Summer 2021

Creating Conditions for Collaboration: A Case Study on Design-Based Professional Learning

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CREATING CONDITIONS FOR COLLABORATION:

A CASE STUDY ON DESIGN-BASED PROFESSIONAL LEARNING

by

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A Dissertation Submitted to the Faculty of
Old Dominion University in Partial Fulfillment of the
Requirements for the Degree of

DOCTOR OF PHILOSOPHY

EDUCATIONAL LEADERSHIP

OLD DOMINION UNIVERSITY
August 2021

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ABSTRACT

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Design thinking is a process for solving complex problems through creative actions. There are three primary ways design thinking is being used in education today: (a) as a teaching tool, (b) as a strategy for teachers to redesign their students' learning experiences, and (c) as a tool for school leaders to design school change (Gallagher & Thordarson, 2018). Design thinking includes a strong emphasis on team-based learning regarding the problem and possible solutions (Lindberg et al., 2010). This case study describes one school's approach to navigating complex challenges, inspiring school change, and developing conditions for meaningful collaboration using a design thinking-based approach to professional learning. The theoretical lenses of organizational learning and collective teacher efficacy were used to frame the study. Participants included school administrators, teachers, and instructional specialists from one high school who were a part of a design thinking-based professional learning program. Findings from the study indicate that school leaders held a desire to build capacity within the school and understand the importance of cultivating a positive school culture. Additionally, teachers found value in leading meaningful change, encountered resistance to change due to their roles as teachers, and were able to contextualize their work in the division-level initiative to be replicated their own school. All participants acknowledged the impact of COVID-19 on their school change process and that their momentum stalled as a result of the global pandemic. The results of this study can help guide educators as they implement inquiry-based activities that are team based, to create

conditions for teachers and administrators to work collaboratively to solve complex problems, and to empower teacher leaders and administrators to establish efficacy and ownership in professional learning experiences.

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CHAPTER 1: INTRODUCTION

Leadership takes many forms within the educational system. In a school context, a leader could hold the title of teacher, administrator, specialist, or coordinator. The role of the leader evolves as our educational system adapts, grows, and changes. Leaders navigate complex school issues related to meeting state and federal accreditation requirements. This can include activities related to increasing student achievement, identifying and tackling challenges within the community, and building a culture of high expectation for staff and students. Professional learning is a vehicle for staff to work together to solve complex school issues while providing a space for teachers to learn and grow (Stafford, 2017).

Statement of the Problem

Although teachers and administrators have different perspectives about how best to tackle school issues, the combined efforts of one team working together to solve a complex issue brings multiple perspectives to the task, allowing for more creative solutions to occur. Professional learning programs within schools are propelled by an environment that leaders create so adult learners can safely take risks. The role of school leaders—whether teacher, administrator, or specialist—needs a disruption due to the constantly changing landscape of education (Gallagher & Thordarson, 2018). Leaders must address the challenges they face with a design-based approach. A design-based approach is a mindset rooted in the way one leads and learns. Design thinking is an approach to creative problem solving that is widely recognized as a route to human-centered innovation (von Thienen et. al, 2018). The possibilities for a school with the leadership to tackle complex issues with a design mindset, teamwork approach, and relationship-focused mentality is limitless. This study focused on the impact of the intersection of these concepts: design-based professional learning between teachers and administrators in a school and

the prerequisite conditions for meaningful collaboration to occur. I examined this intersection through the following research questions:

1. What is the relationship between a design-based professional learning process and developing the conditions for collaboration to occur?
2. What is the relationship between a design-based professional learning process and the development of collaborative school outcomes?

With this study, I aimed to analyze how one high school worked to collectively diagnose, understand, and tackle persistent problems through iterative cycles of innovation and reflection (Williams & Brown, 2018). “For a talent revolution to take place, governments and businesses will need to profoundly change their approach to education, skills, and employment, and their approach to working with each other” (Gallagher & Thordarson, 2018). Advocates of design thinking have an open mind, are full of ideas and enthusiasm for innovation, and have an appetite for new solutions that yield better services, products, and ultimately, societies (Plattner et. al, 2016). The revised profile of a school leader should capitalize on teachers being a key to change needed in the classroom (Gallagher & Thordarson, 2018). A teamwork approach to professional learning can bring administrators and teachers together and empower the team to take ownership of change possibilities. Schools must be able to simultaneously experiment, adapt, and keep up with daily challenges. Educators must profoundly change their approach to working and learning with each other; participation in a design-based team for professional learning could be one platform for doing so.

Background and Context

Design thinking is a five-stage, human-centered process. The five stages are empathize, define, ideate, prototype, and test (Gallagher & Thordarson, 2018). There is general agreement

design thinking is a successful philosophy that allows users to develop a deep understanding of innovation processes (von Thienen et. al, 2018). There are three primary ways design thinking is being used in education: as a teaching tool, as a tool for teachers to design learning experiences, and as a tool for school leaders to design school change. This research study involved a Mid-Atlantic school district. In the district, professional learning design teams began the process of tackling complex problems of practice with the empathize stage. Teams of teachers, specialists, and administrators began work at the start of a school year and worked for a full academic calendar year. Throughout the process, professional learning specialists taught the group about the design thinking process and closely monitored progress throughout. Knowledge of the design thinking process was not a pre-requisite for participation in this program and therefore participants entered the process with varying levels of background knowledge about design thinking. Participants were asked to engage in activities that included perspective taking, recognizing emotions in others, and communicating the emotions they recognized. Through a series of empathy interviews, participants extracted big ideas, took notes, and developed empathy maps. Professional learning specialists led teams through the process during a series of full-day sessions over the course of a school calendar year.

During the processes of design thinking, teams explored their selected challenges through a lens of managing uncertainty, communication, and time constraints. Three dimensions of success were used: results, process, and relationships. Processes included how the work gets done, managed, and evaluated. Relationships included how people relate to each other and their work. Results included how teams accomplished their goals. Participants empathized to help define the problem, learned from prototypes to spark new ideas, learned about users through

testing, tested to create new ideas, and reflected on tests that revealed insights that helped teams redefine the challenge (Lindberg et al., 2010).

Face-to-face design learning sessions were held, and resources were warehoused in the school district's learning management system. Schools were given opportunities to receive feedback from each other during face-to-face sessions. At times, schools were strategically partnered, based on the individual school challenges, needs, and goals. This created a partnership approach where schools could work together to define the specific needs of their target populations, generate and ideate solutions, and review feedback on prototypes. There was time embedded within this learning to celebrate small wins while managing discomfort and staying motivated. Opportunities were given for a network of teams to be created to explore challenges. Lastly, options were provided to teams needing to pivot and modify their pace based on the individual school's needs. Schools focused on developing solutions to problems centered around their Instructional Leadership Team (ILT). Problems varied from developing a new structure for the ILT, building capacity for teacher leadership, and shifting small scale collaborative change to a larger school-wide change.

This research study was explored through the lenses of organizational learning theory and collective teacher efficacy. Organizational learning theory considers socio-organizational context about learning new things, the influences of environmental conditions on knowledge application and learning, and the impact of learning on innovation. Learning is also a social process (Berta et al., 2015). One distinction between high-performing organizations and poor ones is the capacity to engage employees in higher-order learning. This theory places importance primarily on generating learning and knowledge. How schools specifically generate these learning

experiences and adapt to the learning environment and capacity of employees, is an empowering process driven by key players within the organization (Berta et al., 2015).

In this study, I examined factors related to sharing organizational influence and empowering individuals and teams to create change through participation in a design thinking process. Learning involves both the learner and her context (Hager et al., 2012). When participants in organizations work around difficulties, they are translating policies and practices into viable or innovative solutions. There are many factors constantly in flux. How teams and individuals respond and change to meet the challenges dictates the way an organization or individual functions and evolves (Hager et al., 2012). Schools cannot produce the kind of teaching and learning the world demands unless they are redesigned to innovate systems that support efforts to do so (Leithwood, 1998). Through the lens of organizational learning theory, I analyzed the collective and individual aspects of learning. The conditions of the school included in this case study was considered to see whether organizational learning was fostered or inhibited.

Significance of Study

I first collected qualitative data to test the ways teachers and administrators create conditions for collaboration within each school context. Conclusions from this analysis were used to examine the intersection of design-based professional learning, conditions for collaboration to occur, and an organizational learning theoretical framework. The results will provide educational leaders with the knowledge to engage teams in collaborative inquiry and the collaboration outcomes which emerged from analyzing complex school challenges in this format. This will, in turn, allow educational leaders to better understand the relationships between

teacher and leader teams and the impact team learning has on empowering participants to act as change agents within their larger school communities.

There are several specific contributions to theory and practice gained from this study. I aimed to describe a design-based professional learning process for teams based on analyzing problems of practice, clarify ways teacher and administrator participants create conditions for innovation and collaboration as a transfer of the learning experience, and analyze how the work generated from the design thinking process impacted the greater school community. Educational leaders will be able to use the findings to guide their practice of leadership by: (a) implementing professional learning processes that are inquiry and team based, to further increase collaboration and innovation outcomes; (b) creating conditions and spaces for teachers and administrators to work collaboratively to solve complex school problems; and (c) empowering teacher leaders and administrators to establish efficacy and ownership in professional learning experiences.

Statement of Purpose

The purpose of this study was to describe one school's team-based approach to navigating complex challenges, inspiring school change, and developing the conditions for meaningful collaboration. One area of emphasis was the ways administrators work in collaboration with teachers to develop innovative solutions to problems while building teacher efficacy through design-based professional learning. The traditional view of a principal or assistant principal as "manager" is a role that no longer captures the position. Instead, leaders are needed who create a culture of growth and "use the group to change the group" (Fullan & Quinn, 2016, p. 60). Innovation is pushing school leaders and practitioners to think about education differently, and leaders must draw on new ideas and practices to support the talent of their teachers. Using a design-based approach, leaders can move from "manager" to "designer," which

can include several roles and mindset shifts: opportunity seekers, rule breakers, producers, and storytellers (Gallagher & Thordarson, 2018). When leaders and teachers realize their true potential, they realize the true potential of their organizations (Gallagher & Thordarson, 2018).

In this study, I outlined the conditions for collaboration and innovation, connecting the processes for teams to push employees to think about the systems in place and ways to change and enhance them. When members of an organization participate in processes of higher-order learning and innovation like the program outlined in this study, participants are engaging in social processes that can lead to better student and school outcomes. Educational institutions are built on long-held beliefs that are deeply embedded within our educational systems (Williams & Brown, 2018). School leaders grapple with how to maintain strong frameworks for decision making and develop an adaptive approach that requires awareness of others, acceptance of uncertainty, and a requirement for collaboration with flexibility (Williams & Brown, 2018). It was hypothesized in sharing the approaches and outcomes related to how schools adapt to change and challenges within an organization, teachers and leaders will be equipped to lead broader change, generate enthusiasm with participation from key players, and navigate uncertainty in a way that benefits their organizations (Berta et al., 2015).

The relationship between teacher empowerment and school organizational capacity is well documented (McCharen et al., 2011). There is a clear link between administrative support and teacher outcomes. School administrators' focus on providing professional learning aligned with school improvement is a key strategy in improving the culture of learning for both students and teachers (McCharen et al., 2011). If teachers and leaders work to build a better understanding of how to work productively together while examining complex issues, they can navigate change together more effectively. Trust is both contextual and dynamic, and it is also

related to positive organizational characteristics (Schwabsky et al., 2019). Creating a culture of trust between school leaders and teachers fosters an environment where shared values are created, upheld, and supported through trustworthy behavior from all members of the organization (Schwabsky et al., 2019).

Methodology Overview

I used a case study approach to document a design-based professional learning process in one high school in a Mid-Atlantic school district. Participants had a range of experience levels as classroom teachers and school leaders. Qualitative data, collected through a semi-structured interview process, and pre-existing participant survey data were used to look specifically at a design-based professional learning process and the development of conditions for collaboration to occur within a high school context. In addition to conducting interviews, I analyzed pre-, mid-, and post- assessment data collected in survey form throughout the program from participants in the program as well as prototypes and Ignite Talks related to the team experience in the design thinking process. This survey data was designed by professional learning specialists. Teachers, specialists, and school administrators (assistant principals and principals) were interviewed to gain a better understanding of how team members used the learning from the design-thinking process and further cultivated collaboration in this high school environment.

Research Questions

This study focused on a design-based professional learning experience between teams of administrators and teachers in a school and the pre-existing conditions for collaboration and the resulting collaboration outcomes. Two research questions guided this study:

1. What is the relationship between a design-based professional learning process and the development of conditions for collaboration to occur?

2. What is the relationship between a design-based professional learning process and the development of collaborative school outcomes?

Definition of Key Terms

Adaptive problem – complex problems that require innovative solutions and experimentation (Williams & Brown, 2018).

Administrator efficacy – an administrator's ability to produce a desired or intended result (Schwabsky et al., 2019).

Collaboration – collaboration occurs when educators build shared knowledge, learn, and work together toward a common goal (Brown & Duguid, 1991).

Collaborative school outcomes – tangible products from the design-based professional learning experience

Conditions –environmental factors that allow for collaboration to occur (Stafford, 2017).

Design thinking – a five-stage process that teams use to understand users, challenge assumptions, and redefine problems while creating innovative solutions (Gallagher & Thordarson, 2018).

Empowerment – authority given; in this study, applies to teachers and administrators (Francescato & Aber, 2015).

Innovation – an idea, practice, or objective that is perceived as new (Schwabsky et al., 2019).

Organizational learning – process of creating, retaining, and transferring knowledge within an organization (Leithwood et al., 1998).

Professional learning– designed to encourage teachers to take responsibility for their own learning and to practice what they are learning in their own context (Scherff, 2018).

Professional learning community (PLC) **–** a group of educators committed to working collaboratively in an ongoing process of collective inquiry and action research to achieve better results for the students they serve (DuFour, 1999).

Teacher efficacy – a teacher's ability to produce a desired or intended classroom outcome (Schwabsky et al., 2019).

Technical problem – problems easy to identify and solve (Heifetz et al., 2009).

Trust – occurs when a person or group feels at ease in a situation of interdependence, based on the confidence the other party is being competent, honest, and open (Schwabsky et al., 2019).

This dissertation will follow a traditional structure. Chapter 2 will provide an overview of the research on innovation, organizational learning, design-thinking, and creating conditions for collaboration, along with a description of the theoretical framework for this study and research questions. Chapter 3 will detail the research design and methodology of this study as well as the problem, purpose, and methods for data collection and analysis; limitations and research bias will also be discussed. Chapter 4 will detail the findings from the study and Chapter 5 will include the discussion and implications to future research.

CHAPTER 2: LITERATURE REVIEW

School leaders and teachers hold a collective responsibility for leading school improvement and change by creating and sustaining efforts for innovation and collaboration to occur. A thorough understanding of how to support teachers in their roles as positive change agents contributes to how administrators create and foster conditions for ongoing innovation to occur in schools. Much of the work done to move schools forward is done in teacher teams with the support of a trusted administrator. Examples of these collaborative teams are described below. Professional learning communities (PLCs), professional learning teams, instructional leadership teams, and teacher design teams are outlined—including the human-centered design thinking process that connects these teams to better analyze, understand, and empathize with each other and their greater school community. In this chapter, I critically review literature regarding innovation, collaboration, and team-based professional learning activities, such as design thinking. I use the lenses of organizational learning theory and collective teacher efficacy to analyze and support the summary and critique of existing literature.

Leading School Change

The best way to manage and adapt to change is to allow it to happen. Leadership makes a difference when leading school change. (Fullan, 2020). Effective leadership requires a great deal of understanding the people you are working with and inspiring them to do better things. Especially in schools, leaders and those they serve have an emotional connection to the change happening around them. Leading change is about helping others focus and learn (Fullan, 2020). Schools must be open to innovation and redesign; with this, a level of risk taking is involved (Fullan, 2020). Redesign is needed almost everywhere – school events, staff meetings, and professional development all call for opportunities for designing new experiences (Gallagher &

Thordarson, 2018). While deliberately building in differences, leaders can leverage the differing perspectives of a group and acknowledge the human component of change.

Adapting to Change

Adapting to change is a complex process involving webs of routines and traditions built over time within a school's community (Fullan, 2020). School reform has traditionally focused on networks of teachers and school improvement, and teacher collaborative network success played a pivotal role in the routines built into the school community (Carpenter, 2014). Supportive and shared leadership structures at schools leverage the group to lead change efforts by building deep collaborative work (Fullan & Quinn, 2016). Adaptive management addresses uncertainty to handle adaptive problems which do not lend themselves to clear or concrete solutions at first. "Uncertainty" is defined as a general lack of predictability about future conditions (Williams & Brown, 2018). Routines built into a school over time, the leadership to support structures at school, and response to uncertainty can all be key factors leaders must consider when developing plans to adapt to change.

Adaptive management is leadership in response to change and shares common features including: (a) system changes in response to environmental conditions, (b) environmental variations that lead to unpredictable system behaviors, (c) varying management interventions that influence behaviors directly or indirectly, and (d) limitations for effective management because of uncertainty about the resource system and how it responds (Williams & Brown, 2018). Stakeholders within the organization must be committed to being involved and playing a role in the decision-making process. Stakeholder participation is a key factor in effective adaptive management. There will inevitably be challenges associated with the organization; promoting the

continued support and involvement of all stakeholders leads to broader participation, greater enthusiasm, and less contentious management (Williams & Brown, 2018).

Adaptive problems are especially complex because the human component cannot be removed and must be considered when diagnosing and solving a problem. Values, beliefs, and loyalties play a role in the challenge and possible solutions generated (Heifetz et al., 2009). In order to create lasting change, decisions will need to be made which create losses for some and gains for others. Diagnosing the organization's adaptive challenge and understanding the relationships among people in an organization takes time, careful thought, and courage (Heifetz et al., 2009). People within the organization must open themselves up for experimentation and foster a continuous-learning mindset in action. When teams partner together and a broad involvement of key stakeholders is attempted, this participation is a critical part of the change process (Sotirou et al., 2016). Attempting support strategies aimed to meet school needs is critical in the innovation process (Sotirou et al., 2016). This type of approach and teaming is a catalyst for the introduction of innovation in educational settings. After individual mindsets are shifted and people are prepared for change and flexibility in action, the development of teams comes into focus to connect people. Design thinking and cohesive team dynamics allow teams to connect through relationships to develop innovative solutions and creative ways to solve problems leading ultimately to school change.

PLCs

A PLC is a group of educators committed to working collaboratively in an ongoing process of collective inquiry and action research to achieve better results for the students they serve (Carpenter, 2014). PLCs in an education arena can be groups of teachers who teach the same subject, grade level, or group of students. Teachers can look to PLCs as a practical, job-

embedded opportunity to discover challenges and seek solutions (Holdsworth & Maynes, 2017). Connecting the ways adults and students care for each other through purposeful conversations, assessments, and informal observations sustains change efforts (Strahan, 2003). Significant efforts to reform and redesign education have been at the forefront in recent years. Almost every school is engaged in some type of work to reform education (Strahan, 2003). One characteristic of successful schools is teachers working collaboratively (Strahan, 2003). When teachers do so, they develop broader instructional strategies and enhance student achievement. Teachers build a strong sense of professional community, which gives them social support for teaching and learning. Successful schools encourage freedom and flexibility to "fail forward" and have high expectations for teacher collaboration that leads to greater teacher efficacy (Hargreaves, 1997).

Successful schools also exhibit coordinated efforts by teachers and administrators to identify needs, investigate and develop solutions for improvement, and develop initiatives focused to help teachers (Strahan, 2003). When teachers play a role in planning their professional development, teacher agency and a shared belief for improving overall achievement exists (Holdsworth & Maynes, 2017). Teachers involved in PLCs are involved in a continuous improvement process that is student-centered and includes supportive and shared leadership. There are key characteristics of effective PLCs: (a) shared purpose and values, (b) collaborative culture, (c) problem solving and collective inquiry, and (d) continuous improvement (Figure 1).

Figure 1

Key Characteristics of Professional Learning Communities (PLCs)

Note. Adapted from "Promoting a collaborative professional culture in three elementary schools that have beaten the odds," by D. Strahan, 2003, *The Elementary School Journal, 104*(2), p. 127-146 (https://doi.org/10.1086/499746). Copyright 2003 by The Elementary School Journal.

Relationships forged within PLCs build successful collaboration. The shared expertise within the group of individuals turns complexities into a focused force for change (Fullan & Quinn, 2016). The values of a group are the intrinsic qualities on which the school or team stands. Administrators and teachers need a mutual agreement about the purpose of PLCs and the amount and types of support required to provide to sustain them. When administrators place a great value on providing the time to meet in PLCs, teachers place a greater value on the time to meet, which can lead to improved instruction. A leader's job is to manage the transition from the current to desired state in order to drive school change.

Fostering collaborative cultures through PLCs and teacher collaboration must be focused on instructional improvement within and across schools. The conditions for a collaborative culture may include PLCs, teacher collaboration, and building teacher capacity and relationships. Building teacher capacity and relationships achieves results (Fullan & Quinn, 2016). Capacity refers to the capability of the individual or organization to make the needed changes and involves the development of knowledge, skills, and commitments (Fullan & Quinn, 2016). Relationships require coaching, mentoring, and a commitment to learning together. A culture is created in schools where teachers develop continuously through collaborative planning, reflection, and coaching (Sotirou et al., 2016). The development of teachers within teams motivates teachers to do the hard work of school improvement, which yields results. In order to accomplish the shared goals, everyone must be pushing in the same direction (Fullan & Quinn, 2016). Shaping the collaborative culture must involve developing deeper relationships, trust, and engagement. Leaders looking to create the conditions for this type of culture put processes and supports into place to build teacher collaboration, inquiry, and teams of leaders (Fullan & Quinn, 2016).

Innovation

The world is rapidly changing, and schools are having to change how the modify instruction and programs to prepare students to meet the demands (Schwabsky et al., 2019). For schools to foster a spirit of innovation, the educational organization must engage in and support new ideas, experimentation of ideas, and creative processes that result in change (Schwabsky et al., 2019). This section outlines examples of innovation within schools, the role of support and trust from administrators, and the components for innovation to be most effective. Trust and teacher teams influence important school outcomes—in this case, developing innovative strategies or solutions to problems. Specific examples of innovative schools, components of

PLCs, qualities of communities of practice (CoPs) and teacher design teams, and a description of the design-thinking process used by Stanford d.school is outlined. The design-thinking process explained in the sections that follow mirrors the process the case study school district in this dissertation used to tackle complex school problems together. Interrelated concepts of all dimensions of innovative problem-solving processes are hypothesized to ultimately lead to systemic change in education.

Research Related to Innovation in Schools

Deeply rooted in reform initiatives and leading innovative school change are the teacher PLCs described in the previous section. School support groups aim to encourage teachers to discover, share, shape, and acquire teaching and learning materials (Sotirou et al., 2016). Fostering shared collaboration requires the teacher to become a core change leader in developing CoPs. Strong emphasis is given to teacher CoPs as a vehicle for introducing innovation and for alternative to traditional professional development approaches (Sotirou et al., 2016). Teacher networks with formal features, usually a part of national initiatives, led to the creation of CoPs (Sotirou et al., 2016). This describes groups formed for the purpose of sharing knowledge about professional activities. Sharing peer-to-peer activities in a professional setting can lead to innovative future practices and members are more likely to develop ownership and involvement in the activities (Sotirou et al., 2016).

When empowering teachers to engage in innovative practices, personal and individualized support is essential. There is no one-size-fits-all type of development for these groups, so schools design the types of activities they will target for the group process to be most beneficial. The ways teachers within PLCs establish support and trust with each other impact motivation and willingness to share resources and activities with each other (Sotirou et al.,

2016). Conditions for collaboration to occur within these communities will be discussed in more detail in the sections that follow.

Design Thinking as a Tool for Innovation

Human behavior is context dependent, making the formulation of problems and their solutions difficult (Bandura, 1986). Design thinking was first approached as innovative curricula that related to present-day practices of creative thinking by John E. Arnold. Arnold worked with other creative thinkers and collaborators to summarize research on creative thinking and implications for practice (von Thienen et al., 2018). Creativity was described as a characteristic of people to allow them to realize their own potential. Arnold introduced the idea of problem framing and opening structures for solution spaces; producing a coherent vision out of messy problems (von Thienen et al., 2018). With these characteristics and ideas, the concept of being a reflective practitioner was developed by Donald Schon and embraced within the design thinking community in 2013 (von Thienen et al., 2018). In design thinking research, there is strong concern for human needs. This concern for human needs matches both Arnold's historical perspective of design-thinking, but also present-day design thinking values. Knowing the roots of the scientific comprehension of design thinking can improve our understanding of ourselves (Leifer & Meinel, 2016).

Design thinking relies on local expertise to uncover local solutions (Brown & Wyatt, 2010). Another philosophy of Arnold's includes instructional practices to foster creative confidence rather than rigid method use. This is a strategy design thinkers still retain today. A central idea in this strategy is to regulate success and failure attempts students have in class and build up a sense of resiliency and confidence pedagogically (von Thienen et al., 2018). In Arnold's framework meta-cognitive control for creative activities includes: monitoring,

regulating, and balancing three thinking modes, monitoring and carefully selecting communication means, monitoring and adapting one's creative process, and noticing and overcoming creativity blocks (von Thienen et al., 2018). It should be noted Arnold's historical framework focuses on individuals, while the design thinking community emphasizes innovation within a team.

There is sustained development of the design thinking concept in academic research. The discourse of design thinking can be broken down into two categories: 'designerly thinking,' linking theory and practice from a design perspective, and 'design thinking', describing a designer's methods integrated into academic or practical discourse (Johansson-Skoldberg et al., 2013). Simon, considered to be one of the original thinkers of design research gave a definition of design as 'the transformation of existing conditions into preferred ones' (Simon, 1996). Schon used organizational learning and reflection to become the core of his design work (Johansson-Skoldberg et al., 2013). Buchanan, another pioneer in design, introduced the idea of 'wicked problems' or complex problems without a single solution and where much creativity is needed to find the right solution (Johansson-Skoldberg et al., 2013). The wicked problems approach was formulated by Horst Rittel in the 1960's, who sought an alternative to a linear, step-by-step model of the design process (Buchanan, 1992). Buchanan attests there is no area of contemporary life where the plan, project, or working hypothesis design is not a significant factor in shaping human experience (Buchanan, 1992).

Many of the frameworks of these design thinkers have been compared and consolidated over time. Design thinking has become a portal to contribute to innovation, and a way to surpass strategic management to deal with complex problems (Johansson-Skoldberg et al., 2013). IDEO is the world's largest design company markets itself as an innovation company and co-operates

with Stanford University. IDEO was formed in 1991 focused on traditional design work for businesses. By 2001, IDEO was being used to tackle problems beyond traditional design (Brown & Wyatt, 2010). Teamwork is an important part of the IDEO process (Johansson-Skoldberg et al., 2013). Not all members of IDEO are trained to be expert designers, IDEO works to use the concepts of design thinking to conceptualize earlier models (Johansson-Skoldberg et al., 2013). The concept of design thinking in management consists of three elements: a set of practices, cognitive approaches, and mindsets. Design thinking relies on our ability to be intuitive, to recognize patterns, to construct ideas that have emotional meaning while being functional, and to express ourselves other than in words and symbols (Brown & Wyatt, 2010). Many social organizations use some aspects of design thinking, but most stop short of embracing the approach to move beyond traditional problem solving (Brown & Wyatt, 2010).

Design thinking incorporates user insights in depth and rapid prototyping, all aimed at getting beyond assumptions that potentially block effective solutions (Brown & Wyatt, 2010). There are three primary ways design thinking is being used in education today: (a) as a teaching tool, (b) as a tool for teachers to design learning experiences, and (c) as a tool for school leaders to design school change (Gallagher & Thordarson, 2018). Design thinking is a process for solving problems with creative action. The process involves "wicked problems"—problems that are difficult or impossible to solve because of contradictory or changing requirements can be challenging to recognize (Gallagher & Thordarson, 2018). There are traditionally five steps involved in this human-centered process: empathize, define, ideate, prototype, and test. The process begins with establishing a wondering or question for the work. While becoming more aware of the values, assumptions, and identity of those involved (i.e., *empathizing*), participants reflect on their own personal biases and what they think they know or do not know about a given

problem. During the empathize step, participants learn more about the audience for whom they are designing. Through empathy interviews, observations, or immersion, groups examine a person's experience or environment to enter the world of the users. This requires groups to identify who the users are and examine the world from their reality as a starting point to the process (Gallagher & Thordarson, 2018).

During the *define* stage, participants attempt to find out the needs of the intended users. What problems are users really solving? Some problems are defined initially in the process and others are uncovered as the design process proceeds (Gallagher & Thordarson, 2018). In the next phase, participants *ideate*, brainstorming as many creative solutions as possible. A *prototype* is created and teams build a representation of their ideas to show others. Sharing the prototype and getting feedback from others is a part of this step. Teams iterate between the prototype and *testing* for honest feedback as many times as needed. Reflection is an ongoing component of thinking. Teams must include time for reflection at various points in the process, which includes checking on the emotional status of the team and building in time to connect, build trust, and provide a safe space to release honest emotions (Gallagher & Thordarson, 2018). Designers change goals as they design and are flexible in selecting and trying different solutions and remain solution focused rather than problem focused (Razzouk & Shute, 2012).

Design thinking includes a strong emphasis on team-based learning regarding the problem and possible solutions (Lindberg et al., 2010). Stanford University's d. School has explored ways to utilize design thinking approaches in a variety of contexts. As defined by the d.school, the design thinking process is about using a human-centered approach to create innovative solutions to a problem by following the five-stage design-thinking process. (Aflatoony et al., 2018). Design thinking has received increasing attention in the business world

due to its success in the design of products and services and overall competitiveness (Aflatoony et al., 2018). Some companies are striving to become design leaders. In school settings, students use the design thinking process to think about and solve complex problems. Educators use this type of process to support students in developing the skills needed to be successful in an interconnected world. In educational contexts, design thinking skills involve problem-based learning, project-based learning, and inquiry-based learning. In addition to business and education, engineering, architecture, and design have all found useful applications for design thinking (Razzouk & Shute, 2012).

Stanford University's d.school

Stanford University's d.school designed a guide to prepare trainees to engage in the process of design thinking (Doorley et al., 2018). The guide offers an overview of the different stages of the process as well as advice about engaging in the process meaningfully. To reach deeper levels of observation, teams are encouraged to look at *what*, *how*, and *why* to understand *how* emotions and motives impact problems of practice, sometimes in unseen ways. Through a series of empathy interviews and other structured activities, participants are encouraged to brainstorm questions, identify themes, refine questions, and encourage stories as interviewers stay observant and aware of body language and emotions. A journey map is a tool to dissect the process into moving parts after conducting interviews and is utilized for fostering empathy and communicating findings to others. Stanford's d.school encourages reliance on guidelines that are able to be adjusted and modified as more information unfolds in the discovery process. When testing a prototype, users talk through their experiences and actively observe and follow up with questions. There are various suggestions for giving feedback during the design thinking process, including a feedback capture matrix (Plattner et. al, 2016).

The prototyping and testing processes vary depending on four key components: people, objects, location, and interactions (Dam & Siang, n.d.). Sketching is a common way to map out ideas or diagrams into mind maps, in order to illustrate the structure of ideas. Storytelling is another key component of the design thinking process; storyboards can guide participants through a user's experience. Storyboarding is used to empathize with users' needs and for generating high level idea discussions. Role playing, or experiential prototyping, allows users to explore scenarios physically. Physical models are used to visually build a mock-up for testing. A user-driven prototype is developed to generate an understanding of how the creator thinks of certain issues. With such a wide range of prototypes developed from this process, users must keep in mind what the idea is about, the questions they want to ask, and connect which prototype makes the most sense for the problem of practice (Dam & Siang, n.d.). These prototypes serve as collaboration outcomes from the team process of design thinking and are models used in Stanford's d. school.

Design activities explore how systems work. When human behavior is involved, utilizing a design process allows the users to organize aspects of the issue into interrelated parts or issues while considering the behavior of the participants. The design thinking process places teams at the center of constructing knowledge, rather than receiving it (Hmelo et al., 2000). Through problem solving and discussion about artifacts, teams focus attention on concrete aspects of the adaptive problem as they are communicating with each other by engaging in parts of the process or explaining the created prototypes or models for feedback cycles. The feedback process allows teams to participate in reflection and build an understanding of the interconnections between the structural and behavioral parts of the issue. The facilitator plays an important role in the process as she is responsible for moving the participants through various stages of the problem and

monitoring the overall group process. This requires scaffolding based on the group's experiences and adapting to the needs of the group as users get to know one another. Designers explore myriad potential solutions and select the one that offers the best potential for success under the circumstances (Hmelo et al., 2000). In design thinking, users develop a list of potential solutions and ideate, prototype, test, and reflect until coming up with the solution that will lead to the best solution.

Design thinking fosters innovation by creating a common language, common artifacts, and culture centered around trust (Gallagher & Thordarson, 2018). It is critical for teams who engage in this process to establish norms and purpose protocols. These include everyone on the team in the process and keep the team's work on track. Although there is a well-established process in place, design thinking encourages engagement of all team members and adjustments from feedback processes along the way. When assembling a team to partake in this design journey, consider the diverse make-up of those working to tackle an issue. Understanding who you are designing for and the average user helps the team to identify extreme users who have needs magnified in some way. Finding a way to engage all users allows school teams to create and design unique experiences that fit the entire school community (Gallagher & Thordarson, 2018). The design thinking process helps teams to identify problems and develop creative solutions that involve all stakeholders, when the appropriate conditions are in place. The d-school, in particular, provides ready-made activities and strategies for users to replicate back in their school settings when seeking collaborative outcomes.

Open Discovery Space Innovation

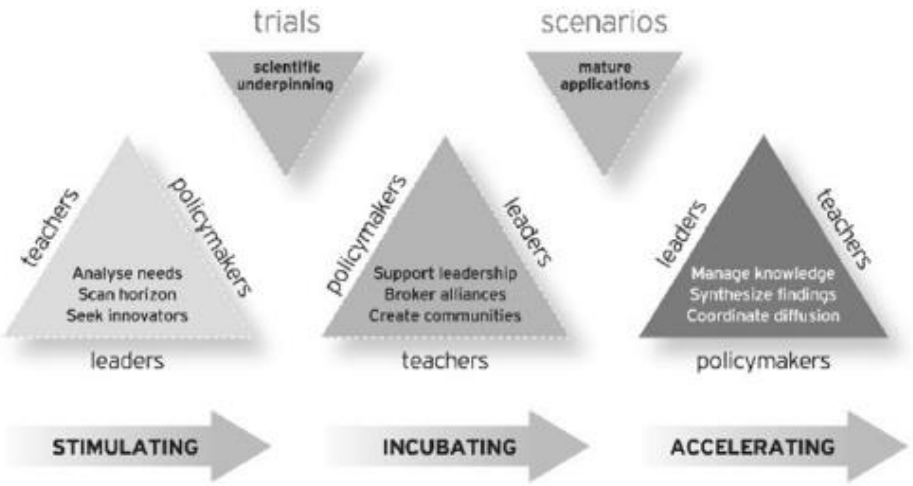
One framework for innovation is the Open Discovery Space Innovation model. The model focus was on mapping the process and developments of "change agent" skills, developing

a model for strengthening teacher competencies, and contributing to practicing communities (Sotirou et al., 2003). A team of researchers studied one application of this model as it was designed and applied during a three-step process to stimulate, incubate, and accelerate innovative practices in school communities and national policies (Sotirou et al., 2003). In the study, a local team of teachers analyzed school needs and identified areas of opportunity for innovative approaches. The second phase of this process encouraged a broader school community focus for participation to reflect on the use of certain tools, resources, and practices through reflections and workshops. CoPs were developed around the implementation ideas and noted as a critical element in the success of the proposed innovative changes. The third phase aimed to accelerate and expand changes significantly within the school. Users were asked to reflect on and synthesize evaluations and school needs following the changes that occurred.

Figure 2 illustrates the Open Discovery Space Innovation model of school innovation and reform, based on the study of using teacher communities as a vehicle for introducing innovation. The development of these CoPs around the identified tasks and goals was a critical element of success. Like design thinking, teachers build capacity and take ownership in high level content scenarios, mental models were shared as a source of inspiration. Assessment tools included: leadership and vision, curriculum, school culture, professional development, and resources and infrastructure. The training academy implemented in this study gave teams the competencies needed to act as change agents while implementing innovative solutions in their settings (Sotirou et al., 2016). In this model, teams moved through cycles of defining identified tasks and goals, brainstorming ideas, prototype, test, and reflect. Mental models served as the prototype. This initiative had a positive result in engaging schools in the implementation of innovative activities (Sotirou et al., 2016).

Figure 2

Open Discovery Space Innovation Model of School Innovation and Reform



Note. From "Introducing large-scale innovation in schools," by S. Sotirou, K. Rivou, S. Cherouvis, & F. Bogner, F, 2016, *Journal of Science Educational Technology*, *25*(1), p. 541-549. Copyright 2016 by Journal of Science Educational Technology in Public Domain.

Remote Networked Schools

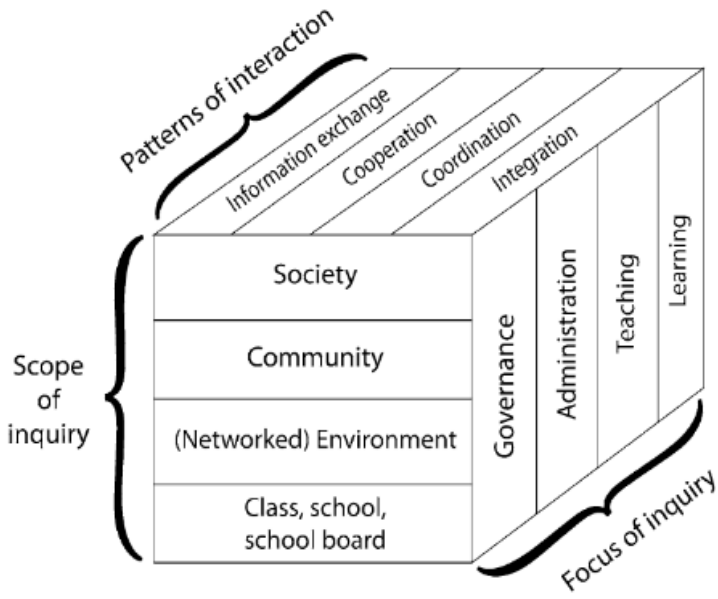
In Turcotte et al.'s (2010) study on Remote Networked Schools, a knowledge transfer agency and university researchers examined collaborative online tools and activities and reinventing teacher practice. A remote networked school aimed to examine the potential of information and communication to enhance the educational environment in rural schools

(Turcotte et al., 2010). This initiative took the problem with lack of communication due to location and posed a networked and community solution to helping schools to operate in a more effective way. The project was designed to lead to further research and funding for innovative technology programs as a major educational innovation. The research was focused on the relationships between systems and the cooperation of those within. How each school connects to other schools was examined in multiple ways: classroom to classroom, school staff to school staff, and across school teams. The project was inspired by school success, educational reform, and innovation research. There were multiple dimensions involved in the Remote Networked Schools initiative.

The first dimension covers the system level as the focus for change effort (i.e., the learning experience, instruction, administration, or governance). The second dimension is the scope of the design inquiry, presenting several items to examine: the boundaries of the current system, the broadening of the boundaries of the existing system, the extension of boundaries, and the large society as a space of the design (Turcotte et al., 2010). The third dimension concerns relationships between educational systems and other organizations and outside agencies. The dimensions were developed to illustrate the context within which to explore and create new images of education and select from various alternatives to find the most promising one. According to Banathy (1991), the systems design approach is key to successful systemic change in education. The interrelated nature of the components of the educational system requires systemic change to bring fundamental and sustainable change (Kahn & Reigeluth, 1993). The model in Figure 3 shows how events, observations, and exchanges with stakeholders at the local level impact other dimensions involved in innovative initiatives.

Figure 3

Adaptation of Banathy's (1991) Model



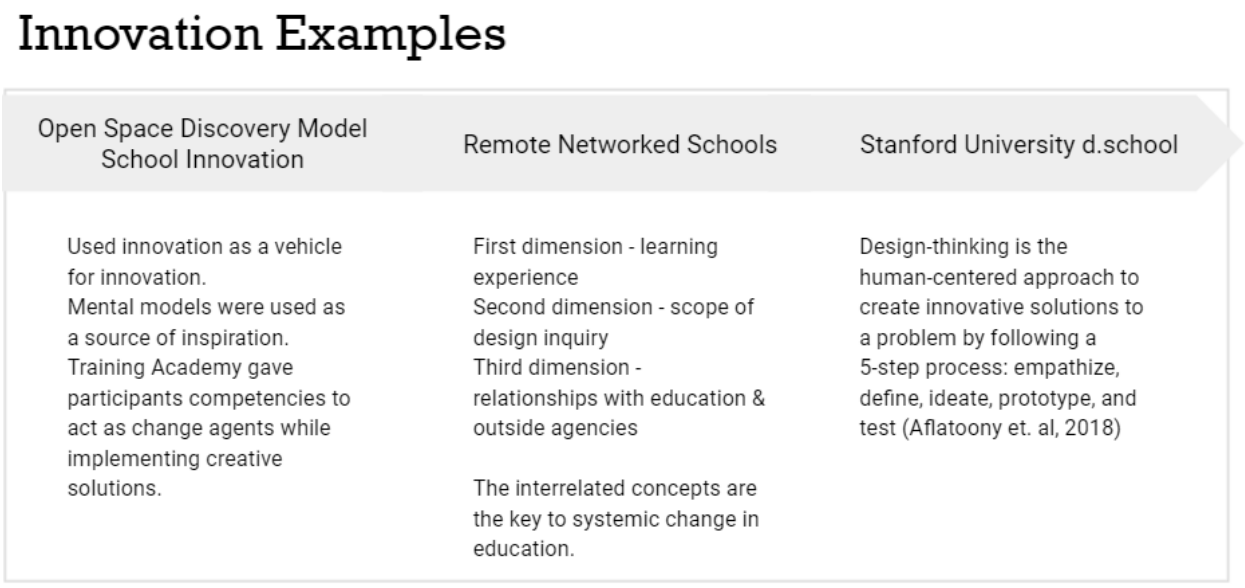
Note. From *Systems design of education: A journey to create the future*, by B. Banathy, 1991, p. 285-299. Copyright 1991 by Educational Technology Publications. Reprinted with permission.

Knowledge is both a source of innovation and a barrier to it. Innovation is a social process in which distributed knowledge is activated through establishing connections and cultivating those relationships within practice. As in the Remote Networked Schools, the process of innovation is spontaneous and emerges from a community of practitioners, but it is also sustained organizationally as a learning practice (Hager et al., 2012). Schools are looking outside of their own buildings and even into other fields to gain new ideas, inspiration, and innovation

(McCharen et al., 2011). Teachers look outside of their own classrooms and into their teams and larger school setting to learn and grow which further cultivates conditions for collaboration to occur. Support and professional development are being designed to relate to day-to-day instruction and teachers' genuine needs (Sotirou et al., 2016). All levels of the school system must engage in redesigning practice if innovation is to be successful (Sotirou et al., 2016).An overview of the innovation examples found in this research is found in Figure 4.

Figure 4

Overview of Innovation Examples From Research



Note. Adapted from Sotirou et al., 2016; Turcotte et al., 2010; Doorley et al., 2018.

Support and Empowerment of All Stakeholders

A common strategy as an organization targets change is to set an objective on the front end of a project to guide decision making and to adjust objectives as needed. Formal or informal surveys are used to solicit stakeholder priorities. Learning about the elements of the decision-making process is important within individual organizations. The need for an inclusive learning framework that allows decision elements to evolve as greater learning occurs, stakeholder priorities change, and perspectives shift supports the need for a more systematic approach to double-loop learning (Williams & Brown, 2018). Double-loop learning can be defined as a way to identify a problem's root causes rather than treating surface symptoms (Kaplan & Owings, 2017). Double-loop learning can include adaptive changes to routines and structures (Berta et al., 2015). This process includes recognizing when elements of decision making need to be revisited and how alternatives are identified and incorporated. Because the role of stakeholders is critical in all aspects of the learning and decision-making process, promoting their continued support and involvement is of great benefit.

Empowering Organizations

An empowering organization can increase personal, relational, and collective well-being. A relational or structural perspective views empowerment as a set of structures, policies, and practices by which authority and responsibility are distributed from upper- to lower-level employees. Promoting an empowering organization focuses attention on aspects of the organization to be modified or redesigned to allow members to perform more effectively, have power over their work, and feel and exercise control over the outcomes for which they are responsible (Francescato & Aber, 2015). Promising examples of these types of practices include four conditions—information, sociopolitical support, opportunity for advancement, and access to resources—as well as transformational leadership, creation of a participative work climate,

building collaborative governance structures, job enrichment by creating self-managing teams, and building intrinsic task motivation (Francescato & Aber, 2015).

Francescato & Aber, 2015 experimented with constructs and methodologies to find which ones were particularly empowering. One of the most empowering factors was the competence group members were able to acquire by examining the different facets of the organization. The skills acquired by the group increased both the knowledge and appreciation of the various kinds of contributions from multiple stakeholders within the organization. The most frequently empowering factor mentioned was the discovery of problems perceived to be impossible to solve that could be tackled by using viewpoints on the same problem from other dimensions (Francescato & Aber, 2015). This type of empowerment also increases the voice of historically underrepresented groups and allows organizations to develop an understanding of multiple perspectives with the same goal of problem solving within the group.

When examining the different facets of the organization and leading organizational change, all system levels must engage in the redesign efforts, which include a variety of stakeholders, perspectives, and voices. Teacher teams are no different; teachers have reported a better sense of self as they became aware of the value of their expertise and taught other teachers when working together (Turcotte et al., 2010). CoPs within networked schools allow for teachers to have processes of adopting innovation at the classroom and then school level. Administration and governance over school levels play a role in the redesign efforts of teacher teams. This includes adjusting initial needs to teachers' genuine needs for support and assistance (Turcotte et al., 2010). When examining the conditions and outcomes of collaboration, teacher self-efficacy, team learning, and teachers having a role in the decision-making process allows for teachers to adopt processes of innovation in the classroom and school level.

Teacher Design Teams

Teacher Design Teams are creative spaces where groups of teachers work together. These are related to other teams with this study such as design teams, communities of practice, and professional learning communities in they provide teachers a space to carefully approach problems with the support of a network for solutions. Teaching is a complex and multifaceted task, and teachers fulfill intellectual and social needs by participating in teams. Creative space must be given for teachers to examine their subject matter, work together, and challenge each other's thinking (Simmie, 2007). Experienced and novice teachers have varying personal and professional development needs to build their creativity and share their experiences. When teachers work collegially, they feel empowered to design, learn to change, and develop leadership capacity. Teacher Design Teams are created with the intent to provide a space where teachers maintain professional dialogue and design and work together for the benefit of their own professional development. Teachers' need to build and develop their capacity and creativity in collaboration with other teachers is something policymakers often underestimate (Simmie, 2007).

As teacher experience level increases, self-actualization becomes a part of the reflection and capacity-building process in being a part of a Teacher Design Team. Teachers desire to leave an organization better than they found it and to leave a legacy. Participation in effective and innovative design teams does not come without thoughtful intention and commitment. A high level of energy is required, and this does not happen by chance. Educational reform includes tackling curriculum concerns or initiatives with the development of teacher teams and dedicated professional development for teachers. A key indicator of growth and sustainability in these

teams is the degree to which teachers feel empowered and supported as a result of their participation in the team (Simmie, 2007).

Innovative Nursing Teams

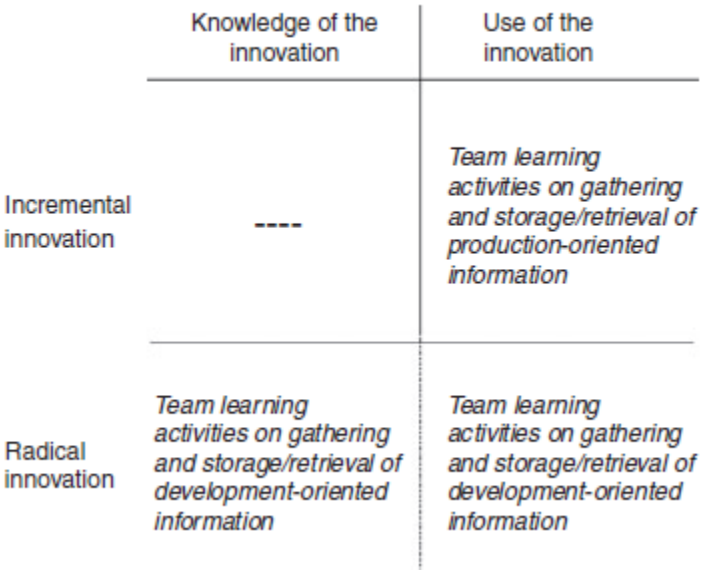
Research about the effectiveness of teams in the nursing field presents comparable parallels to education. In nursing, team learning is encouraged. There is no single, best method for organizing teams because each team acts according to a specific context. How teams learn and innovate continues to be an area of research and focus for organizational learning and working on a team is an important competence most organizations (Timmermans et al., 2013). Nursing teams must simultaneously produce and innovate nursing care. Innovations on these nursing teams include introduction of new products, the use of information computer technology, or changing ways of organizing nursing care (Timmermans et al., 2013). Similarly, educators work together to produce learning activities and innovate based on student needs. Ideally, team learning promotes a shared understanding among members (Vangrieken et al., 2015).

Timmermans et al. (2013) found two types of innovations exist in nursing teams: incremental and radical. Incremental innovations are improvements of the current practices. Radical innovations are fundamental changes to current practices disruptive to current ways of thinking and practicing (Timmermans et al., 2013). Team members' underlying values and beliefs influence the safety and learning competencies of the individuals on the team. Like in education, nurse teams are described based on a team culture, where values, belief systems, and relationships among team members help or hinder team learning. Researchers used a cross-sectional study to gather self-reported data from individuals in nursing teams. Knowing the factors that influence change, including the environment of continuous change challenges,

allowed the researchers to explore the effect of team learning on the knowledge and use of incremental or radical innovation in nursing teams.

Figure 5

Contingency-Frame Team Learning Activities and Innovation Implementation in Nursing Teams



Note. From "A contingency perspective on team learning and innovation in nursing," by O. Timmermans, R. Van Linge, P. Van Petegem, B. Von Rompaey, & J. Denekens, 2013,. *Journal of Advanced Nursing, 69*(2), p. 363-373. Copyright 2013 by Journal of Advanced Nursing. In the public domain.

Nurses give and take feedback, ask other nurses for help to solve problems, and apply strategies to innovate their nursing or care. Timmermans et al. (2013) concluded team learning did not relate to obtaining knowledge of incremental innovation. The team learning activities

affected the implementation-effectiveness of the incremental innovation. Radical innovation in this study included teams who received training and education related to making team learning activities most relevant. Teams adjusted their learning activities based on the type of innovation. If a team did not provide appropriate learning or activities, the overall implementation-effectiveness of an innovation was decreased.

Communities of Practice

A CoP is tightly interwoven with the development of a collective identity and then cultivated to support the creation and sharing of knowledge (Hager et al., 2012). Effective school innovation must operate at a collective level. In this dissertation, innovation refers to the school's way of engaging in and supporting new ideas based on a complex problem of practice and the creative results. Innovative schools are typically characterized by strong social connection among teachers as well as trust, friendship, and closeness (Schwabsky et al., 2019). Innovation is an idea, practice, or object perceived as new (Schwabsky et al., 2019) and includes the idea (or practice or object), its implementation, and an outcome resulting in a significant change. A school's culture supports two dimensions of innovation: the intent to be innovative and the environment to implement innovation.

Changing practices frequently requires changing teaching and learning activities beyond the knowledge or control of individuals and outside their field of vision. A key issue in thinking about the relationship of practice to learning is understanding how practices change, as well as how they are stable and enduring (Hager et al., 2012). Innovation is not just the result of deliberate activities that introduce challenges in working practices; it is also produced by those who engage in routine work practices in their jobs. Innovation is considered a continuous process because knowledge is produced through participation in a set of work practices that lead to the

development of a collective identity; this participation entails the negotiation of meanings and evaluation of practice. Innovation requires continuous refinement of practices by those who have created them (Hager et al., 2012).

Collaboration and collegiality are organizationally embedded into the working conditions of schools. The school context includes both structural and cultural working conditions. For these concepts to be most widely accepted, a cultural perspective must be established through sense-making, norms, and established values. PLCs contribute to the professional development of teachers and overall school improvement. These teams must balance relationships with authentic professional learning (Vangrieken et al., 2015). A characteristic of collaboration is its task related focus, working and reflecting together for job-related reasons.

Professional CoPs are a school-level program, involving the whole school as a professional community or even teachers from different schools. It is also a small group of teachers teaching similar subjects or students. These teachers are bonded together based on a shared set of values, rather than working in isolation. Teacher communities have characteristics of mutual support, collaboration, and collegiality centered around improving student learning. There are three dimensions of CoPs: (a) mutual engagement, (b) a joint enterprise, and (c) a shared repertoire (Vangrieken et al., 2015). Activities include discussion, decision making, building a group identity, sharing goals and interactions. A team is defined as a collection of individuals who are interdependent in their tasks, share responsibility for outcomes, and are seen by others as an intact social entity (Vangrieken et al., 2015). Teams are made up of individuals across the school, grade level, content area, or a fixed grouping of some kind. Communities of practice are teams similar to the teams in this study because of the shared values, building of a group identity, and shared responsibility for outcomes.

Feeling a sense of belonging and affinity within the team and being perceived as a team member is important. There is a need for group members to rely on each other for task completion and performance and the accomplishment of goals depends on others. Deep-level collaboration—characterized by discussing problems teachers are facing, observing each other in the classroom, and critically examining one's own teaching practice—is rare (Vangrieken et al., 2015). Many teachers find themselves strapped for time and feel confined to talk about more practical or managerial tasks and focus most attention on planning and discussing materials (Vangrieken et al., 2015). In order to be most effective, collaboration touches the underlying beliefs of teachers to enhance real school change and improvement. Collaboration is not always associated with positive reception and success, and there are risks involved with teachers working as a group. Teachers might experience tensions, competitiveness, or a loss of autonomy (Vangrieken et al., 2015). Factors such as team size, tenure, supportive atmosphere, leadership, and collective efficacy impact the group process (Vangrieken et al., 2015

Conditions for Collaboration

Environmental factors can foster collaboration. Organizational innovation is a process for innovation and the cultural aspects in schools that lead to improved quality of education and policy (McCharen et al., 2011). A supportive learning culture encourages members' continuous and collaborative learning while providing strategic leadership and inter-departmental connection (McCharen et al., 2011). The cultural aspects of a school dictate the levels at which staff collaborate and learn with each other. Teacher empowerment through shared decision making and building trust is associated with learning in organizations (McCharen et al., 2011). Building teacher capacity and trust fosters a dynamic learning climate and promotes job autonomy (McCharen et al., 2011). School teams adapt to complex situations, adjust and seek to

improve, and continually revise their effectiveness and tend to produce better results with organizational innovation (McCharen et al., 2011). Knowledge sharing cannot exist without access to new ideas, professional learning created by members of the school community, and a process for sharing knowledge and decision making. Components of a supportive learning culture include continuous learning, inquiry and dialogue, dynamic team-based learning, empowerment, system connection, and system and strategic leadership (McCharen et al., 2011).

The Administrator's Role in Group Innovation

The group innovation process is not a linear process and operates in two phases: creativity or ideation and implementation (McCharen et al., 2011). One factor impacting a groups' innovation ability is the makeup of the team. A diverse team and a variety of perspectives leads to innovative solutions. When teachers and staff members feel involved in the decision making, this enhances a sense of fairness and trust within the school (McCharen et al., 2011). Teachers develop a sense of ownership and have a more favorable attitude towards the school and are more willing to take on added responsibilities. In this way, there is a link between administrator support and teacher outcomes (McCharen et al., 2011). When administrators build groups intentionally, develop time within the school day for teachers to meet in teams, and plan meaningful professional development for teachers, the learning culture for both students and teachers improves (McCharen et al., 2011). The school leader plays an important role in creating the conditions for a positive and supportive learning culture within a school. It's important to understand the administrator's role in supporting teams; this could be an important factor in the success or failure of team-based design-thinking processes.

Developing Trust & Capacity

Specifically, school leaders create the conditions for teachers to feel safe taking risks to innovate and work openly with their colleagues. This requires trust from teachers and the perception of job autonomy given from the leadership team. Schools are generally organized into a series of teams based on grade level, content area, or shared students. The connections between the teachers on the teams and how they are trusted to operate within their teams influence the effectiveness of the groups' work together. Professional learning teams are also a part of the school's learning culture and are developed to deliver learning experiences to colleagues as opposed to a professional learning community. As an example, developing trust and capacity to work collaboratively is a necessary condition in successful professional learning teams (Stafford, 2017). To encourage this type of connection on all school teams, leaders place their efforts towards improving coherence, capacity, commitment, and collaboration among members (McCharen et al., 2011). Shared responsibility, decision-making, vision, and commitment greatly impact the school organizational capacity. Teachers must be encouraged wherever possible to build deep relationships with their colleagues and be empowered to guide their own professional learning and courses of action within learning teams (Stafford, 2017).

Trust can refer to a person's or group's feelings at ease in a situation of interdependence, based on the confidence the other party is being competent, honest, and open (Schwabsky et al., 2019). Faculty trust refers to teachers' beliefs in their principal, colleagues, students, and their parents (Schwabsky et al., 2019). Trust liberates teachers to innovate without fear of retribution and encourages collaboration among teachers and other parties. Therefore, it is a valuable resource in times of flux and change (Schwabsky et al., 2019). Without trust, a culture of innovation is not likely, even when collective teacher efficacy is high (Schwabsky et al., 2019).

School leaders create conditions for trust by being trustworthy themselves and promoting goals to encourage trustworthy behavior from all members of the school community. Effective leaders differentiate their approaches to creating the conditions for trust and innovation based on the needs of individual teachers in their employ.

Personalized and individualized support is necessary to empower teachers to engage in innovative practices and trust those they are working with (Sotirou et al., 2016). There is not a one-size-fits-all approach to support for school leaders. Each team should have a diverse makeup and commitment level of team members, driven by a set of shared values and expectations from school leaders. A community-building approach supports the development of trust among teachers when teachers are supported to become the creators and contributors of their educational environment. School leaders support the learning of all teachers and encourage a collaborative culture among students, families, and colleagues. When teachers feel administrators trust their instincts, they begin to trust their own instincts and lead through inquiry (Collay, 2013).The partnerships teachers build with those who provide relevant support contributes to helping teachers transform themselves, their students, their colleagues, and their communities (Collay, 2013).

Theoretical Framework

Two theoretical frameworks will be used in this study: organizational learning theory and collective teacher efficacy. This study will outline the lenses of organizational learning and collective teacher efficacy and describe how school leaders create conditions for collaboration to occur by implementing practices related to both theories. Grounded in social contexts and relationship building, both theories contribute best practices for building capacity while engaging in learning processes, ultimately leading to organizational change and growth. Organizational

learning provides a lens for understanding the social context about learning new things and how school leaders generate and adapt learning experiences based on the capacity and environment of employees. Collective teacher efficacy outlines how teachers and administrators build expertise, trust, and a supportive network when working together as a team.

Organizational Learning Theory

There is a need to understand more about the ways organizational learning theory applies in teams in educational organizations during the design-thinking process. Organizational learning is defined as a collective and collaborative learning process for dynamic and creative decision-making and can be applied to changes in both the internal and external environment of an organization (McCharen et al., 2011). Organizational learning theory considers the social context of the organization and factors that influence learning, the impact of innovation on learning processes, and the impact of environmental influences on the application of learning (Berta et al., 2015). The people within an organization create the context and relationships for the organization; thus, organizational learning is a social process. The job performance and tenure of the individuals within the organization influences the organizational learning (Berta et al., 2015). Adaptive learning either occurs by chance or is intentionally orchestrated. While most individuals within organizations learn through experience, learning capacity is developed as individuals adapt to organizational factors (Berta et al., 2015). The way schools generate learning experiences and adapt to the learning environment and capacity of employees is a process driven by key players within the organization (Berta et al., 2015).

Learning capacity refers to how an organization recognizes the value of new information and applies it to make high quality decisions (Berta et al., 2015). It also refers to the capacity to engage employees in higher order learning. Using this framework, efforts for change are focused

on the technical, functional aspects of the organization (Fauske & Raybould, 2005). Organizational learning theory emphasizes social relationships among the people within an organization and is grounded in cognitive and social psychology (Berta et al., 2015). Mental models and memory are shared to inform collective and individual action. Collective learning is a term for how mental models are shared and refers to learning groups within an organization (Fauske & Raybould, 2005). The extent to which frameworks and models are shared over time influences the development of the group's culture and vision. The group's culture and vision influences the culture and vision of the organization. Organizational change efforts are effectively moved forward by the work of teams and professional learning. During change efforts, teams must manage uncertainty and deflect pre-existing mental model frameworks within the organization. These models will change with adaptation over time (Fauske & Raybould, 2005).

Workplace learning is best understood in terms of the communities formed and the personal identities being changed in a given workplace (Brown & Duguid, 1991). Communities are emergent and grow in the direction of their activity process. The introduction of *teams* and *work groups* to enhance learning assumes an organization's members already organize themselves as individuals (Brown & Duguid, 1991). In other words, introducing teams into an organization's culture assumes teams and groups do not already exist. To harness innovative energy, the organization's communities must be purposefully linked and connected to each other. The way teams work, learn, and innovate in the context of communities of an organization contributes to the idea organizations should be redesigned to continue to improve all three (Brown & Duguid, 1991).

Fauske and Raybould (2005) studied a school district of about 74,000 students in the western USA. A grounded theory of organizational learning emerged based on the teachers' shared mental models and routines. Structures and systems were established to move information within the organization and between those within the organization and its environment (Fauske & Raybould, 2005). Three themes emerged from this research: goals and resource allocation, roles and responsibilities, and training. The researchers explored the development of teachers' mental models and how these models related to the processes of organizational learning; organizational learning theory informed the study (Fauske & Raybould, 2005).

Organizational learning theory encompasses both structural and social cognitive systems. An organization learns through the individual learning of its members (Fauske & Raybould, 2005). It comprises what an organization knows, its shared beliefs, values, and structures. Over time, the learning within an organization, make-up of the teams, and actions of the stakeholders within dictate which change attempts succeed. School leaders hold mental models, including developing strong and trusting relationships with others. Understanding how an organization works conceptually can lead to better understanding the process by which it evolves as a result of members' learning (Kaplan & Owings, 2017). Leaders also hold beliefs about collaboration between teachers and administrators leading to improved student outcomes.

School leaders must understand individual employee needs, beliefs, and goals to identify appropriate ways to motivate better performance and improved educational outcomes (Kaplan & Owings, 2017). Governing variables are the values within an organization stakeholders strive to satisfy. Argyris (1976) researched the impact of formal organizational structures and said organization learning involves the changing of the governing variables. The concept of ideas being tested publicly, feedback cycles implemented, and keeping an honest cycle of reflection

will move employees toward system change. An organization grows as a result of its employees' learning and behaviors (Kaplan & Owings, 2017). Team learning includes dialogue, skillful discussion, and inquiry and reflection. If teams learn, the organization learns. Systems thinking helps an organization's members see the complexities of problems. The dissection of organizational issues allows for stakeholders to take focused actions that lead to sustainable and long-term outcomes (Kaplan & Owings, 2017).

Collective Teacher Efficacy

Collective teacher efficacy refers to how teachers perceive their capabilities to positively affect student learning outcomes (Bandura, 1989). The amount of personal efficacy (i.e., self-efficacy) a teacher has influences the effort they invest in their daily instruction, particularly with students who are struggling (Bandura, 1989). The more efficacious a group is, the more motivated the team will be to take risks and tackle innovative goals. Teacher self-efficacy is an indicator of instructional innovation at the organizational level (Bandura, 1989). The world is changing rapidly, and schools are having to adjust how teaching and learning looks in response to those changes. Teachers' belief in themselves as agents of change to prepare students plays a critical role in both school and student success. Amidst uncertainty, trust is intertwined as a factor for schools developing teacher efficacy. If school leaders want teachers to take risks and innovate instructional strategies, trust is a key factor in building ownership and capacity among the teaching staff. There is a need to better understand the impact of supportive and trustworthy school leadership on teachers' willingness to take risks and build capacity on school teams.

Teachers build expertise in the process of their own individual and team learning. Being a part of a teacher team involves more than just working with a group of people. Buy-in occurs when a team shares a goal and works together to achieve the goal, assess student progress, make

mid-course corrections, and hold each other and themselves accountable. PLCs or teacher teams that do these things generate positive outcomes related to teaching quality and student learning. When teachers invest in their own learning, they are empowered to guide and generate deeper relationships with other teaching professionals. This fosters collective ownership of learning goals and outcomes for classrooms and the school. When teachers are encouraged to share authority, decision-making, and responsibility with other group members for the group's sake, cooperation often results alongside the development and improvement of other group members (Stafford, 2017).

The learning potential of collaboration and building collective efficacy depends on the interdependence of group relationships. Teacher collaboration affects teacher learning (Meirink et al., 2010). Teacher learning is the ongoing process of engagement in activities that result in changes in teacher practices and beliefs about teaching and learning. Interdependency refers to the level of collegiality and collaboration among teachers, based on the interactions between the teachers in everyday school environments (Meirink et al., 2010). There are several different types of collegial interactions among teachers. One type of interaction is *storytelling*, where teachers learn about each other's practice by telling each other about it in moment-to-moment exchanges. Another type of interaction is *aid and assistance*, in which teachers look examine their own experiences, critically examine the experiences, and exchange feedback in response (Meirink et al., 2010). The third type of interaction, *sharing*, involves sharing instructional materials, ideas, and opinions that promote positive conversations about the curriculum. Lastly, *joint work* refers to instructional problem solving. This final type provides teachers with the most learning potential as they feel a collective responsibility that guides their individual teaching practices (Meirink et al., 2010).

Collegial interactions can also be described as social capital which refers to the collaborative power of the group (Holdsworth & Maynes, 2017). Teachers look to professional learning teams as practical, job-embedded opportunities to discover challenges and seek solutions in a collaborative environment. Such teams motivate teachers to undertake and sustain self-initiated innovation when conditions support teachers innovating their practice. Although teachers' responses to new initiatives or changes can be negative, teachers tend to be more enthusiastic and open to self-initiated change (Holdsworth & Maynes, 2017). The belief in teachers as trusted professionals and change agents offers a path to understand how collaboration outcomes occur within a school community with the increased support and trust of school leaders. Hargreaves, 1997 discussed three types of professional rewards for teachers working together: human, social, and decisional. This structure provides a lens for examining the conditions for innovation in schools among teachers (Holdsworth & Maynes, 2017). Organizational learning theory and collective teacher efficacy provide a useful lens through which to examine the factors that foster and sustain innovative and collaborative practices within a school.

The review of the literature supports the research questions, what is the relationship between a design-based professional learning process and developing the conditions for collaboration to occur and developing collaborative school outcomes? Supportive and shared team learning structures between teachers and administrators are a function of school culture and procedures (Carpenter, 2014). Educators who commit to working collaboratively in a collective inquiry process enhance school culture related to collaboration and innovation (Carpenter, 2014). It is critical to examine the relationships between professional learning and the conditions needed for effective collaboration in order to understand issues facing individual schools. These issues

are not simple and clean, but intricately connected to social, political, historical, and personal contexts.

CHAPTER 3: METHODS

The previous chapter described selected research related to design thinking, innovation, collaboration, team learning, and the conditions needed for collaboration to occur. Chapter 3 will describe the methods used in this study. The chapter will conclude with a summary of the main points and ideas.

Problem

School leadership has taken many forms as the job responsibilities of principals and assistant principals have widened over the years. For school administrators to manage complex problems of practice effectively, they must learn to address the problems they face with a design-based approach and mindset. The purpose of this study was to better understand the relationships between a design-based professional learning process involving teachers and administrators in a school and the development of conditions for meaningful collaboration to occur. This will be achieved by answering the research questions: a) What is the relationship between a design-based professional learning process and the development of conditions for collaboration to occur? And b) What is the relationship between a design-based professional learning process and the development of collaborative school outcomes? Bringing a team of diverse people together can help to experiment with, adapt to, and keep up with the changes by changing the approach to working collaboratively with each other.

Purpose

The purpose of this study was to examine the collaboration outcomes of teams participating in a design-based approach to learning and the organizational conditions which allowed those outcomes to occur. In this section, I outline the identification of adaptive problems and how the learning process will take teams through a higher-level inquiry process, with an

emphasis on how administrators work in collaboration with teachers to develop innovative solutions to complex problems while building teacher efficacy through authentic professional learning. Previous findings suggest schools with successful collaborative cultures produce consistently positive outcomes from team professional learning activities (McCharen et al., 2011). Theoretical and methodological decisions for my proposed study were guided by the research question established. A case study is a careful examination of one setting or one event. This study used one school district's professional learning program as a platform (Bogdan & Biklen, 2003).

Research Questions

This research case study aimed to address questions related to the design-thinking professional learning process, the transfer of learning, and conditions for collaboration to occur because of that learning amongst teachers, specialists, and administrators. The following questions guided the study:

1. What is the relationship between a design-based professional learning process and developing the conditions for collaboration to occur?
2. What is the relationship between a design-based professional learning process and developing collaborative school outcomes?

These questions guided my efforts to gain a better understanding of conditions school administrators foster and help to develop for collaboration to occur and the associated outcomes on school teams. There was also a focus on understanding the aspects of the team learning process and the outcomes from the process. To address the research questions most effectively, I analyzed the pre-existing data in a variety of ways and collected additional qualitative data. Qualitative data such as survey results of a pre-, mid-, and post- survey, Ignite Talks, and digital

prototypes were analyzed. One school team and their collaboration outcomes were analyzed in a case study format. A single case study method was used to understand the context for the conditions and outcomes for collaboration and innovation to occur.

Research Design

Qualitative research allows the researcher to investigate complex topics in context (Bogdan & Biklen, 2003). A case study is a careful examination of one setting or one event. Building this case study included gathering data about the program and participants, organizing data, and preparing a written narrative about the findings (Stake, 1995). The data I collected for this study was qualitative. Pre-existing data included a range of formal and informal assessment procedures in the form of survey data that took place during the professional learning program over several years of implementation. The data collection method was selected to allow for flexibility, creativity, and a diversity of perspectives and experiences to be included to make a rich case study. This included conducting a document review and coding and transcribing interview transcripts to look for themes and patterns.

I used a case study design to identify the impact, if any, of a design-thinking professional learning process in one school. My goal was to conduct categorical aggregation or direct interpretation. Two ways researchers reach new meanings about cases is through direct interpretation of the individual instance and through aggregation of instances until something can be said about the group (Stake, 1995). I will concentrate on this specific learning experience, trying to deeply analyze the parts of it and then put it back together through analysis and synthesis (Stake, 1995). The process can be replicated through observations, interviews, and document reviews. Participants included school administrators, specialists, and teachers engaged in a design-based professional learning process. With this case study, I aimed to provide a

thorough understanding of the learning process, participants involved, and the outcomes of the process. I will provide a narrative of the setting and situation, allowing for school administrators to develop conditions for collaboration to occur while working on a design-thinking team.

Context

Elementary, middle, and high school teams participated in this district-wide professional learning program. A high school was selected for this case study due to convenience and the applicability to the researcher's current position. The professional learning program outlined took place over the course of one academic school year. During this time, central office administrators served as facilitators for each school team to learn about and be led through the process of design thinking. The specific professional learning program is outlined in detail in Chapter 4. Teams were asked to select an adaptive problem of practice to approach and proceeded through the design thinking process (described in Chapter 2) to determine the most creative and innovative solution to the selected problem over the course of several in-person sessions. In order to ensure the process was conducted with fidelity along the way, central office administrators facilitated surveys and checkpoints to closely monitor progress at the middle and end of the program. The surveys were given in the form of a forced rank survey with opportunities for a written narrative to explain any answers. The school district also required products such as prototype models and Ignite Talks where users shared more in a presentation format about the final outcomes of the design thinking process. Face-to-face sessions were conducted in collaboration with schools of all levels. Facilitators paired school teams based on commonalities to give feedback and participate in reflection cycles together. As a final product, school teams presented their outcome to the entire group of participants and principals were

asked to complete a survey to evaluate overall school outcomes from participation in the program.

Participant Selection

Participants were selected from the mid-Atlantic region and based on the recommendation of central office of the selected school district, with the recommendation of university faculty members. Participants included school administrators, teachers, and/or specialists from one high school in a school district who were primary participants in the design-based professional learning program. Administrators, teachers, and specialists with a range of experience levels made up the interview candidate list. I interviewed school administrators, teachers, and specialists, with interviews lasting no more than 1 hour. Participation in the interview process was voluntary. The total number of participants interviewed from one case study school was five. Each participant went through the Design Academy program and it also included the school's principal.

Data Collection

Qualitative research seeks to better understand complex situations and is exploratory in nature (Leedy & Ormrod, 2019). In addition to the pre-existing data examined, a semi-structured interview process was used to obtain additional information about the program and the conditions for collaboration to occur. I conducted interviews and collected qualitative data of themes and patterns in interview transcripts to assess how a design-based professional learning experience led to developing conditions for collaboration to occur. I collected additional information from interview participants related to collaboration outcomes from the design-thinking process and the conditions for collaboration to occur within the context of a school setting such as learning walks protocols, PLC calibration tools, and school mission statements.

Careful selection of open-ended interview questions (Appendix A) was based on literature findings. It should also be noted interviews took place during COVID-19 remote learning during the second half of a unique school year, 2020-2021.

Participants, members of the original school design team plus the school principal, were invited to participate in an interview process regarding their experience in a design-based professional learning program to determine the relationship with team learning and developing the conditions for collaboration. Since participation was voluntary, responses and interview data collected were dependent on who chose to participate. All of those invited to participate in interviews did choose to participate. The researcher worked with central office administrators to identify participants for the interview process. All research subjects gave informed consent to participate in the interview process. Interviewees received an invitation to participate in the study via e-mail after the approval of the school district. All interviewees classified as non-vulnerable adults, 18 years or older, who are involved in a team-based design-thinking professional learning experience in one school district. Subjects drew from one high school and levels of experiences and are teachers, specialists, or administrators. Participants selected their interview time based on several available time slots. A quiet and distraction-free environment on video conference was used to hold interviews to allow for full attention to be given and a protocol for the interviews will be followed and used in a virtual format. All interviews were recorded and transcribed for in depth-analysis and understanding. The questions allowed for interviewees to explain answers and provide details about their own learning to allow me to better understand the process and resulting outcomes.

I examined the perspectives of the teachers and administrators who took part in a professional learning program focused on tackling complex school issues. In direct response to

the literature reviewed and the research questions identified, I used qualitative methods to elevate multiple voices, perspectives, and the investigation of multiple levels of educators in this school district. Data were collected while teachers and administrators were participating in the program and the qualitative data collected through the interview process represents a reflective perspective of the learning experience which occurred 1–2 years prior.

Trustworthiness & Credibility

Qualitative data from interviews guided the compilation of one case study school and were analyzed alongside pre-existing survey data from the program from the identified school in addition to supplemental documents provided by interviewees. Interviews provided background and context about the participants and their school setting. The themes and main ideas gleaned from the interviews and pre-existing data helped me gain a better understanding of how the team used learning from the design-thinking process to allow collaboration to occur in one school setting. In this case study, the researcher simultaneously collects data and analyzes them (Bogdan & Biklen, 2007). Detailed analysis of interview transcripts, notes, and reflection of the interviews helped me answer the research questions for this study.

After the interviews are conducted and transcribed, I analyzed the interviews and pre-existing data to gain a better understanding of the participants' backgrounds and initial thoughts on the learning process they experienced while in the program. The researcher also created memos from each interview transcript. Each sentence and phrase was broken down and analyzed using an inductive coding process through nVivo. From these key phrases, focus areas were identified to guide the remainder of the analysis of findings. Following coding, themes were identified. Themes emerging across from the case study were identified. A research team was used to validate themes findings using interview transcripts. The research team was not

connected with the study, but rather a set of peer reviewers. The research team was given the opportunity to dispute any data triangulation findings from the researcher. The length of this study confirms trustworthiness. From August 2018 until February 2021, the study took place over the course of a four-year span.

Research Ethics and Human Subjects Protection

Data for this study was drawn from one suburban school district with a diverse population. Only one select school is outlined in this case study research to allow for a deep dive into participant experience. Participants in this program represent a cross section of all levels of schools in the school district and representatives from a variety of positions within each school. To be considered for participation in the design-thinking program initially, building principals had to submit an application. To be considered for the school team, an educator had to be a member of the school's Instructional Leadership Team. Typically, these teams are composed of teachers and leaders selected by the principal. Pre-existing qualitative and quantitative data collected prior to this study was considered alongside the stories within the school team. These data, along with data collected through qualitative investigative interviews, were combined for a case study approach to answering these research questions.

Institutional Review Board (IRB) procedures safeguard the participants in a research process. I sought university IRB approval for this research study and Old Dominion University reviewed and approved this human subject research in accordance with the Code of Federal Regulations (Appendix C). The study was submitted to the IRB with all related forms and proof of a certificate indicating completion of training to protect human subjects. Throughout the research study, participant identities will be protected, and any identifiable information kept

confidential. Participants in the interview process will sign a consent form (Appendix D) and agree to have their responses recorded for research purposes.

Researcher Background

During this study, I had to regularly inspect my expectations and values as a school leader. Regular conversations with my university advisor helped me to understand assumptions I did not realize I was originally making. As a school leader, I am hopeful this research contributes to laying the groundwork for school leaders and teachers to implement conditions for collaboration and innovation to occur and to have a better understanding of how to encourage team professional learning and teacher efficacy. In my role as a school administrator, I have participated in team professional learning activities and as a result, I have generated a high interest in innovation and collaboration research. Participating in these events has taught me the power of collaborative learning when working as a team of administrators and teachers. It raised questions for me about school context and school leadership, and how school leaders foster conditions for others to safely take risks for the benefit of staff, students, and the larger community.

During the interview preparation and process, I had to be aware of my own assumptions and keep an open mind to the idea I am gathering as much information as possible from a diverse group of sources to inform this study. I anticipated being able to experience design-based team professional learning in a different way than I had previously, which better informed my practice and understanding of the outcomes. My unique perspective as a former participant and now researcher allowed me to better understand participants' experiences and make recommendations for similar learning programs in the future. My passion as a professional and leader and desire to

learn and share concrete examples and experiences about this topic make this study a valuable addition to this research base.

Researcher Bias

Reliability is the degree to which an assessment strategy yields similar results when the entity being assessed does not change (Leedy & Ormrod, 2019). A strategy can be valid only to the extent the data are also reliable. Researcher bias is inherent in this design and acknowledged in this study. It is important to enhance the understanding of how teachers and leaders learn and transfer the learning within their contexts and to also understand the impact of design-based team professional learning and the conditions for collaboration to occur. The consideration of organizational structure and how the case study school builds teacher self-efficacy will also be used as a lens for this study.

Limitations

This study was conducted during a global pandemic, COVID-19, which limited the physical interactions occurring with human subjects. Interviews took place via Zoom and were audio recorded. Preliminary data collected from participants in this program were collected over the course of 2 years prior to the pandemic. During Year 1 of the program, a pre-test was not administered and during Year 2 of the program, a principal evaluation was not administered due to COVID-19. Our single case study school used in this study participated in the first year of the professional learning program. Therefore, there are factors outside of my control that limit the types of data collected. There will also be a difference in the roles in which participants went through this process—whether teacher, administrator, or specialist—and therefore their shared experiences and perspectives will vary. I anticipated differences in the roles existing within the

case study school impacted the collaboration outcomes and conditions that occur, which is why a case study approach is used.

Conclusion

The purpose of this study was to gain a better understanding of one schools' participation in a design-based team professional learning process and developing conditions for collaboration to occur. This study used semi-structured interviews and a compilation of pre-existing data, including survey data and qualitative data created by program participants such as prototypes and presentations created by group members. My main goal was to determine how school teams transferred outcomes from a professional learning experience to their school context and what conditions developed by school leaders allowed for the transfer to happen. Findings from this study cannot be used across the entire field of educational leadership because the number of participants is small and confined to one school district. Little research has been done in the area of design-based team learning and developing collaborative school conditions in the educational context. This study informs, in greater detail, how a design-based professional learning process can allow for teams of teachers, specialists, and administrators to transfer learning in a collaborative way across levels and school contexts when applied in their education settings.

CHAPTER 4: FINDINGS

The purpose of this chapter is to present findings from the data in relation to the research questions. The research questions are:

1. What is the relationship between a design-based professional learning process and developing the conditions for collaboration to occur?
2. What is the relationship between a design-based professional learning process and the development of collaborative school outcomes?

The findings presented in this chapter are based on the analysis of data collected through interviews and pre-existing documents. The findings from the data analysis will provide insights into the two research questions in this study.

In presenting the findings, I first offer an overview of the Design Academy program year in review for the reader to have a comprehensive understanding of the design-based professional learning process. Next, I present the leader and teacher testimonies and the common themes and patterns gleaned from the interviews. This includes an individual breakdown of the collaboration conditions and outcomes, organized by research question, to clearly articulate the findings. Lastly, I include a summary of pre-existing data and documents and provide a summary overview of the findings.

Professional Learning Program Year in Review

It is important to understand the process the case study school participated in over the course of a school year from August to June. The professional learning program, Design Academy, was developed and facilitated by professional learning specialists in Vanderbilt School District, located in the mid-Atlantic region of the United States. As mentioned in previous chapters, participants were required to submit an application and all school team members agreed to be a part of the school's Instructional Leadership Team (ILT). The overview

of this year in review program was divided into four quarters of learning over a yearlong period, beginning with pre-work to be completed prior to starting the program. Once accepted into the program, participants were given an overview of the training, including a statement of purpose, vision, and a required pre-work reflection to complete prior to the first session. Participants were asked to embark on a journey to enhance their effectiveness as agents of change within their roles as school leaders and members of their school's ILT. The school district communicated participation in the Design Academy would allow participants to develop insights about how to apply theory and practices into everyday work situations while exploring and refining their roles as leaders and making connections between school leadership and student outcomes. While there were many routes this school division could have chosen to tackle school change, Vanderbilt School District selected design thinking because of the unique ability to tackle complex problems using a flexible and adaptable framework.

With the guiding question—How do we help people get through the change process and get greater coherence while we are at it?—professional learning specialists laid the groundwork for teams to shape a pathway for change (Fullan & Quinn, 2016). For both confidence and competence, capacity building and a supportive climate are crucial (Fullan & Quinn, 2016). Teams engaged in continuous collaborative conversations to build shared knowledge, language, and expectations and leaders played the role of continuously defining, articulating, and shaping the pathway (Fullan & Quinn, 2016). Catered to specific roles as a leader, teacher, or specialist, pre-work included readings about specific role designations in change leadership. Teachers read an article on collaborative inquiry during uncertain times and read about how to collaborate with each other to become better teachers and more creative explorers. To create the space for collaborative leadership, schools must have confidence in teachers (Cody, 2013). Teachers were

then asked to reflect on a district that used a professional learning model to provide structure and protocols for collaborative work. The guiding principles for these participants were autonomy and choice about which process to follow and how they would pursue their projects (Cody, 2013).

Participants who were school leaders and specialists read about leading from the classroom and leading others by teaching well. Teaching well means embracing the tensions of being in a relationship with students, colleagues, parents, and the community; teacher collaboration with these stakeholder groups is essential to create conditions for learning (Collay, 2013). Teachers leading through inquiry, developing partnerships, and building relationships was the focus. Schools should not underestimate the powerful leadership role of teachers and specialists who build relationships from their classrooms outward, thus transforming their students, students' families, colleagues, and communities (Collay, 2013). The last team member was the administrator (Principal or Assistant Principal) designated to the program, who had specific pre-work related to building effective ILTs. Reflection required leaders to assess characteristics of ILT members and evaluate current teams based on a framework for effective ILTs. Key characteristics emphasized were: continuous learner, effective working with adult learners, effective communicator, collaborative, knowledgeable of content and pedagogy, knowledgeable of assessment and data, and a systems thinker (Austin, 2018). Lastly, participants were asked to evaluate the ILT they represented based on the Framework for Effective ILTs (Appendix E).

To set the stage for reflection to be an integral part of the process, participants were asked to give specific examples of ways the ILT works together to improve teaching and learning. Leaders, teachers, and principals were asked to identify 3-5 changes they would make to improve

their school if they were not afraid to fail and to develop a visual representation of one. The ability to connect deeply across schools, districts, and even globally means ideas can be cross germinated and refined (Fullan & Quinn, 2016). Vanderbilt School District was setting the stage for the group to collaborate on the work, internalize the concepts, share stories of success, and build commitment (Fullan & Quinn, 2016). The next step of the professional development program guided participants through a Design Academy retreat planned intentionally to facilitate reflection and connections to work.

During Days 1 and 2 of the Design Academy retreat, participants were introduced to working agreements, teacher leadership characteristics, effective instructional leadership teams, educational change, and design thinking. The learning intention for Day 2 was to provide a forum for teams to develop knowledge, skills, and dispositions of impactful leadership so ILTs can create the conditions through which teacher practice and student outcomes improve. As leaders exploring challenges, participants reflected on what role(s) they were playing in perpetuating and solving challenges; team members were separated into categories of values, loyalties, and losses. By using a structure to reflect on the role of the leader and how to separate team members into categories, a future researcher could replicate this process by having participants go through the same activities. Next, participants were led through a series of protocols including the iceberg model to identify one discrete event to unpack—one the team believed was observable, happened, and was critical to showing something important about the system they were trying to understand. The iceberg model asks participants to evaluate what is going on beneath the surface that may be contributing to the problems visible on the surface. Using the book *Design Thinking for School Leaders* (Gallagher & Thordarson, 2018), participants worked through how to help ILT members see their potential and create a shared

vision. In identifying a challenge, each person takes a role and has a task based on their role to address the challenge.

The professional learning specialists operated with the philosophy it was best practice to solve complex problems by closely examining and developing a holistic understanding of the problem before starting to ideate possible solutions to it (Dam & Siang, 2020). The most successful problem-solving spaces provide room for each player to present his or her views, thoughts, feelings, and experiences by allowing a holistic approach to solving the problem (Dam & Siang, 2020). Interweaving the roles of design-inspired leadership, the foundation was laid for teams of all levels (elementary, middle, and high) to work together to ensure each person's role was equally important in the design-thinking process. Design-driven leadership offers opportunities for moments of impact that are intentional (Gallagher & Thordarson, 2018). This retreat was held prior to the start of the school year when the teams were in the planning phases for their upcoming school year.

Quarter 1: October 2018

During Quarter 1, schools closely examined an overview of the design thinking process. As a starting point, schools were introduced to the idea of starting with empathy. In design thinking, empathy is a deep understanding of the problems and realities of the people you are designing for (Dam & Siang, 2020). Empathy allows participants to get a better understanding of people's emotional and physical needs and better understand the contexts being investigated (Dam & Siang, 2020). *Empathize* is the first step in the design thinking process (Dam & Siang, 2020). The other stages follow: *define, ideate, prototype,* and *test*. The Design Academy facilitators encouraged schools to gather substantial information about both the design thinking

process and the users, their needs, and problems underlying what the ILT was designing for (Dam & Siang, 2020).

Each step of the design thinking process was explored in Quarter 1 with an overview, an activity to synthesize learning, and a moment of reflection to build meaning. Using the d.school bootleg guide, participants learned about the stages of the design thinking process (Plattner et. al, 2016). In addition to this resource, participants were each provided with the book *Design Thinking for School Leaders* (Gallagher & Thordarson, 2018), a list of each step of the process, helpful tips, and roles and mindsets that ignite positive change. Following this Quarter 1 session, teams were asked to meet with principals to discuss their proposed challenge and vision and to meet as a team to discuss the role-specific tasks selected at this training. Teams were also tasked with designing and conducting empathy interviews. The results of the empathy interviews were shared and analyzed during the next session. Vanderbilt School District has a strong professional learning focus, and the specialists collected feedback each session and designed the next based on user feedback to model aspects of the design process.

Quarter 2: December 2018

Prior to attending the mid-year session, teams were asked to complete a Mid-Year Check-in survey. This survey asked participants to tell the story of the impact of the Design Academy on their work by responding to a series of questions. The reflection form collected information about: effects of the program on the individual, the ILT, and the school; most significant takeaway; and how participants had used what they had learned in the program back at their school. As a starting point at the second session, teams revisited the idea of leading change. Participants took the ideas they had learned about their chosen problem and made connections to concepts learned in Design Academy. One way to foster continuous learning is not only to run

experiments, but also to reward learning from them, particularly when experiments fail (Heifetz et al., 2009). Each Design Academy session embedded the concept of celebration and embracing redirection where and when needed. The key focus of Quarter 2 was to network and prototype. Teams were placed into breakout groups by level (elementary, middle, and high). Roles were split into administrator/leader, specialist, and teacher. These groups reflected on challenges and shared role-specific feedback for addressing challenges.

School teams then returned together to prototype using feedback grids. A prototype is a way for designers to test the flow, interaction, content, and feasibility of a product before moving full speed ahead (Derome, 2019). Teams were strategically partnered with another school to present their gap, vision, user needs, and pitch their prototype. Teams at this point had developed a representation to show others and were encouraged to get feedback quickly to keep the relationship with the idea healthy (Gallagher & Thordarson, 2018). Facilitators provided teams with a list of prototype testing questions every designer should ask. Next, teams moved into the testing and iterating phases. They read three articles to familiarize themselves with the process. Dam and Siang (2020) emphasize the importance of testing prototypes on the right people. While in the early phases of the project, getting feedback from the team is fine. Toward the end of a project, teams should consider testing a wider range of users to get the most relevant and helpful feedback (Dam & Siang, 2020). The feedback capture grid was a structured way of organizing feedback gathered from the testing sessions. Participants in Design Academy used this feedback process as well as I like, I wish, I wonder" to provide a structure to collect feedback from users (Dam & Siang, 2020). This protocol asks participants to reflect on what the liked about the process, what they wish could have been done differently, and any wonderings they have still about the process.

Teams were given time to reflect on their work up to this point and begin mapping out actions, responsibilities, and timelines to decide and articulate what each step would look like and make a plan to do each task well. With celebration embedded throughout, this session ended with teams sharing an inspiring story. Teams were asked to post on the learning management platform something that happened when they implemented the prototype in the form of a photo, video, or data. For feedback, the exit ticket included individual reflections to several questions:

1. What I have learned about my identity as a leader?
2. What I have learned about leading change?
3. What I have learned about shared leadership?
4. What I have learned about the process of innovation?

Quarter 3: February 2019

Prior to the third session, participants were asked to share what happened when they implemented their prototype in a discussion post online. The importance of celebrating small wins was reemphasized to manage the disequilibrium that comes to with change. By putting ideas into action, teams create knowledge in context, making it easier to shift conversations based on the knowledge that has been gained (Gallagher & Thordarson, 2018). If schools want to change a system, teams must have a strong learning design and deep collaborative work (Fullan & Quinn, 2016). Facilitators provide a sense of safety during the necessary risk-taking that comes with change and the idea of urgency is addressed. Participants are asked to reflect on urgency they and others feel during the change process. As teams prepare for or encounter resistance, they are provided direct instruction on the idea of managing disequilibrium through various faction groups. School groups look at the idea of getting buy-in, something critical to making any large organizational change happen (Hedges, 2015). Real buy-in involves some

element of co-creation—it invites discussion and debate and allows for everyone to feel invested in the outcome (Hedges, 2015).

Teams were provided with guiding questions and a list of items to think about at the beginning of the session. They identified who else needed to help with the change process. Facilitators acknowledged building and sustaining resilience as a change leader is critical. Three dimensions of success were introduced: process, relationship, and results. As leaders, participants were encouraged to balance all three. School groups worked to determine the indicators of success at each dimension. Following this activity, a gallery walk was conducted for teams to give and receive feedback in the form of questions, wonderings, or suggestions. At the end of this session, another review of the five stages of design thinking was shared. At this point, teams had worked through one cycle of the design process and were continuing to iterate. A planning session was then provided to determine the next steps. In preparation for the final session, teams planned an Ignite Talk to tell their story. Teams were asked to: tie the story to the themes of shared and change leadership; explain what the team did; and share what the team learned, effects their actions had, and their next steps.

Quarter 4: April 2019

Prior to the final session, participants were asked to create an Ignite Talk presentation to tell the design story of their project. As a reminder, the learning intentions for all sessions were: to provide a forum for teams to develop knowledge, skills, and dispositions of impactful leadership so ILTs can create the conditions through which teacher practice and student outcomes improve. The closing session primarily celebrated the story of each team, sharing each team presentation and revisiting the idea of change leadership and being change agents within the school ILT and community. Teams were taken through an exercise to facilitate agreement; a

way to possibly build psychological safety through the change process. After the final presentations, individuals completed a post-assessment. Principals were sent a separate feedback link on the Design Academy (Appendix G). The program ended with a team certificate, social media promotion, and cohort picture.

Figure 6

Overview of Design Academy Process

Participants and Setting

This study focused on one school team from the professional learning program outlined previously at PHS in Vanderbilt School District located in the mid-Atlantic region of the United States. PHS is a comprehensive high school with 1900 students in Grades 9-12 in Vanderbilt

School District, which serves 66,000 students. Approximately 36% of students at PHS are White, 35% are African American, 10% are Hispanic, and 10% are multi-racial. Within PHS, there were 4 team participants in the Design Academy process: two teachers, one specialist, and one administrator/leader. The principal of PHS helped select the original team and guided the approval process but allowed the team members to take primary ownership in the work done during the program and ultimately back at PHS. I conducted interviews with all participants in the Design Academy program from PHS and with the school principal, Dr. Jay. Participants were interviewed in 2021, approximately 3 years after their initial participation in the Design Academy Program. In 2021, the world is experiencing COVID-19, a global pandemic. The way the education system previously worked has been drastically altered and some of the findings of this study connect to this fact. Interviews took place in February 2021, the third school year following Design Academy. In addition to the interviews conducted, I was granted permission to review extant data the facilitators of the Design Academy collected. I reviewed a series of documents including feedback surveys, feedback charts, ILT rubrics, and planning documents for the program and compiled the year in review of the professional learning program outlined in the previous section. These documents were reviewed by the researcher in connection with the overview of the design program to tell the story of the learning experience over the course of a calendar year. As appropriate, I collected documents from PHS referenced in interviews to aid in the analysis. The roles of each person cited in this study are represented in Table 1.

Table 1

Participants Cited in Study

Name	Title	Role
Dr. Jay	Principal, PHS	School administrator
Emma	Assistant Principal, PHS	Primary leader participant
Lacy	Health & PE Teacher, PHS	Primary teacher participant
Monica	AVID Instructor, PHS	Primary teacher participant
Kiki	Specialist, PHS	Primary specialist participant

Note. PHS = Poole High School; PE = Physical Education; AVID = Advancement Via Individual Determination

Leader Experiences

At the time of this study, Dr. Jay had been the Principal at PHS for 7 years. He had been working with Vanderbilt School District for 24 years. Prior to being a Principal, Dr. Jay was a classroom Social Studies teacher, high school Assistant Principal, and middle school Principal. When asked how he became involved in the Design Academy process, he explained he saw the opportunity to grow his team as the school was reinventing the ILT. He credited Emma, an Assistant Principal at PHS, for taking the lead with instructional approaches that were different and new and for giving him a push for applying to be a part of the Design Academy as a step toward high school redesign. High school redesign was an initiative by the Vanderbilt School district to rethink what education looks like on the high school level and Dr. Jay wanted PHS to be a key player in this work. He also had confidence in Emma to lead and guide this initiative.

Emma had been the Assistant Principal at PHS for 5 years and had myriad teaching experiences prior to PHS. She taught for the Teach for America program in several other states, and served as a teacher, Coordinator, Academic Dean, and Assistant Principal at PHS. Emma felt

Dr. Jay selected her to lead this work due to her instruction background. While it took some convincing initially, Dr. Jay agreed to let the school participate and invited teachers he thought would pair well and could commit to participating in the program with Emma. He selected three teacher leaders, two already on the staff and one starting at the school in the fall as a specialist. Emma and Dr. Jay noted in their interviews that prior to participation in Design Academy, the ILT was a group of department chairs and did not have an in-depth instructional role, something they both had a vision for. Dr. Jay called for teachers to apply to be a part of the ILT and interviews were conducted. Starting with the interview, applicants were asked to bring instructional strategies to share. After selection of the new PHS ILT, only the two teachers, Assistant Principal, and specialist began the Design Academy process which represented only a cross section of the new ILT and a hand selection of individuals by Dr. Jay. There were under five team members who served on the old ILT and the new ILT.

The ILT at PHS was comprised of the building's specialists (Gifted Resource Teacher, Instructional Technology Specialists, Library Media Specialists, Literacy Specialists, Building Administrators) and all selected applicants for the ILT, including the Design Academy participants. This team of teachers had been together for 3 years at the time of interviews collected for this study. In the effort to reinvent the roles and expectations of the ILT, a 3-year commitment was expected. At the end of the 2021 school year, a new group will be brought in to gain new energy and fresh perspectives.

Conditions for Collaboration

This section provides an overview of the themed responses gleaned from leader interviews, organized by the research question, What is the relationship between a design-based professional learning program and the development of the conditions for collaboration? After

analyzing qualitative interview data collected in this study, two major themes emerged: a desire to build capacity and the importance of a positive school culture. Leaders emphasized the importance of having the right people in positions of leadership for the Design Academy and these were the people who would recruit others in ILT, PLCs, and school-wide to join in the work. Elements of school culture were also mentioned consistently, both as a desire to build pride among staff and students as a community and to develop an instructional model that was innovative and allowed all students to have voice and choice in their learning and achievement.

A Desire to Build Capacity

Both Dr. Jay and Emma referenced in their testimonies that a goal of leading change in their building was to grow their team and the people on the team. In my study, I found there were three primary teams referenced leading change at PHS: the ILT, comprised of building specialists, administrators, and teachers Dr. Jay selected; PLCs, comprised of teachers of content-specific courses who have embedded time built into the instructional day to collaborate with each other; and Professional Learning teams, put together to learn about specific and innovative instructional practices and initiatives as determined by Dr. Jay. Effective change processes shape and reshape good ideas as they build capacity and ownership among participants (Fullan & Quinn, 2016).

When asked if the Design Academy process was personalized for her team, Emma stated the team personalized the experience based on what PHS needed. Highly successful organizations never try to imitate what others did and instead find their own pathways to success (Fullan & Quinn, 2016). Based on interview accounts from both Emma and Dr. Jay, building capacity was a value of the school's leadership. Instruction was at the center of the direction of the group. Vanderbilt School District had a clear direction for high school redesign and the

state's Profile of a Graduate. The school district also laid out a direct framework for teaching and learning. Deeply embedded in the Design Academy process and replication of this work back at PHS was reflection. Both leaders referenced the importance of this component. Classroom teachers, building administrators, and school specialists were consistently being asked to reflect on their own instructional practices and engage in discussion and dialogue about rethinking traditional ways of teaching and learning; the group was united around a Vision Statement developed by the Design Academy team.

Dr. Jay's selection of primary teacher participants and Emma as the primary leader participant was strategic. The teachers selected were highly regarded by others in the building, which assisted in the efforts to lead change among colleagues. Leaders need the ability to develop a shared purpose and meaning as well as a pathway for attaining that purpose (Fullan & Quinn, 2016). Dr. Jay indicated his primary role was to identify the teachers, walk the group through the process, and make sure they had a result. It was important to him they share growth and then use that information as a template for the ILT and PHS in general. Dr. Jay also built capacity through his administrative leadership team. Each Assistant Principal was assigned a set of PLC teams to supervise and work with. Each administrator was also assigned a specialist from the ILT to work with in implementing Dr. Jay's instructional agenda of Project Based Assessments within each PLC. Administrators were asked to monitor progress and build capacity within the PLC teams with the teachers and specialist participants. In the organizational structure of PHS, Administrators and Specialists worked with the ILT to disseminate instructional information to PLCs. PLCs and ILT members were asked to lead schoolwide professional learning programs at PHS.

As part of the High School Redesign program and Project Based Assessment movement at PHS, Dr. Jay encouraged staff to use their imagination beyond the constraints of the state standardized testing. He pushed teachers to change their thinking about how they assess students with an emphasis on fewer, more targeted grades, and assessments of mastery instead of behavior which motivated teachers to step outside of their instructional comfort zones. Dr. Jay mentioned PLCs examine their practices to revise them, carefully considering curriculum adjustments, revising instructional strategies, and branching out to different types of instruction. The leadership team at PHS expects collaboration with each colleague within teams and the replication of that process with students. Teachers were pushed to move toward skills and small group instruction. Emma and the Design Academy team used Dr. Jay's vision for instruction and the needs collected in empathy interviews to select *enhancing the school culture* as a problem area to focus on at PHS. The inclusion of new voices in the empathy interviews and the Design Academy acting on the feedback is another example related to the theme of building capacity.

School Culture

When Emma was asked about the problem of practice the team decided to focus on, she described:

> It was the concept of unity and consistency. We had just relooked at our ILT. We had an ILT that was department chairs, and it was not instructional at any time we tried to have more of an in-depth instructional role. Dr. Jay talked to us about creating two separate entities: instructional leadership team and then the department managers.

Emma went on to discuss the many competing problems the group wanted to focus on during the process. When the Design Academy team went through the protocols facilitated by Vanderbilt School District, they decided to look at the strengths and weaknesses of instructional

leaders. It was determined, as a collective unit, teachers were not speaking the same language. When the team designed the vision statement, they went through each component and focused on the idea of consistency throughout. During her interview, Emma shared the following:

> I think every instructional leadership team should go through it. I was really fortunate with the people chosen to go with me because they were ready to work. We wanted to get back to being a wonderful, wonderful school. Not that we weren't wonderful, but one of the protocols I remember had us look at problems below the surface. On the surface, we looked really good. We had everything on paper, but when we dug deep, we realized we weren't, and that's when we had to really unpack.

Dr. Jay gave the historical perspective that in his first 2 years at PHS, the ILT was a group he inherited. He took a more active role in modeling collaboration after selecting those who would serve as ILT members and department managers. Mondays were selected as a collaboration day. On days the administrative team was not meeting, the ILT would go out for learning walks with Dr. Jay. The Design Academy team developed a learning walk tool as a look-for document when conducting these calibration walks. ILT members were given choice in what Professional Learning teams they would like to lead and participate in. Examples of focus areas for Professional Learning at PHS are equity, grading, and school culture.

Emma shared Dr. Jay gave them autonomy with replicating the Design Academy process at PHS, and he was happy there was a structure that they were going to use. The primary teacher participants started the conversation with teachers on the ILT and implemented the Design Academy process. Dr. Jay and Emma both noted during their interviews there was a new administrative team. Emma acknowledged she should have worked more to get buy-in from the administrative team before taking the work to the ILT or in conjunction with the work. As a

result, she noted the entire administrative team did not buy-in at first. The design process allowed Emma and the teacher participants to get feedback from key stakeholders as a starting point, and not to feel the pressure of getting feedback from all 130 staff members at PHS. Emma referenced push-back when determining who to seek initial feedback from as the process was being implemented.

> In hindsight, we didn't have buy-in from all of our administrative team at first. We had a new admin team as well. And perhaps through the presentation of it, the team members didn't think it aligned with everything. This was a positive of the design process, is we were able to take everybody's input and not all at once.

Some wanted staff members beyond the ILT to be incorporated and others thought it should stay within the hand-selected group. The Design Academy group decided to narrow their focus to what made a good ILT and to allow the products of design thinking to spread to PLCs and professional learning following that focus.

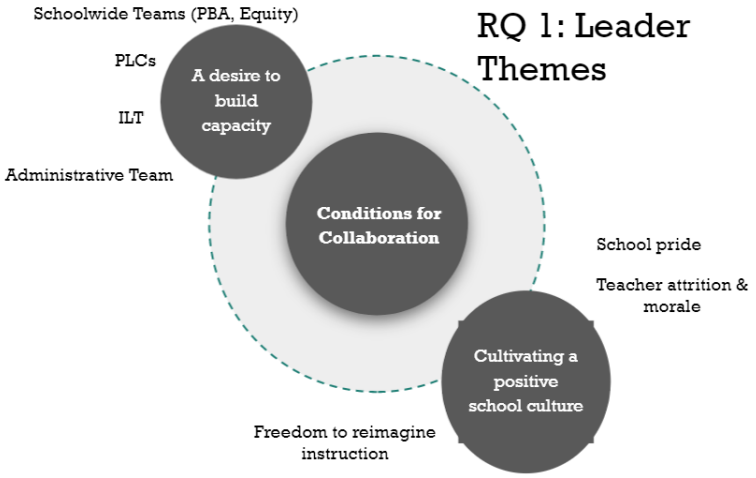
The group initially focused on identifying real problems at PHS. The Design Academy team wanted to have deeper conversations and self-reflected throughout the process in different capacities. Emma also acknowledged momentum was difficult to maintain because the action items within the ILT would not always translate into action items for the school. As the group built capacity, they thought they were bringing PLCs into the capacity building, but realized they were doing so without clear direction. *Communicate often and listen even more* became a philosophy of the Design Academy team (Fullan & Quinn, 2016). After building in the component of checking in with PLC teams, it was determined a PLC check-in document should be developed. This is consistent with previous research that indicates once the purpose and goals are identified, it is critical everyone perceive a clear strategy and see their part in that strategy

(Fullan & Quinn, 2016). This tool, along with the learning walk calibration tool and ILT vision statement, are a few examples of the products created as the team replicated the Design Academy process at PHS.

Another component of school culture mentioned in Dr. Jay's testimony was the teacher attrition rate. In the last 5 years, he shared, 70% of teachers are new since he started working at PHS; each year he loses about 20 teachers to attrition. With the group of teachers on the staff constantly changing, he acknowledges the difficulty in maintaining momentum for instructional change. There has also been a turnover in administrators at PHS. With a change each year on the administrative team, Dr. Jay and Emma have remained constant. However, due to COVID-19, both feel that momentum has shifted because of the shift to virtual learning and with many teachers leaving the profession. Pushing through resistance is a theme that came up in both leader interviews. Figure 7 shows the summary of leader themes found in Research Question 1 related to conditions for collaboration.

Figure 7

Overview of Research Question 1 Conditions for Collaboration: Leader Themes



Collaboration Outcomes

The sections that follow outline specific outcomes of the Design Academy process leaders at PHS mentioned. These findings are based on the research question: What is the relationship between a design-based professional learning program and the outcomes for collaboration? The data are organized by research question and by leader. The leaders had a different perspective than teachers involved in the Design Academy process. Dr. Jay, principal, did not participate directly in the Design Academy and directed and supported the process in his role as school principal. Emma worked directly with the cohort of teachers selected by Dr. Jay and directed the process of Design Academy, ILT, and the overall implementation of PLCs and school-wide professional learning.

Emma referenced several collaboration outcomes from the Design Academy process in her interview: development of a vision statement, learning walk calibration tool, PLC check-in form, development of school-wide Professional Learning teams, and the restructuring of the ILT. She also shared there is now a common language because the Design Academy team attempted to bring more voices into the process over the last several years. The PLC organizational form has a built-in reflection tool and a requirement of a common agenda to align what is happening in each team throughout the school. The ILT also implemented a summer retreat, like the Design Academy's 2-day training session, to lay the groundwork for a successful year following participation in the program. Other outcomes referenced: focus on Project Based Assessments within PLCs, collaboration in administrative team meetings, the development of an equity team, and supporting and sending teachers to state-leadership conferences to improve their professional practice and present on this specific experience and the outcomes from the process.

Dr. Jay referenced several outcomes from participation in the Design Academy process as well. He perceived a new energy devoted to not looking at traditional instructional practices in the same ways and a movement away from "teaching to the state test." Identifying the superpowers on your team not only helps build a stronger team, but also helps leaders connect people to opportunities and establish the right level of support for them (Gallagher & Thordarson, 2018). Dr. Jay shared certain teams and departments need different levels of support and understanding; those needs have been facilitated through the Design Academy replication at PHS. Collaboration with each other in PLCs and with students in classrooms is a noted outcome from the process. Lastly, Dr. Jay mentioned a shift toward reflection. Teachers revised their professional practice by engaging in cycles of inquiry with each other. Because the Design Academy replicated the process in the school, there were pockets of teachers replicating the

design process in their classrooms. This was visible with student goal setting, risk-taking, collaboration, and shifts to more project and skill-based activities in the classroom.

The leaders agreed Design Academy inspired change at the school level, made them feel empowered to tackle additional problems, and made them more open to working as a team. Figure 8 shows the summary of leader themes found in Research Question 2 related to collaboration outcomes from the study.

Figure 8

Overview of Research Question 2 Collaboration Outcomes: Leader Themes

Development of a schoolwide vision statement	Movement away from "teaching to the test"
Learning Walk calibration tool for ILT	Summer ILT Retreat
PLC check-in form	Design Academy replication @ PHS
Development of schoolwide Professional Learning teams	Development of an equity team
Reimagining the traditional structure of ILT	Supporting & sending teachers to state-leadership conference to improve professional practice
Project Based Assessments within PLCs	
Collaboration in Administrative Team meetings	

Teacher Experiences

Lacy

Lacy has been at PHS as a Health & PE teacher for 24 years. She is the department leader and has served on the ILT for 15 years. Lacy provided a historical perspective of many principals who came before Dr. Jay. She shared:

> Dr. Jay came in and attempted to streamline the ILT. We were a very large body at one time through multiple leadership iterations with different principals, it just kept growing. He came in and implemented an interview process to pare it down, so it was more functional. After that, we were volunteered for the Design Academy process. It was four of us from ILT they thought would be most engaged in the process and helpful when we returned from training.

From Lacy's perspective, the primary focus was to get everyone on the same page because they had been working in very different directions. A vision statement was created to give the group a direction. The next goal was to realize the structure within the building to allow for knowledge transfer from the ILT to PLC. Ultimately, Lacy wanted to see multiple stakeholders engaged in the change process in a unified direction.

> We had a lot of individuals within the building and no real unified direction. So that was our biggest issue here at PHS, we were lacking buy-in and motivation. Everybody had a lot of good ideas, but nobody was going in one direction. We had been through so many principals and so many changes that nobody knew who we were anymore. We had to create that.

Monica

Monica is an Advancement Via Individual Determination (AVID) teacher, who had been at PHS for 9 years at the time of the study. AVID is a program that trains educators to prepare all students for college, careers, and life while closing the opportunity gap. She started as an AVID tutor, worked as a substitute teacher, and was hired as a middle school teacher for struggling students in Vanderbilt School District. Her primary role as a teacher in her previous school was to provide remediation and help students meet grade level expectations; the program she was originally hired to help with no longer exists. When she was hired at PHS, she taught history until the AVID program came. Her Assistant Principal at the time went to Dr. Jay and told him due to Monica's experience in the program and being the first person in her family to go to college, she was the clear choice to lead the AVID program. At the time of the study, she had served as the AVID coordinator for 4 years and was pursuing her Master's in Educational Leadership.

When asked how she became involved in the Design Academy process, she shared it was part of the ILT restructuring by Dr. Jay. There were applications and interviews and initially Monica did not apply. However, Dr. Jay emailed Monica to inquire about why she had not applied for the position, which convinced her to do so. Monica stated:

> He said, "Do you want to be a leader?" Even though I didn't think I was, I had to be pushed into it. I'm going to take this opportunity to do it. And, it was a positive experience, especially working with my group. We still try to do quarterly get-togethers and it was a bonding experience for the four of us.

Monica stated teacher morale and culture were the initial focus of the process. PHS formed a committee within the ILT to help. Then, the team wanted to provide meaningful

professional learning for teachers. The previous professional learning experiences seemed disjointed and disconnected and were done with a push at the beginning of the school year and then would fizzle out. Consistency and follow-through were important to Monica. She was intent the learning experiences be relevant and something teachers could build upon. Empathy is what distinguishes design thinking from other processes used to tackle problems and must be a driving force behind changes made in schools (Gallagher & Thordarson, 2018). Human behavior is overwhelmingly context dependent, making the formulation of problems and solutions difficult (Bandura, 1986). PHS Design Academy participants first conducted empathy interviews with stakeholders. They selected a sample of teachers, students, and parents to participate. In reviewing the results, the team discovered there was a culture problem. Students did not have pride in their school and the same small group of people volunteered to help with everything. A key focus of the Design Academy group was to rekindle a sense of community and love for the school.

Kiki

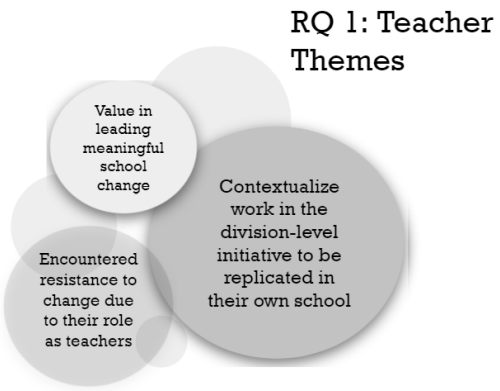
At the time of the study, Kiki had been at PHS for 3 years, jumping into the Design Academy process in her first year in the building as the Gifted Resource Teacher. Before serving as a building specialist, she taught second grade. When asked how she became involved in the process, she stated she was asked. Because she was new to the building at the time of her participation in Design Academy, Kiki did not feel she could contribute much to the discussions initially. She found a way in when it was time to discuss how to shift instructional practice to more transformational learning. The more the team talked about the ideas, the more the group was led by the newly established vision statement and the ideas they produced together. Kiki shared the following about the Design Academy process:

> The most valuable part of the process was collaboration. We had the opportunity to use protocols, use these big ideas, and bring them back and make them more concrete and realistic for PHS. Having uninterrupted time with your peers to focus on your goal and moving forward was valuable.

Figure 9 shows the summary of leader themes found in Research Question 1 related to conditions for collaboration.

Figure 9

Overview of Research Question 1 Conditions for Collaboration: Teacher Themes



Conditions for Collaboration

There were common threads of consistency throughout PHS's participant interviews and how the group perceived team collaboration. I have combined the responses from each of the interviewees to provide a summary of what the PHS group believed were the qualities of team collaboration. Participants described many of the design mindsets for school leaders to ignite positive change outlined in *Design Thinking for School Leaders* (Gallagher & Thordarson,

2018). The PHS team believed team collaboration should be a group of people who come together to move something forward. This included everyone having a specific role and being fully engaged in their purpose. The group share common ground and values and be comfortable enough to hold one another accountable. Having a genuine understanding of each other through active listening, being respectful, honest, and solution focused allowed the group to generate change.

The sections that follow provide an overview of the themed responses gleaned from teacher interviews, organized by the research question: What is the relationship between a design-based professional learning program and the development of the conditions for collaboration? After analyzing qualitative interview data collected in this study, three major themes emerged: leading meaningful change, support for encountering resistance, and replication of the work. Teachers also consistently mentioned the impact of COVID-19 and momentum stalling as a result of the global pandemic.

Leading Meaningful Change

Coherence is a shift in shared mindset rather than alignment, which is about getting the right structures in place (Fullan & Quinn, 2016). Lacy, Monica, and Kiki acknowledged the importance of the restructuring of the ILT, PLCs, and professional learning at PHS. Directional vision emerges from working together to develop a shared vision by engaging in continuous collaborative conversations to build shared language, knowledge, and expectations (Fullan & Quinn, 2016). The Design Academy team was given administrative support and freedom to develop a vision statement for the entire staff at PHS. The vision statement was then printed on t-shirts and shared throughout the building to build momentum and enthusiasm about the set of shared values and expectations. Many of the steps following the development of the vision

statement centered around the results gleaned from conducting empathy interviews. All participants shared that, initially, many problems bubbled to the surface. To practice adaptive leadership, the team had to help people through a period of disturbance as they sifted through what was essential and what was expendable and experimented with solutions to the challenges at hand (e.g., Heifetz et al., 2009). Emma and Dr. Jay were there to help funnel the underlying issues into a priority list.

Participants were given complete control and support for bringing everything back from Design Academy to ILT. Kiki shared the following perspective:

> Our administration was fantastic. We came back, and they were open to everything we brought back to the table. We became kind of like the artificial leaders of the ILT. And still to this day, the four of us plan the ILT meetings. We did reach a road block because of the pandemic.

One of the interview questions asked of participants was to what degree central office administration from Vanderbilt School District supported them throughout the program. The level of support referenced outside of the school building was minimal; however, the teacher participants acknowledged the work of the Vanderbilt School District facilitators, who celebrated their successes along the way and allowed them to adapt and change paths as needed. This process was unique to PHS, and as a result, participants wanted the majority of work to be done by PHS teachers and for PHS teachers. As part of the Design Academy process, the team had identified resistors and assistors—those who would either hinder or help their work to lead change back at the school level. The team identified primary areas for concern would be in implementing change back at PHS. The team decided to develop a PLC facilitation organizer and a new learning walk tool. The ILT would later break into different sub-committees, by choice, to

allow each instructional leader to choose a path for where they wanted to serve as change agents. A few examples of these sub-committees were: joy, culture, Project Based Assessment.

The exact design thinking process is less important than the core components and mindsets embedded in the process (Gallagher & Thordarson, 2018). As school leaders start to imagine new models of education, like Vanderbilt's High School Redesign process, design might be one tool to help overcome common obstacles and resistance to change (Gallagher & Thordarson, 2018). There was shared ownership at PHS in leading the instructional change vision as laid out by Dr. Jay and meeting the tenets of the vision statement established by the Design Academy group. Teams were required to collaborate twice per week. Each PLC had a specialist and administrator assigned to them, and all specialists served on the ILT. With varying perspectives and experiences they brought to the table, the PHS Design Academy team refused to accept the status quo, especially after conducting empathy interviews and analyzing the current situation in their building.

One aspect of the school's culture noted in the interviews with both leaders and teachers was the push to change the traditional educational mindset. Several activities and processes were implemented to allow teachers to question processes in education that had long been in place. Creating a culture of inquiry and innovation was the direction PHS chose to move beyond traditional instructional practices. Dr. Jay and Emma gave explicit permission for some at the school to question and rattle the collective mindset (Gallagher & Thordarson, 2018). Teachers may experiment but are unlikely to challenge the traditional without the support of a school leader (Gallagher & Thordarson, 2018).

The investment in dedicating time and energy to the Design Academy and then the replication at PHS was significant. Three years later, the team believed they had a common

language and more voices and perspectives involved in the change process. The primary replication of the Design Academy process happened with ILT. However, a cohort of teachers who teach state standardized testing subjects were identified to be a part of a Project Based Assessment team. To build capacity, Dr. Jay had several members of the ILT involved in spreading some of the values of the vision statement to this newly created group. ILT members also joined sub-committees to selectively choose an area of focus. Lacy shared she felt this engaged more of the ILT members with a solid direction and gave them value.

Another focus of the ILT and product gleaned from Design Academy was the idea of instruction being more student centered and involving students more in decision making. Using the ILT and PLCs, the team tried to model the way for this by asking questions like: When can you lend student voice and choice to this lesson? Each teacher and leader acknowledged the difficulty to ensure alignment and consistency with elective classes and shared a common direction is better implemented with the core content teachers who typically have a partner to plan with. Teacher participants felt empowered to lead change and Lacy shared, “My favorite saying is when the ‘why’ becomes strong enough, the ‘how’ is easy. When you understand why you’re going in a direction or why we want this as a community, it becomes easy.”

Encountering Resistance

Design thinking is messy and nonlinear, which can make it challenging for educators to embrace (Gallagher & Thordarson, 2018). There were several key groups referenced throughout the study who the participants encountered resistance from. Both Monica and Lacy shared there was not complete buy-in from the ILT to start, more like 75–80% buy-in. Both felt teachers wanted to be told what to do and then they would move on, a relic from the “old” ILT model at PHS. In replicating the design thinking process from Design Academy, continuous inquiry,

dialogue, and reflection were required. As the team tried to implement these strategies with ILT, they encountered resistance from their peers. It is noted the development of the committees by choice helped to give team members a direction of their choice.

In the same vein, just as the staff members did not always want to engage in an open-ended process without knowing the outcome, neither did all students. When strategies were implemented with students, Lacy encountered resistance. She felt the biggest resistance came from the students and not the teachers. However, she did share it is gradually changing. Monica recognized the challenges in replicating this work as a peer with the ILT. She reiterated the team felt the need to explain the purpose in what they were trying to do. They did not want to overwhelm the staff and sometimes walked away from sessions feeling like they were doing just that. Monica explained the investment and time was so great that when even a small minority expressed dissatisfaction, it was difficult for the group of four to handle as they were protective and felt ownership in the work. Repeating cycles of collaborative design, teaching, and reflection is a powerful way to build understanding and commitment (Fullan & Quinn, 2016).

Participants noted the challenges of having new administrators each year at PHS, except for Dr. Jay and Emma who remained constant. While Emma acknowledged she wished she had done more work to involve and build capacity within the administrative team with this work, teacher participants recognized not all administrators were on board with this change. As those voices quieted, those within the ILT became more empowered. Capacity building impacts the organization because it fosters sustainability and reinforces the strategy as people become more involved in learning and problem solving across the organization (Fullan & Quinn, 2016). Overall, the ILT was open and hopeful for change and most teachers were receptive to the efforts to build a better PHS.

Replication of Design Academy

The Design Academy team from PHS committed to replicating the design thinking process at PHS within the ILT and then with whole-school professional learning. By putting the product out to the whole school through the vision statement, the group was able to set a consistent expectation for all staff to buy-into. The foursome of Emma, Lacy, Monica, and Kiki worked through ILT to develop a common language and structure, which was shared with teachers through PLCs, and then outward to students and larger staff. The group met prior to ILT and whole-school faculty meetings to carefully plan how they would replicate Design Academy. Lacy felt because they had a solid understanding of design thinking and the different aspects, they were better able to refine it back at PHS based on their learning. In the second year of implementation with the staff, the group took the vision statement to the student leadership team to involve students in the buy-in process as well. Lacy shared the following about bringing the information to the PHS staff:

> When we brought it back here, we did a whole staff meeting where basically it was an empathy interview. We asked staff questions, put them on sticky notes with whiteboards. They had to put up what was most important or the best strategy to reach students. We were in the gym and spent 45 minutes writing, posting, and then rotating going through and organizing ideas until we came up with the best five things we needed to do.

The information gathered at this staff meeting served as an empathetic guidepost for the development of sub-committees, schoolwide professional learning, and ILT topics for the next year. Following this process, the group developed several other avenues to collect staff input, such as Google Forms. Primarily, they aimed to learn from staff members: From an instructional perspective, what do you need right now and how can we make that happen for you?

Monica shared the piece about the student leadership team, which was comprised of a group of student athletes focusing on a topic for athletes during lunch. Monica worked with another teacher to build student morale within the group:

> We asked the kids who the top three athletic programs were in the district and not a single kid put PHS. Realizing this was a culture problem that goes deeper, we realized it's the same people who volunteer and chaperone everything. It's the same people who do everything. Same kids who do everything. We tried to get that culture and love – a sense of this is our community and being proud of it.

Impact of COVID-19

At the time interviews for this study were conducted, Vanderbilt School District was still using a remote learning model because of COVID-19. This meant most teachers and students were teaching and learning virtually. The most difficult part of continuing the Design Academy process was the momentum halted in response to the global pandemic. Carefully considering who remained on the staff, what work had been put into the process leading up to this, and continuing the forward focus was the goal. Lacy noted communication was the most critical component in this process, whether virtual or in-person. She shared teachers needed to be on the same page more than ever and the pandemic had forced everyone to change in big ways, whether teachers were ready or not.

Monica shared teachers were struggling in 2021, and what support looks like to teachers in 2021 is different than it was when the Design Academy process was started in 2019. Periodic check-ins have become necessary, even in a virtual setting. Kiki felt shortening the sessions and making them more focused and frequent would help as Vanderbilt School District considers revising this program following and considering the implications of COVID-19. Dr. Jay shared

the process and the teachers need to be reinvigorated after a difficult year personally and professionally where everything has stalled. Dr. Jay felt the process was impeded because the staff was in limbo for a long period of time thinking things were going to return to normal. Now that Vanderbilt School District has started to return students and staff to school buildings, Dr. Jay said administrators were starting to re-introduce the PHS way again.

> We've had a whole mentality change in a year's time. We really have to start with re-introducing things and showing it's the PHS way again. We are going to work with the small cohorts we have and showcase what it means to be a Patriot again, how to instruct and what our expectation of great instruction looks like, and the usefulness of a Project Based Assessment versus teaching to a test.

Collaboration Outcomes

Teachers shared specific outcomes of the Design Academy process at PHS. These findings are based on the research question: What is the relationship between a design-based professional learning program and the outcomes for collaboration? The data are organized by research question and respondent. The teachers had unique perspectives on the specific outcomes broken down by ILT, PLC, and school-wide professional learning.

Each teacher participant was asked about what specific outcomes resulted from PHS's participation in the Design Academy process. Lacy shared first the outcome of discussion and development of the vision statement and what the team wanted it to represent. Next, the group moved to developing a central structure with the ILT and PLCs while maintaining the idea of instruction being student-centered. She indicated they framed their PLCs around the vision statement and philosophies, which kept the group focused on meaningful instruction. Monica added, in addition to developing and sharing the vision statement, the school purchased t-shirts

for everyone to have a visual of the school's values. She elaborated on the idea of the restructuring of the ILT and development of sub-committees. The ILT started with two subcommittees: joy and culture. Monica also mentioned Dr. Jay's vision of Project Based Assessments and forming committees based on subject area for certain PLCs.

Kiki believed the ILT was more cohesive and purposeful in year three than in year one. During the design thinking process, the team developed a PLC planning document and learning walk look-for document. She referenced the following about the second year following the Design Academy:

> My second year was a year things really took form in my opinion. We really had momentum going and focused on specific pieces and the group was very receptive.

Kiki saw the most change with instruction and assessment and ways of thinking differently about instruction:

> When I got to [PHS], I saw Scantron machines and people were giving packets. I felt like a little step back in time. And, I don't see that anymore. I see teachers who are taking risks and that was a big thing. Actually, it was a huge thing because they were afraid to take risks and the message had to come from the top: I encourage you to take risks. And I won't judge you based on those risks.

The teachers agreed Design Academy inspired change at the school level, made them feel empowered to tackle additional problems, and made them more open to working as a team. Figure 10 shows the summary of teacher themes found in Research Question 2 related to collaboration outcomes.

Figure 10

Overview of Research Question 2 Collaboration Outcomes: Teacher Themes

Development of a schoolwide vision statement*	Movement away from "teaching to the test" (Leader response) Teachers taking risks with instructional practice* (Teacher response)
Learning Walk calibration tool for ILT*	Project Based Assessment focus in PLCs*
PLC check-in form*	Design Academy replication @ PHS*
Vision Statement t-shirts for all staff	
Reimagining the traditional structure of ILT*	
Development of sub-committees within the ILT (Joy, Culture)	

Note. * represents overlapping outcomes shared by teachers and leaders

Pre-Existing Data

Vanderbilt School District granted me access to the survey data from the Design Academy. In 2018-2019, three assessments were administered: a mid-year survey, an end-of-year survey (for participants), and an end-of-year survey (for principals).

Mid-year Survey

In 2018, only Emma and Lacy took the mid-year check-in survey. The survey was voluntary, and it is unknown why Kiki did not take it. Questions on the survey included:

1. In what ways has Design Academy impacted you?
2. In what ways has the Design Academy impacted your ILT?
3. In what ways has the Design Academy impacted your school?
4. What is your most significant takeaway from the Design Academy?

5. How have you used what you have learned?

Emma felt at the mid-year the Design Academy work had completely transformed the building for that instructional year. She shared the team had taken the work from the initial session, worked with the administrative team, ILT, and PLC lead teachers, the staff, and students to help build the focus for PHS. Lacy felt the first part of the program prepared her to build instructional capacity and she now had a better understanding of her role as an instructional leader. The ILT was impacted because it became more focused and directed after it was restructured. The most significant takeaways from the Design Academy shared were: helping the school to build an instructional vision and to build a timeline of what needs to be done. Lacy expressed she used the strategies learned at the program when implementing instruction in her classroom and within her department as a department leader.

End-of-Year Survey (Participants)

In April 2019, all four participants completed the end-of-year survey. In addition to revisiting the five questions asked in the mid-year survey, participants were asked to force rank several concepts based on the ILT rubric shared in the beginning of the process. Appendix F shows the breakdown of ILT rubric items, type of participant response, and forced ranking response.

The final component of the end-of-year survey for participants was clarifying next steps following the Design Academy process. Teachers responded they wanted to continue to build capacity through PLC development and refinement. This included encouragement of students and teachers to take on leadership and more ownership in the building through innovative teaching practices. Teacher open-ended survey response indicated participants will also continue to remind the group of the ‘why’ behind the process headed back to PHS. Emma shared her next

step was to implement a second year of the shared vision to focus on building capacity with PLC leaders and growing common instructional strategies and language for the building. Kiki shared her next step would be to continue to focus on expanding and growing based on feedback. She also wanted to create a positive school culture.

End-of-Year Survey (Principal)

In April 2019, an end-of-year survey was administered to principals of Design Academy teams. Dr. Jay completed the survey and indicated his team had created a vision for the school and provided a clear direction aligned to the school district's strategic objectives. He shared the changes made in ILT brought a change to the school and there is now a clear direction and alignment of strategic objectives, professional learning, and instruction. When asked to provide additional feedback, Dr. Jay clarified he did not participate directly in the process but found great value in the process and would send additional staff members in the future. He shared his team members came back energized and full of ideas. The group chose to focus on those ideas they knew would produce the buy-in from the teachers.

Summary

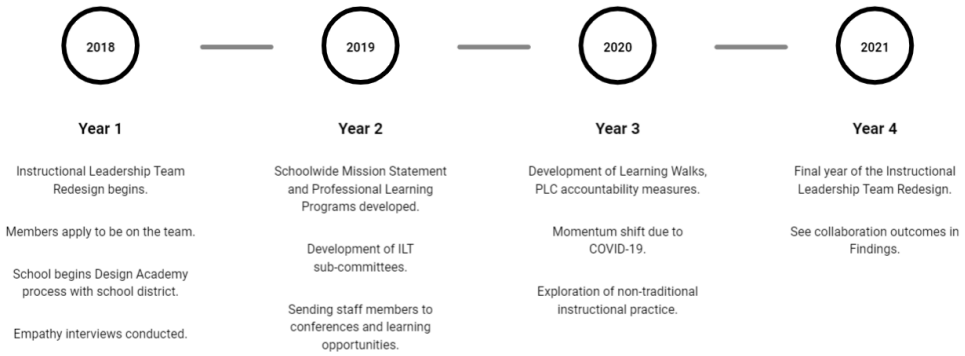
Both leader and teacher participants shared about the conditions of school culture and the value of having a positive school environment. It was acknowledged the administrator and teacher turnover rate was noticeable, and the presence of new staff made leading instructional change more challenging. All respondents mentioned the importance of getting buy-in, because they needed each other and administrative support as the group encountered resistance to change. Although everyone shared the idea of competing problems, the focus of the group was on unity, consistency, and follow-through. The group focused on this condition and the goal of students and staff developing pride and love for their school in the process. All participants discussed the

development of the vision statement, implementation of school-wide professional learning, re-structuring the ILT, and teachers generally working to revise their instructional practice.

Teacher respondents talked about teacher morale being low; leader respondents attributed challenges to teacher attrition. Teachers spoke carefully to the impact of classroom and daily instruction—student-centered instruction, developing student agency, and how teachers changed the way they think about instruction. Leaders spoke more broadly about school-wide professional learning, committees, structure, and the Project Based Assessment initiative. Leaders spoke specifically about PLC tools, learning walk calibrations, and Project Based Assessment cohorts. Teachers talked about the ILT unity, PLC capacity building, and the implementation of sub-committees on the ILT for joy, culture, and Project Based Assessments. Figure 11 shows an overview of the summary of findings in the four-year time frame of the study and the ILT development at PHS.

Figure 11

Overview of the ILT Process Start to Finish at PHS



This chapter presented the findings to demonstrate how a design-based professional learning program impacted developing the conditions for collaboration to occur and led to collaboration outcomes in a school. The participants interviewed in this study revealed both conditions and outcomes for collaboration following participation in a yearlong Design Academy program in Vanderbilt School District. Interview themes as well as anecdotal mid- and post-survey data administered during the program were analyzed. The findings will be discussed in the next chapter in relation to the theoretical framework of Organizational Learning Theory and building teacher efficacy; implications for practice and future research will be offered.

CHAPTER 5: DISCUSSION AND IMPLICATIONS

This study intended to add to the existing research on how schools use design thinking as a tool for innovation to adapt to challenges within the organization, equip teachers to lead broader change, and navigate uncertainty in a way that benefits the organization (Berta et al., 2015). This chapter is to discusses the findings of this study in relation to the theoretical frameworks of organizational learning theory and collective teacher efficacy. Educators who commit to working collaboratively in a collective inquiry process enhance school culture related to collaboration and innovation (Carpenter, 2014). I also discuss how the findings add to the understanding of how teachers and administrators contribute best practices for building capacity, leading to organizational change and growth. I also present conceptual connections to previous literature related to adapting to change, design thinking as a tool for innovation, and support and empowerment of all stakeholders. Finally, implications for school leaders and future researched are offered.

Discussion

In this study, I examined the intersection of the concepts of a design-based professional learning experience between teachers and administrators in a mid-Atlantic high school and the conditions and outcomes from that collaboration using the following research questions:

1. What is the relationship between a design-based professional learning process and developing the conditions for collaboration to occur?
2. What is the relationship between a design-based professional learning process and the development of collaborative school outcomes?

One area of emphasis in this study was the way administrators work in collaboration with teachers to develop innovative solutions to problems while building teacher efficacy through

design-based professional learning. Using a single case study approach, I have outlined one school's experience in a design-based professional learning program in Vanderbilt School District. Three years following the professional development program, users were interviewed using a semi-structured process to collect qualitative data. Pre-existing survey data were also analyzed to develop themes for findings. In the findings, I have outlined the conditions for collaboration to occur and continue at PHS and the processes for how the team pushed the school community to think about the systems in place and ways to change and enhance them. Teachers and leaders from PHS engaged in a social process that led to improved student and school outcomes. It was hypothesized that in sharing the approaches and outcomes related to how schools adapt to change, teachers and leaders will be equipped to lead broader change, generate enthusiasm and participation from key players, and navigate uncertainty in a way that benefits their organization (Berta et al., 2015).

Organizational Learning Theory

The theoretical frameworks of organizational learning theory and collective teacher efficacy guided this study. The findings in Chapter 4 connect to the concepts outlined in the literature review using these two lenses. Organizational learning theory emphasizes social relationships among people within an organization and is grounded in cognitive and social psychology (Berta et al., 2015). The concept of ideas being tested publicly, feedback cycles implemented, and keeping an honest cycle of reflection will move employees toward system change (Argyris, 1976). To motivate better performance and lead to improved educational outcomes, school leaders must understand individual employee needs, beliefs, and goals (Kaplan & Owings, 2017).

Adapting to Change

Adapting to change is a complex process involving routines built over time within a school's community (Fullan, 2020). PHS's principal, Dr. Jay, made the purposeful decision to focus on non-traditional pathways and high school redesign. Traditionally, PHS was focused on school improvement, standardized testing, and rote instruction. To develop a framework for school change, Dr. Jay and Emma worked to establish supportive and shared structures to leverage the Design Academy group to lead change efforts by participation in deep collaborative work (Fullan & Quinn, 2016). A few qualities outlined in the literature for adaptive leadership include: (a) system responses to environmental conditions, (b) environmental variations that lead to unpredictable system behaviors, (c) varying management interventions that influence behaviors directly or indirectly, and (d) limitations for effective management because of uncertainty about the resource system (Williams & Brown, 2018). Initially, Dr. Jay, Emma, Monica, Kiki, and Lacy were identified as the stakeholders selected to play a role in the decision-making process. Because these were respected and distinguished educators within the PHS community, their involvement led to broader participation, greater enthusiasm, and more willingness among teachers to work with administration (Williams & Brown, 2018).

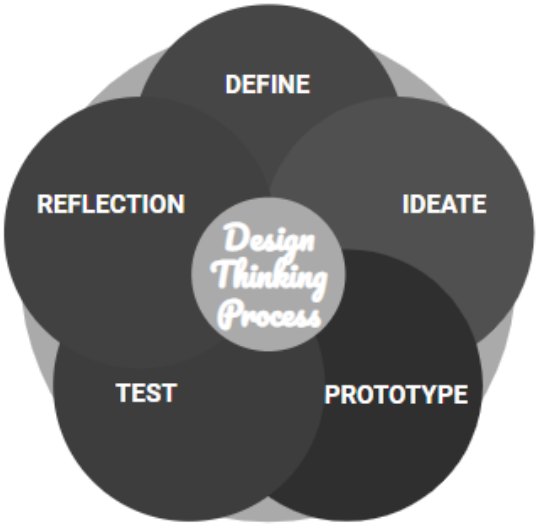
Diagnosing the challenges and truly understanding the problems the organization was facing took time, careful thought, and courage (e.g., Heifetz et al., 2009) for the PHS team. There was a laser focus to connect people and promote unity. The team was prepared for change and flexibility, and a primary goal of the team was connect people and develop a common language. Through the Design Academy process, Emma, Monica, Kiki, and Lacy built trusting relationships with each other and developed creative ways to solve problems, which ultimately led to school change.

Design Thinking as a Tool for Innovation

This study focused on a design thinking process used as a tool for school leaders to design school change (Gallagher & Thordarson, 2018). There are traditionally five steps involved in this process: empathize, define, ideate, prototype, and test (Figure 12). Participants from PHS focused on the empathize step—where they learned more about the audience for whom they were designing. The group carefully sought to understand the reality of others at PHS. Emma, Lacy, and Monica all acknowledged the difficulty the group experienced when navigating the four steps following empathize. The uncertainty was a gray area where the group became more comfortable during the training, and the teachers on the ILT and within PLCs did not feel immediately comfortable in this uncertain space. This was a required step when Design Academy participants attempted to replicate the process to connect, build trust, and create a safe space to release honest emotions (Gallagher & Thordarson, 2018).

Figure 12

Steps of Design Thinking Process



Note. From *Design Thinking for School Leaders: Five Roles and Mindsets That Ignite Positive Change*, by A. Gallagher & K. Thordarson, 2018, *ASCD*. Copyright 2018 by ASCD. Technology in Public Domain.

Reflection is an ongoing component of design thinking. The PHS team included time for reflection in nearly every step of the process. The feedback process built in and modeled by Vanderbilt School District allowed teams to build an understanding of the interconnections between the structural and behavioral parts of their selected complex school challenge. Professional learning specialists modeled the role of moving participants through various stages of the process and monitoring the overall group process. The specialists determined at what points to pause, change course, encourage celebration, or rethink possible solutions. The transfer of this process with the PHS Design Academy taking on the role of facilitators was not always positive. Teachers acknowledged the difficulty in taking teams through this same process. Design thinking fosters innovation by creating a common language, common artifacts, and

culture centered around trust (Gallagher & Thordarson, 2018). Although Emma shared having a common language school-wide was an outcome from this process, not all steps of the design thinking process were implemented with fidelity in the transfer of learning process. One example noted of this was the team's opting to not teach all staff all steps of the design thinking process, but rather pick and choose those processes and activities that worked best given the time and place. The team used iterations of the steps to best meet the needs of the teams. There was a disconnect noted between the understanding of only some steps of the design thinking process and the way the process was transferred from Vanderbilt to PHS.

Capacity-building is a process built into being a part of a teacher design team (Simmie, 2007). Participation in a team like this requires thoughtful intention and commitment. Team learning includes dialogue, skillful discussion, inquiry, and reflection. The dissection of organizational issues allows for stakeholders to focus on actions that lead to sustainable outcomes (Kaplan & Owings, 2017). Three years following participation in the Design Academy process, those interviewed for this study all agreed the process motivated and inspired change within the school community. Traditional structures were redesigned to include ILT, PLCs, and schoolwide professional learning outcomes. To contribute to a positive learning culture, the school's vision statement was rewritten and redistributed to all staff. At each checkpoint with students and staff, reflection was built in to revisit the way things were being done and gather multiple perspectives from staff.

Collective Teacher Efficacy

Collective teacher efficacy outlines how teachers and administrators build expertise, trust, and a supportive network when working together as a team. According to Bandura (1989) the amount of personal efficacy a teacher has influences the effort they invest into their daily

instruction, especially with students who are struggling. Monica, Kiki, and Lacy, all teacher participants in this team process, acknowledged feeling trusted and supported to lead change by Dr. Jay and Emma. When Monica did not initially believe she should apply to be a part of the ILT redesign team, Dr. Jay sent her an e-mail directly and asked her why she had not applied; this encouraged her involvement. Teachers' belief in themselves as agents of change plays a role in both school and student success (Bandura, 1989). The support and trust given by Dr. Jay and Emma played a role in the willingness of Monica, Kiki, and Lacy to take risks and build capacity on school teams at PHS.

Buy-in occurs when a team shares a goal and works together to achieve a goal, assess student progress, make mid-course corrections, and hold each other and themselves accountable. PLCs or teams that do this generate positive outcomes related to student learning. When teachers are encouraged to share authority, cooperation often results alongside the development and improvement of other group members (Stafford, 2017). Building collective teacher efficacy is dependent on group relationships (Meirink et al., 2010). The belief in teachers as trusted professionals and change agents offers a path to understand how collaboration outcomes occur with the increased support of school leaders (Holdsworth & Maynes, 2017). Although the PHS team acknowledged buy-in did not occur immediately with all stakeholders, Emma shared the need to rely on the school administrators and ILT to keep the sustained look at improving instruction going. These team members were seen as leaders of the change within PHS. As additional information was shared school-wide, adjustments were made based on how team members reacted or responded to change. It was difficult to maintain momentum because the action items for the ILT did not always translate or align with the action items for the school. For example, the readiness level for the ILT to engage in Project Based Assessment teams, reflection

about instruction, or lead school sub-committees was higher than that of the general school population. As the team reflected on the first year of implementation at PHS, the group realized although they thought they were building capacity, they had not provided a component to continuously check in with the PLC after initial training.

Monica shared how discouraged the Design Academy team was when buy-in did not initially happen. She shared the important point that transferring the learning from four hand-selected participants to 16 members of the ILT was harder than the group anticipated. Getting to know people's ways of working and gaining perspective about the learning culture at PHS took time and energy; in its first year, the Design Academy team was extremely protective of their work. During Year 2, the quiet voices became more dominant as team members felt more empowered to participate. The reflective Design Academy team also acknowledged they had not done enough to get initial buy-in from all staff members and to prepare themselves for how to adjust and pivot when resistance occurred.

Support and Empowerment of all Stakeholders

Double-loop learning is defined as identifying a problem's root causes rather than treating surface symptoms (Kaplan & Owings, 2017). The PHS team learned about different elements of sharing decision making within the larger school community when bringing back activities from Design Academy by analyzing problems beyond surface level, similar to a double-loop learning process. Stakeholder priorities changed for many reasons over the course of implementation. New teachers were hired as veteran teachers retired or transferred to other schools. Administrators changed over the course of the 3 years. While trying to gather input from the staff at PHS, staff turnover remained high, requiring constant revisions, perspective shifting, and developing more consistent structures for sustainable use. The world was also experiencing a

global pandemic, COVID-19, and its impact was noted in every participant interview. Schools closed in March 2020 for learning for the remainder of the school year, requiring teachers to shift to all online teaching. The social context used for building the team at PHS was shifted to a Zoom platform, interfering with the ability to connect on a human-to-human level to engage and hear voices of all staff. Team members had to quickly adjust the way they gathered input, asked for reflection, and shifted the common language to a virtual learning format.

Teacher Teams at PHS

The teacher teams referenced in each interview were: ILT, PLCs, and school-wide PL teams. Dr. Jay allowed teachers choice in selecting which pathway they wanted to focus on, starting in the ILT. The ILT developed several sub-committees based on the initial design steps. Using the Framework for Effective Instructional Leadership Teams (Appendix E), the Design Academy team worked to build capacity and support within the ILT. Meanwhile, PHS was also organized by PLC teams based on content taught. The ways teachers within PLCs establish support and trust with each other impacts motivation and willingness to share resources and activities with each other (Sotirou et al., 2016). Teacher PLCs are deeply rooted in reform initiatives and leading innovative school change; these teams are frequently used as a vehicle for introducing innovation and as an alternative to traditional professional development approaches (Sotirou et al., 2016).

When empowering teachers to engage in innovative practices, personal support is essential. The conditions for a collaborative culture may include PLCs, teacher collaboration, and building teacher capacity and relationships (Fullan & Quinn, 2016). PHS provided conditions for the ILT and PLCs to work together, share decision-making, and build capacity. PHS signaled the importance of PLCs and ILT by providing time during the instructional day for

staff to meet. Teachers on these teams at PHS were involved with a continuous improvement process that was student-centered and included supportive leadership. By increasing the voices of underrepresented groups in the building, the Design Academy team developed an understanding of multiple perspectives with the same goal of unifying the building and solving problems at PHS.

Conclusion

This study builds upon previous research using Organizational Learning Theory and collective teacher efficacy to better understand practices and approaches to tackling complex school issues using a design-based professional learning process. This study specifically outlines the conditions for collaboration to occur in one mid-Atlantic high school and the outcomes from a design-based professional learning process. The conditions resulting from this study for collaboration to occur were: building capacity, support in adapting to change, and empowerment of stakeholders to contribute to the learning culture through the transfer of learning from a design-based professional learning process facilitated by Vanderbilt School District and how it transferred to learning outcomes at PH. Findings from this study were: development of a vision statement, learning walk calibration tool, development of ILT and schoolwide PL teams, PLC check-in form, and the redesign of the ILT. Based on the information collected from this study and research, I recommend other schools in Vanderbilt School District, and other districts interested in similar outcomes, to participate in a design-based professional learning program to provide a research-based format for employees to think about the systems in place in their buildings and the ways to enhance and improve them.

Implications for School Leaders

Revised Profile of a School Leader

Traditionally, school administrators have been viewed as managers of people and tasks. This description no longer captures the complexity of the role. When Design Academy was implemented, the world and education were rapidly changing. Vanderbilt School District was taking purposeful steps toward redesigning the high school experience for students and staff. Schools and leaders were being encouraged to take risks, experiment, and adapt to the constantly changing needs of the students. Leadership is needed to draw on creative strategies and practices to support new teachers and a change-oriented environment (Gallagher & Thordarson, 2018). At the end of this study, the world was experiencing a shift to all virtual and in some cases hybrid or concurrent learning, where students were learning simultaneously online and in person. The review of the literature in this study concludes that the process of change begins with the school leader, a concept called design-inspired leadership (Gallagher & Thordarson, 2018). Because design thinking is messy and nonlinear, it can be challenging for leaders and educators to embrace. However, the design-thinking process can be a catalyst for changing the culture of powerlessness that exists in many schools (Gallagher & Thordarson, 2018). The role of a school leader must move beyond traditional discipline, transportation, hiring, and managerial tasks and shift to an approach of supporting, designing, and learning alongside teachers and staff to create an environment where adult and student learners feel safe to take risks.

Engaging Teams in Collaborative Inquiry

Administrators must build groups intentionally and plan meaningful professional learning for teachers. When implementing professional learning processes that are inquiry- and team-based, the work generated can benefit the entire school community. When teachers feel

administrators trust their instincts, they begin to lead through inquiry (Collay, 2013). Educators committed to working collaboratively are engaging in strategies that will enhance school culture. In the case of PHS, school leaders wanted to increase teacher collaboration and see that transfer to student collaboration. Dr. Jay mentioned one of the visible outcomes from the process was operating without a need for direct instruction and a shift away from traditional instructional practices. The key factor with the school-wide professional learning and ILT learning that occurred was it was driven from stakeholder feedback. After conducting empathy interviews and collecting information from a variety of sources, and with Dr. Jay's approval, a team of teachers and administrators designed multiple learning pathways for the staff. Teachers were given voice and choice in these decisions. Identifying which professional learning opportunities to offer, in what format they are offered, and who will teach them is a critical consideration when providing opportunities for staff to engage in learning together.

In the case of Vanderbilt School District, where many professional learning opportunities are offered centrally, resources are available and should be utilized by building administrators who might not have a high readiness level to embark on this work alone. Identifying the needs of stakeholders, developing systems to act on those needs, and using resources to implement the learning process in a social context among the staff are all skills future administrators need. When planning to engage teams, all types of teams must be considered. Participants in this study noted there are some teams whose needs still are not being met due to the subject area taught or the isolation of being on a team alone. Leaders must look at the membership of teams in their buildings placing people in positions to be successful. To do this successfully requires a great deal of relationship-building and an understanding of the skills available among staff members. It will also require self-awareness for a leader to understand their own areas of strength and

weakness and how teachers can be change agents to better serve the professional learning needs of the building.

Administrators Creating Conditions for Collaboration

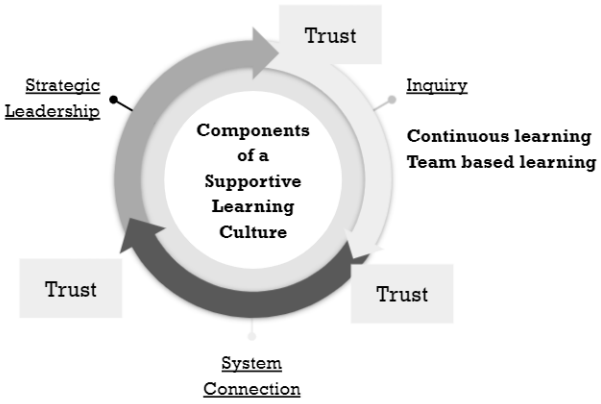
This study outlines a design-based professional learning process that was successful in part because of the conditions for collaboration facilitated by PHS school leaders. In nearly all interviews, participants shared about investment and ownership in the work because they were given the freedom, trust, and flexibility to implement their ideas. Monica, Kiki, and Lacy believed their leaders trusted their decision-making skills and feedback. Dr. Jay and Emma guided the overall vision of instruction at PHS with the support of the Design Academy team. Some of the ways Dr. Jay and Emma provided support were: embedding time within the instructional day for teams to meet, facilitating feedback surveys to staff to gather input, acting on the feedback collected, giving choice in the participation of learning pathways, and putting the right people in positions to lead the work forward. Dr. Jay acknowledged from the beginning he relied on his Assistant Principals, building specialists, and teacher leaders to inform him about how to improve instruction.

By seeing administrators as partners in this work, teachers developed a willingness to work more collaboratively than they had before engaging in the process. Teachers believed they were trusted to make decisions and share leadership with their administrators. Administrators also celebrated and elevated the work being done by teachers in the building. Shaping the collaborative culture must involve developing deeper relationships, trust, and engagement (Fullan & Quinn, 2016). Trust built through this process between administrators and teachers influenced important school outcomes—in this case, developing innovative instructional strategies school-wide and solutions to problems. School leaders who build an environment of

trust will build teacher capacity by sharing decision making (McCharen et al., 2011). The school leader plays a role in creating the conditions for a positive and supportive learning culture within a school. As noted in Figure 13, a supportive learning culture is driven by strategic leadership, continuous and team inquiry, and system connection. Trust is embedded throughout the graphic to emphasize the importance of a sense of trust within the school as an overall condition.

Figure 13

Supportive Learning Cultures



People Support What They Helped to Create

Building capacity was a finding of this study and an implication for school leaders. In this study, teachers were purposefully placed on a design team together to tackle complex school problems collectively. PHS successfully contributed best practices for building capacity while teams were engaging in learning processes, which ultimately led to organizational change and growth. School leaders at PHS did this through restructuring the ILT, careful selection of an

Assistant Principal to lead the Design Academy process, and hand picking a team of teachers to participate in the program. Collective teacher efficacy supports how administrators and teachers work together to build expertise, trust, and a supportive network. Building leaders were given authority and permission to take a non-traditional pathway as part of the high school redesign work in Vanderbilt School District. The authority and permission trickled down to the teams Dr. Jay selected to move the work forward with the Design Academy process. The invitation to participate in the process signaled to the teachers that they were trusted; the continued support and empowerment to do whatever it took to help rebuild the learning culture at PHS also helped. Teachers had voice and space to take risks with the support of school leaders consistently over the course of a 3-year implementation. Responsibility shifted from upper to lower level parts of the organization for a more bottom-up approach to learning and growing together.

Implications for Future Research

I have presented findings and established their connections to relevant previous research on the design-based professional learning process and the collaboration conditions and outcomes from participation. I have also presented implications for current administrators. It is important to highlight the conditions in this study, the timeframe of the study, and the implications they have for future research. As previously mentioned, PHS opted to participate in the Design Academy process. They completed an application and Dr. Jay selected a team to participate. Because the participants applied and were selected by the principal, they did fit the criteria of being willing and wanting to collaborate.

The Design Academy process took place 3 years prior to the data collection for this study. At the time of data collection, the world was experiencing a global pandemic, COVID-19. I chose to highlight the progress noted prior to COVID-19 from the data collection, since the

pandemic was seen as a barrier impacting growth for most who I interviewed. However, the effects of COVID-19 and what schools have learned from it will better guide planning for future sessions of this professional learning program. Fortunately, the outcomes of this study include 3 years of implementation. This included in-person teacher and student learning and the shift to virtual and hybrid learning as a result of COVID-19.

In applying the lenses of Organizational Learning Theory and collective teacher efficacy, future researchers may build on this study to further research the impact of design-based professional learning processes on collaborative school outcomes and conditions. The impact of technology and the shift to all virtual learning due to COVID-19 may also be considered when exploring the idea of a continuous learning culture moving forward. How can school administrators build trust and relationships with teams in an all virtual format? In this study, the design thinking stages were followed in an iterative version in the transfer of learning school-wide, but both of those stages happened during face-to-face professional learning experiences. Further research could provide more insight on how following the design thinking steps with fidelity may affect the process in a school and develop more visible outcomes of design thinking in classrooms school-wide, whether virtual or in-person.

Conclusion

I encourage school leaders to begin with self-reflection of their readiness level for developing a design-based mindset. As our world is rapidly changing, a critical look at current job responsibilities of an Assistant Principal or Principal is needed to determine whether there is space and time for adaptive leadership and seeking creative solutions to complex problems through this process. It is important for school leaders to identify key stakeholders within the school community and seek continuous feedback from them about how to engage teams in

collaborative inquiry processes to lead school change. As an administrator seeking to create conditions to collaboration, an environment of trust and empowerment must be cultivated. This can be done through building relationships, consistent follow-through, and placing people in positions and on teams where they will be most successful. As the team at PHS proved, people support what they help to create. Building capacity is a powerful consideration for school leaders as they carefully look to redesign systems in education. I encourage school administrators to pursue professional learning, participate in self-reflection, and seek feedback from trusted colleagues on the best ways to serve the changing instructional culture of schools post COVID-19.

References

Aflatoony, L., Wakkary, R., & Neustaedter, C. (2018). Becoming a design thinker: Assessing the learning process of students in a secondary level design thinking course. *International Journal of Art & Design Education*, *37*(3), 438-453. https://doi.org/10.1111/jade.12139

Argyris, C. (1976). Single-loop and double-loop models in research on decision making. *Administrative Science Quarterly*, *21*(3), 363-375. https://doi.org/10.2307/2391848

Banathy, B. (1991). *Systems design of education: A journey to create the future.* Educational Technology Publications.

Bandura, A. (1989). Regulation of cognitive processes through perceived self-efficacy. *Developmental Psychology*, *25*(5), 729-735. https://doi.org/10.1037/0012-1649.25.5.729

Berta, W., Cranley, L., Dearing, J. W., Dogherty, E. J., Squires, J. E., & Estabrooks, C. A. (2015). Why (we think) facilitation works: Insights from organizational learning theory. *Implementation Science, 141*(2015). https://doi.org/10.1186/s13012-015-0323-0

Brown, J., & Duguid, P. (1991). Organization learning and communities of practice: Toward a unified view of working, learning, and innovation. *Organization Science*, *2*(1), 40-57. https://doi.org/10.1287/orsc.2.1.40

^Brown, T. & Wyatt, J. (2010) Design thinking for social innovation. *Stanford Social Innovation Review.* 31-35.

^Buchanan, R. (1992) Wicked problems in design thinking. *Design Issues, 8*(2), 5-21 https://jstor.org/stable/1511637

Carpenter, D. (2014). School culture and leadership of professional learning communities. *International Journal of Educational Management*, *29*(5), 682-694. https://doi.org/10.1108/IJEM-04-2014-0046

Cody, A. (2013). Two ways to lead. *Education Leadership, 71*(2), 68-71. http://www.ascd.org/publications/educational-leadership/oct13/vol71/num02/Two-Ways-to-Lead.aspx

Collay, M. (2013). Teaching is leading. *Education Leadership, 71*(2), 72-76. http://www.ascd.org/publications/educational-leadership/oct13/vol71/num02/Teaching-Is-Leading.aspx

Dam, R. F., & Siang, T. Y. (n.d.). *Prototyping: Learn eight common methods and best practices.* Interaction Design Foundation. https://www.interaction-design.org/literature/article/prototyping-learn-eight-common-methods-and-best-practices

Derome, J. (2019) *31 prototype testing questions every designer should ask.* UserTesting. https://www.usertesting.com/blog/prototype-testing-questions

Fauske, J., & Raybould, R. (2005). Organizational learning theory in schools. *Journal of Educational Administration, 43*(1), 22-40. https://doi.org/10.1108/09578230510577272

Francescato, D., & Aber, M. (2015). Learning from organizational theory to build organizational empowerment. *Journal of Community Psychology, 43*(6), 717-738. https://doi.org/10.1002/jcop.21753

Fullan, M. (2020). *Leading in a culture of change* (2nd ed.). Jossey-Bass.

Fullan, M., & Quinn, J. (2016). *Coherence: The right drivers in action for schools, districts, and systems.* Corwin.

Gallagher, A., & Thordarson, K. (2018). *Design thinking for school leaders: Five roles and mindsets that ignite positive change.* ASCD.

Hager, P., Lee, A., & Reich, A. (2012). *Practice, learning, and change: Practice theory perspectives on professional learning.* Springer Science Business Media. https://doi.org/10.1007/978-94-007-4774-6

Hedges, K. (2015). *How to get real buy-in for your idea*. Forbes. https://www.forbes.com/sites/work-in-progress/2015/how-to-get-real-buy-in-for-your-idea

Heifetz, R., Grashow, A., & Linsky, M. (2009). *The practice of adaptive leadership: Tools and tactics for changing your organization and the world.* Harvard Business Press.

Hargreaves, A. (Ed.). (1997). *Rethinking educational change with heart and mind.* ASCD.

Hmelo, C., Holton, D., & Kolodner, J. (2000). Designing to learn about complex systems. *The Journal of the Learning Sciences, 9*(3), 247-298. https://doi.org/10.1207/S15327809JLS0903_2

Holdsworth, S., & Maynes, N. (2017). But what if I fail? A meta-synthetic study of the conditions supporting teacher innovation. *Canadian Journal of Education, 40*(4), 665-703. https://journals.sfu.ca/cje/index.php/cje-rce/article/view/3118/2467

^Johansson-Skoldberg, U., Woodilla, J., & Cetinkaya, M. (2013) Design thinking: Past, present, and possible futures. *Creativity and Innovation Management, 22*(2), 121-146. https://doi.org/10.1111/caim.12023.

Kaplan, L., & Owings, W. (2017). *Organizational behavior for school leadership: Leveraging your school for success*. Routledge.

Kahn, B., & Reigeluth, C. M. (1993). Educational systems design (ESD): An integrated, disciplined inquiry in schools of education. *Educational Technology, 33*(6), 36-40. https://www.jstor.org/stable/44428004

Leedy, P., & Ormrod, J. (2015). *Practice research: Planning and design.* Pearson.

^Leifer, L, & Meinel, C. (2016) Manifesto: Design thinking becomes foundational. *Design Thinking Research,* Springer. https://doi.org/10.1007/978-3-319-19641-1_1

Leithwood, K., Leonard, L., & Sharratt, L. (1998). Conditions fostering organizational learning in schools. *Educational Administration Quarterly, 34*(2), 243-276. https://doi.org/10.1177%2F0013161X98034002005

Lindberg, T., Noweski, C., & Meinel, C. (2010). Evolving discourses on design thinking: How design cognition inspires meta-disciplinary creative collaboration. *Technoetic Arts, 8*(1), 31-37. https://doi.org/10.1386/tear.8.1.31/1

McCharen, B., Song, J., & Martens, J. (2011). School innovation: The mutual impacts of organizational learning and capacity. *Educational Management Administration and Leadership*, *39*(6), 676-694. https://doi.org/10.1177/1741143211416387

Meirink, J., Imants, J., Meijer, P., & Verloop, N. (2010). Teacher learning and collaboration in innovative teams. *Cambridge Journal of Education, 40*(2), 161-181. https://doi.org/10.1080/0305764X.2010.481256

Plattner, H., Meinel, C., & Leifer, L. (2016). *Design thinking research: Making design thinking foundational.* Springer International.

Schwabsky, N., Erdogan, U., & Tschannen-Moran, M. (2019). Predicting school innovation: The role of collective efficacy and academic press mediated by faculty trust. *Journal of Educational Administration*, *58*(2), 246-362. https://doi.org/10.1108/JEA-02-2019-0029

Simmie, G. M. (2007). Teacher design teams (TDTs): Building capacity for innovation, learning, and curriculum implementation in the continuing professional development of in-career

teachers. *Irish Educational Studies, 26*(2), 163-176. https://doi.org/10.1080/03323310701295914

Stafford, F. (2017). Creating a collaborative learning culture. *Australian Educational Leader, 39*(2), 30-39. https://issuu.com/geelongcollege/docs/ael_t2_17_t2_stafford_2

Stake, R. (1995). *The art of case study research.* Sage.

Strahan, D. (2003). Promoting a collaborative professional culture in three elementary schools that have beaten the odds. *The Elementary School Journal, 104*(2), 127-146. https://doi.org/10.1086/499746

Sotirou, S., Rivou, K., Cherouvis, S., & Bogner, F. (2016). Introducing large-scale innovation in schools. *Journal of Science Educational Technology, 25*(1), 541-549. https://doi.org/10.1007/s10956-016-9611-y

Razzouk, R., & Shute, V. (2012). What is design thinking and why is it important? *Review of Educational Research*, *82*(3), 330-348. https://doi.org/10.3102/0034654312457429

Timmermans, O., Van Linge, R., Van Petegem, P., Von Rompaey, B., & Denekens, J. (2013). A contingency perspective on team learning and innovation in nursing. *Journal of Advanced Nursing*, *69*(2), 363-373. https://doi.org/10.1111/j.1365-2648.2012.06014.x

Turcotte, S., Laferriere, T., Hamel, C., & Breuleux, A. (2010). Multi-level innovation in remote networked schools. *System Practice Action Research*, *23*(1), 85-299. https://doi.org/10.1007/s11213-009-9160-x

Vangrieken, K., Dochy, F., Raes, E., & Kyndt, E. (2015). Teacher collaboration: A systematic review. *Educational Research Review, 15*(1), 17-40. https://doi.org/10.1016/j.edurev.2015.04.002

^von Thienen, J.P., Clancey, W., Corazza, G., & Meinel, C. (2018) *Theoretical foundations of design thinking*. Springer.

Wiktorsson, M., & Groth, M. (2011). Conditions for innovation: Insights from a multi-case study. *Journal of Technology Management & Innovation, 6*(2), 203-216. https://doi.org/10.4067/S0718-27242011000200014

Williams, B. K., & Brown, E. D. (2018). Double-loop learning in adaptive management: The need, the challenge, the opportunity. *Environmental Management, 62*(1), 995-1006. https://doi.org/10.1007/s00267-018-1107-5

APPENDIX A

INTERVIEW PROTOCOL

Design Based Approach for Team Learning Protocol
Interview Protocol

I. Introduction (5 minutes)

A. The purpose of this interview is to learn more about a design-based approach to team learning and the collaboration outcomes from that process.

> Your participation is voluntary and while we ask that everyone keep the discussion confidential. The researchers will not identify anyone or any individual response by name in our summaries. You may choose not to answer questions during this discussion if you so choose.

B. Moderator introductions: “My name is Leslie Lehner and I am a doctoral student at Old Dominion University. My job is to facilitate the interview process, record your responses, and keep time to make sure that we do not exceed the proposed time limit.”

C. Interview Questions

D. Wrap-up and thank the candidate for participation in the interview process.

APPENDIX B

INTERVIEW QUESTIONS

Could you please tell me about yourself in terms of education? How long have you been in education? And at X school? How long have you worked in X school district?
How did you become involved with the Leadership Academy process?
What was your role in the Leadership Academy process? (Teacher, Leader, Specialist)
What problem of practice did your team identify to focus on?
How did your team decide on that problem of practice and why was that one chosen?
Tell me about your thoughts regarding the Leadership Academy process – what aspects of the process did you find valuable and which would you recommend revising?
How was your team supported with this work by administration in your school building? How were you supported by the central office?
Talk to me about the design thinking process and the stages your team went through to learn about the challenge and develop your solution.
What outcomes resulted in your schools' participation from the process?
How did the ILT (instructional leadership team) respond to your efforts to lead change?
In what ways have your leadership teams promoted the idea of design thinking following participation in the program?
Did your Instructional Leadership team collaborate before this opportunity?
How often do teams collaborate in your building?
How do you define team collaboration?
How was this experience personalized for your team?
In what ways are the products of the design thinking process visible in the teaching and learning in classrooms at your school?
Did the professional learning experience Leadership Academy cohort motivate or inspire change at the school level?
Did you feel empowered to make decisions and tackle additional problems back at your school?
Are you more or less open to working as a team? With your administrator?
What would you change about the design of this process in the future?
Considering the impact of COVID-19, what about this program should change for future participants?

APPENDIX C

IRB INFORMED CONSENT DOCUMENTS

OLD DOMINION UNIVERSITY

PROJECT TITLE: Design Based Approach for Team Learning

INTRODUCTION

The purposes of this form are to give you information that may affect your decision whether to say YES or NO to participation in this research, and to record the consent of those who say YES for Design Based Approach for Team Learning which will be conducted via Zoom or via phone.

RESEARCHERS

Karen L. Sanzo, Professor, EdD, College of Education and Professional Studies, Educational Foundations and Leadership

Leslie Lehner, Doctoral Student, College of Education and Professional Studies

DESCRIPTION OF RESEARCH STUDY

We are looking to learn more about the collaboration outcomes from a design-based approach for personalized professional learning centered around leadership and problems of practice. We want to explore multiple processes and protocols for effectively facilitating change and are looking to learn more about how faculty and administrators may team to tackle both adaptive and technical problems of practice.

If you decide to participate, then you will be invited to participate in an interview process related to your experience in a design-based approach for personalized professional learning. During this time, you will be asked to respond to a series of interview questions related to the program and outcomes following your participation. If you say YES, then your participation will last for sixty

minutes on Zoom. Approximately fifty teachers and administrators will be participating in this study.

EXCLUSIONARY CRITERIA

To the best of your knowledge, you should have some involvement in the VBCPS design-based approach to personalized professional learning.

RISKS AND BENEFITS

RISKS: And, as with any research, there is some possibility that you may be subject to risks that have not yet been identified.

BENEFITS: The main benefit to you for participating in this study is learning about experiential learning initiatives at your institution and designing new possible experiential learning opportunities. Others may benefit by aggregating these lessons learned and sharing with the broader university and academic community.

COSTS AND PAYMENTS

The researchers are unable to give you any payment for participating in this study.

NEW INFORMATION

If the researchers find new information during this study that would reasonably change your decision about participating, then they will give it to you.

CONFIDENTIALITY

The researchers will take all reasonable steps, including recording only audio of the Zoom sessions and not asking for any identifying information on the written document to keep private information as confidential. The researcher will remove identifiers from all identifiable private information collected. Recordings (audio) of the interview (s) will be stored on password protected computers and names and only on university approved, secure servers. The results of

this study may be used in reports, presentations, and publications; but the researcher will not identify you. Of course, your records may be subpoenaed by court order or inspected by government bodies with oversight authority.

WITHDRAWAL PRIVILEGE

It is OK for you to say NO. Even if you say YES now, you are free to say NO later, and walk away or withdraw from the study -- at any time. Your decision will not affect your relationship with Old Dominion University, or otherwise cause a loss of benefits to which you might otherwise be entitled.

COMPENSATION FOR ILLNESS AND INJURY

If you say YES, then your consent in this document does not waive any of your legal rights. However, in the event of any potential harmful situations arising from this study, neither Old Dominion University nor the researchers are able to give you any money, insurance coverage, free medical care, or any other compensation for such injury. In the event that you suffer injury as a result of participation in any research project, you may contact Karen Sanzo, ksanzo@odu.edu/757-683-6698 or Dr. Chezan, DCEPS IRB Chair, : lchezan@odu.edu/757-683-3802 at Old Dominion University, or the Old Dominion University Office of Research at 757-683-3460 who will be glad to review the matter with you.

VOLUNTARY CONSENT

By signing this form, you are saying several things. You are saying that you have read this form or have had it read to you, that you are satisfied that you understand this form, the research study, and its risks and benefits. The researchers should have answered any questions you may have had about the research. If you have any questions later on, then the researchers should be able to answer them:

Leslie Lehner, llehn001@odu.edu – 757-613-6744

If at any time you feel pressured to participate, or if you have any questions about your rights or this form, then you should call Dr. Chezan, DCEPS IRB Chair., the current IRB chair, at 757-683-3802, or the Old Dominion University Office of Research, at 757-683-3460.

And importantly, by signing below, you are telling the researcher YES, that you agree to participate in this study. The researcher should give you a copy of this form for your records.

Subject's Printed Name & Signature	**Date**

INVESTIGATOR'S STATEMENT

I certify that I have explained to this subject the nature and purpose of this research, including benefits, risks, costs, and any experimental procedures. I have described the rights and protections afforded to human subjects and have done nothing to pressure, coerce, or falsely entice this subject into participating. I am aware of my obligations under state and federal laws, and promise compliance. I have answered the subject's questions and have encouraged him/her to ask additional questions at any time during the course of this study. I have witnessed the above signature(s) on this consent form.

Investigator's Printed Name & Signature	**Date**

APPENDIX D

RECRUITMENT COMMUNICATION

Dear Colleague,

As a student at Old Dominion University, I am conducting a research study on design teams and participation in the Leadership Academy process in x school district. This is a unique opportunity to connect the design-based approach to personalized professional learning and the collaboration outcomes from that process.

In order to do this, we need to hear from faculty, staff, and administrators who have engaged in this professional learning experience.

You are invited to participate in our research study connected with dissertation research around design teams and collaborative team learning. We will be conducting interviews with each participant to gather input on the process and participation is voluntary. The researchers will not identify anyone or any individual responses by name in our summaries. You may choose not to answer questions during the interview if you choose.

Leslie Lehner, doctoral student, will host the interview sessions on the dates and times below. If you are interested, please select one of the following dates (the same interview process for this research study will be used at each session and you should plan to attend only one session).

APPENDIX E

FRAMEWORK FOR EFFECTIVE INSTRUCTIONAL LEADERSHIP TEAMS (ILTs)

KEY ACTION #1: FOCUSES ON IMPROVEMENT OF TEACHING AND LEARNING SCHOOLWIDE
a. Engages the school community in using data to develop teaching and learning goals that align to the vision and mission of the school to promote academic success for every student.
b. Facilitates the development of improvement plans to achieve teaching and learning goals and adapts plans as needed.
c. Uses and promotes a school-wide instructional framework that describes shared and common practices of highly effective teaching designed to improve student learning.
d. Observes in classrooms and collects evidence of implementation of instructional practices in ways that helps teachers continually learn and grow.
e. Engages in inquiry to improve teaching and learning.
f. Plans professional development and provides other resources (e.g. coaching) to support school wide implementation of instructional practices.
g. Commits to continual improvement and measuring development of the knowledge and skills needed to be effective ILT members (e.g. Characteristics of ILT members) in order to improve teaching and learning.

KEY ACTION #2: COLLABORATES TO ENSURE TEAM SUCCESS
a. Develops a climate of trust and respect to engage colleagues in conversations about student learning data and ways to use data to improve instructional practices and organizational structures to improve student learning.
b. Engages in reflective dialogue in which team members talk about their problems of practice and generate possible theories of action to guide the work.
c. Develops and uses shared norms, beliefs and values to guide actions and decisions.
d. Observes and discusses each other's practice (teaching, coaching, team processes, etc.) and are committed to the continuous improvement of practice.
e. Honors diverse points of view and respects team members for their expertise.
f. Exhibits a shared sense of loyalty, commitment, and shared accountability.
g. Models and supports a strengths-based culture of continuous improvement.

KEY ACTION #3: DEVELOPS EFFECTIVE STRUCTURES AND PROCESSES TO STAY FOCUSED ON TEACHING AND LEARNING
a. Uses clear, purposeful and consistent process and structures during ILT meetings (e.g. agendas, minutes, protocols and accountability for completing tasks).
b. Creates, revises and implements policies and procedures to build staff capacity and to support the continuous improvement of teaching and learning.
c. Implements and monitors data systems and uses evidence and data with staff to monitor teaching and learning goals.
d. Uses research aligned to an instructional framework to select appropriate strategies to solve identified problems of student learning and teaching practice.
e. Communicates consistently about growth, areas of need and celebrate successes related to teaching and learning.
h. Actions and decisions of the team reflect a shared commitment to achievement of improvement goals and the implementation plan.

APPENDIX F

END-OF-YEAR PARTICIPANT SURVEY RESPONSES TO EFFECTIVENESS OF THE ILT RUBRIC ITEMS

Rubric item	Participant Type	Response
Engages the school in using data to develop teaching and learning goals that align to the vision and mission of the school to promote the academic success of every student	Teacher Administrator Teacher Specialist	Consistently/Intentionally Consistently/Intentionally Sometimes/Experimentally Sometimes/Experimentally
Facilitates the development of improvement plans to achieve teaching and learning goals and adapts plans as needed	Teacher Administrator Teacher Specialist	Consistently/Intentionally Consistently/Intentionally Sometimes/Experimentally Sometimes/Experimentally
Uses and promotes a school-wide instructional framework that describes shared and common practices of highly effective teaching designed to improve student learning.	Teacher Administrator Teacher Specialist	Consistently/Intentionally Sometimes/Experimentally Sometimes/Experimentally Consistently/Intentionally
Observes in classrooms and collects evidence of	Teacher Administrator	Sometimes/Experimentally Consistently/Intentionally

implementation of instructional practices in ways that helps teachers continually grow	Teacher Specialist	Sometimes/Experimentally Consistently/Intentionally
Engages in inquiry to improve teaching and learning.	Teacher Administrator Teacher Specialist	Sometimes/Experimentally Sometimes/Experimentally Sometimes/Experimentally Rarely/Never
Plans professional development and provides other resources (e.g. coaching) to support school-wide implementation of instructional practices.	Teacher Administrator Teacher Specialist	Consistently/Intentionally Consistently/Intentionally Sometimes/Experimentally Consistently/Intentionally
Commits to continual improvement and measuring development of the knowledge and skills needed to be effective ILT members	Teacher Administrator Teacher Specialist	Consistently/Intentionally Consistently/Intentionally Sometimes/Experimentally Sometimes/Experimentally
Develops a climate of trust and respect to engage colleagues in conversations	Teacher Administrator Teacher	Consistently/Intentionally Sometimes/Experimentally Sometimes/Experimentally

about student learning data and ways to use data to improve instructional practices	Specialist	Consistently/Intentionally
Engages in reflective dialogue in which team members talk about their problems of practice and generate possible theories of action to guide the work	Teacher Administrator Teacher Specialist	Sometimes/Experimentally Sometimes/Experimentally Sometimes/Experimentally Consistently/Intentionally
Develops and uses shared norms, beliefs, and values to guide actions and decisions.	Teacher Administrator Teacher Specialist	Consistently/Intentionally Consistently/Intentionally Sometimes/Experimentally Sometimes/Experimentally
Observes and discusses each other's practice and are committed to the continuous improvement of practice	Teacher Administrator Teacher Specialist	Consistently/Intentionally Sometimes/Experimentally Sometimes/Experimentally Sometimes/Experimentally
Honors diverse points of view and respects team members and their expertise	Teacher Administrator Teacher Specialist	Consistently/Intentionally Sometimes/Experimentally Sometimes/Experimentally Sometimes/Experimentally

Exhibits a shared sense of loyalty, commitment, and shared accountability.	Teacher Administrator Teacher Specialist	Consistently/Intentionally Consistently/Intentionally Sometimes/Experimentally Consistently/Intentionally
Models and supports a strengths-based culture of continuous improvement	Teacher Administrator Teacher Specialist	Sometimes/Experimentally Sometimes/Experimentally Sometimes/Experimentally Consistently/Intentionally
Uses clear, purposeful, and consistent process and structures during ILT meetings	Teacher Administrator Teacher Specialist	Consistently/Intentionally Sometimes/Experimentally Consistently/Intentionally Consistently/Intentionally
Creates, revises, and implements policies and procedures to build staff capacity and support the continuous improvement of teaching and learning.	Teacher Administrator Teacher Specialist	Sometimes/Experimentally Sometimes/Experimentally Consistently/Intentionally Sometimes/Experimentally
Implements and monitors data systems and uses evidence and data with staff to monitor teaching and learning goals	Teacher Administrator Teacher Specialist	Consistently/Intentionally Sometimes/Experimentally Sometimes/Experimentally Sometimes/Experimentally

Uses research aligned to an instructional framework to select appropriate strategies to solve identified problems of student learning and teaching practice	Teacher Administrator Teacher Specialist	Sometimes/Experimentally Sometimes/Experimentally Sometimes/Experimentally Sometimes/Experimentally
Communicates consistently about growth, areas of need, and celebrates successes related to teaching and learning	Teacher Administrator Teacher Specialist	Consistently/Intentionally Consistently/Intentionally Sometimes/Experimentally Sometimes/Experimentally
Actions and decisions of the team reflect a shared commitment to achievement of improvement goals and the implementation plan.	Teacher Administrator Teacher Specialist	Consistently/Intentionally Sometimes/Experimentally Sometimes/Experimentally Consistently/Intentionally

APPENDIX G

END-OF-YEAR PRINCIPAL SURVEY

Please select your level (Elementary, Middle, High)

In what ways has the Design Academy impacted your Instructional Leadership Team (ILT)?

In what ways has the Design Academy impacted your school?

What specific aspects of the Design Academy should be continued?

What suggestions for improvement would you like for the facilitators to consider for future Academies?

Please provide any additional feedback (optional).

VITA

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