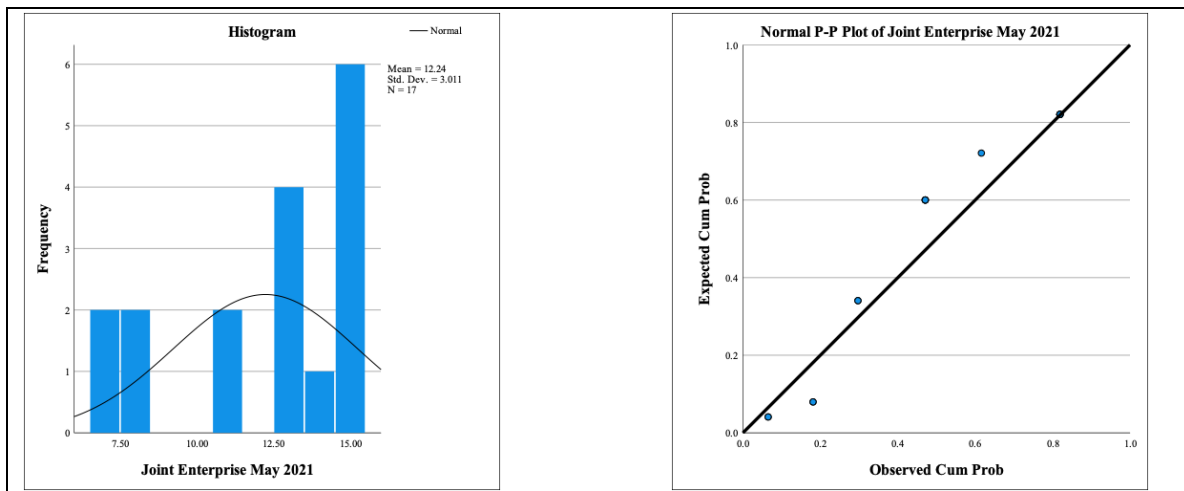


## APPENDIX F

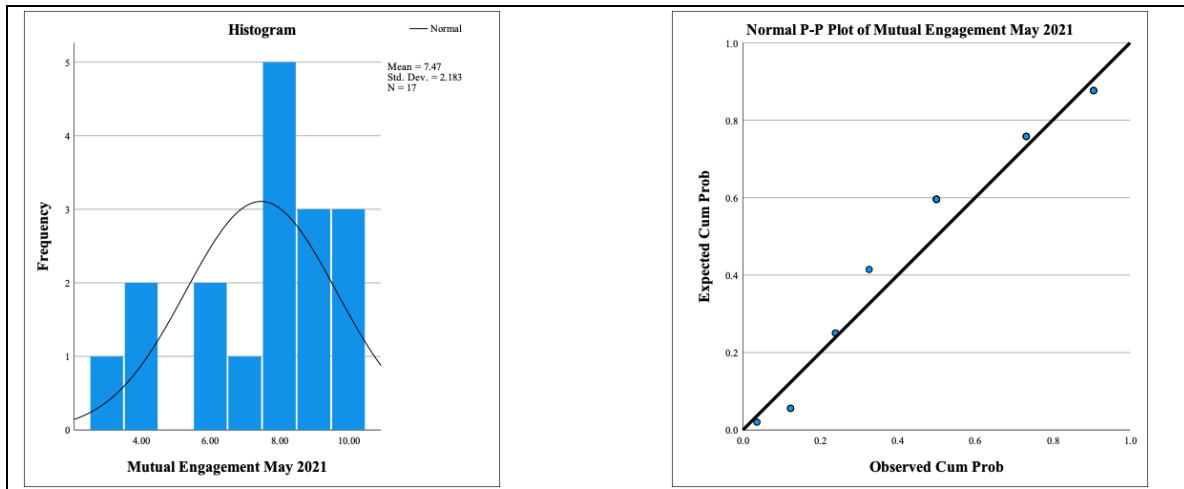
### Histogram and Normal P-P Plots for Factor-level Variables



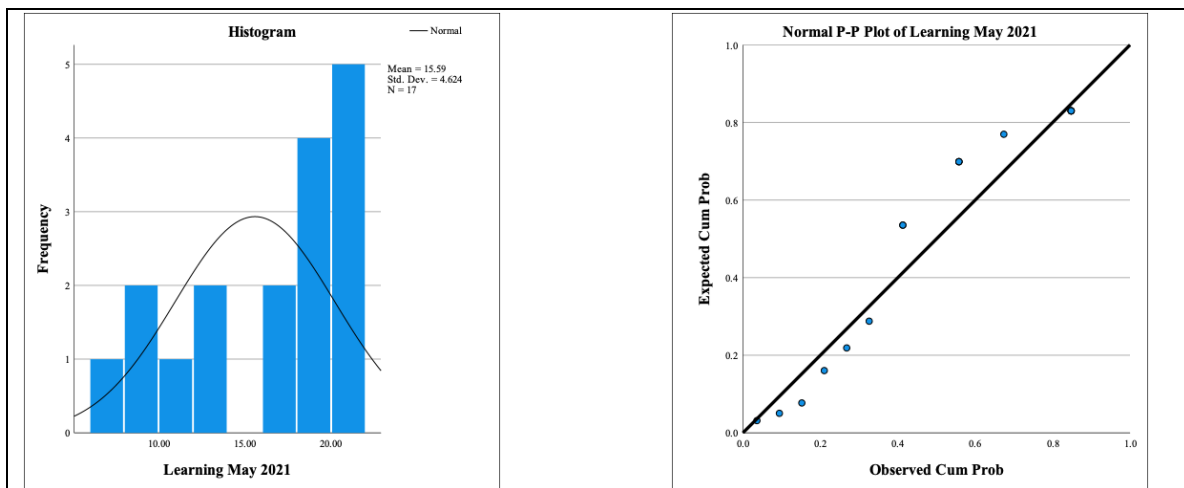
### Histogram and Normal P-P Plots for Shared Repertoire, May 2021



### Histogram and Normal P-P Plots for Joint Enterprise, May 2021



Histogram and Normal P-P Plots for Mutual Engagement, May 2021



Histogram and Normal P-P Plots for Learning, May 2021

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