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Teachers' Descriptions of Their Professional Learning Networks and Spaces

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TEACHERS' DESCRIPTIONS OF THEIR PROFESSIONAL LEARNING NETWORKS AND SPACES

by

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ABSTRACT

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by

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Teachers learn to improve their practice from various sources, including formal professional learning, interactions with colleagues in their school, and participation in social media spaces, to name a few. Scholars have examined individual teachers' descriptions of learning resources they value and have labeled this personal collection of resources a teacher's professional learning network (PLN). This mixed methods study explored teachers' descriptions of their PLNs and closely examined their engagement with professional learning spaces that form a critical part of their PLN. This study also provided teachers with an opportunity to voice what they believe to be ideal professional learning spaces and describe what they are currently experiencing in required spaces. Findings indicated that teachers use a variety of spaces, people, and tools to inform their learning. Teachers in this study generally envisioned ideal learning spaces as collaborative environments in which they access expertise and ideas relevant to their practice in a way they can control. While some teachers reported positive experiences

with required professional learning, many reported not accessing these elements in their required professional learning spaces. The intent of the study is to understand teacher professional learning through the eyes of teachers to assist them in improving their practices and better support student learning.

(202 pages)

PUBLIC ABSTRACT

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The purpose of this study is to understand teacher professional learning through the eyes of teachers to assist them in improving their teaching and better support student learning. Teachers learn to improve their practice in many different ways and from many different sources. Researchers have studied teachers' descriptions of learning resources they value and have labeled this personal collection of resources a teacher's professional learning network (PLN). This study explored teachers' descriptions of their PLNs and closely examined what teachers do in professional learning spaces of their choosing. This study also provided teachers with an opportunity to voice what they believe to be ideal professional learning spaces and describe what they are currently experiencing in required spaces. I found that teachers use a variety of spaces, people, and tools to get better at teaching. In general, teachers look for collaborative environments in which they access expertise and ideas relevant to their practice in a way they can control. While some teachers reported positive experiences with required professional learning, many reported not experiencing these desired factors in professional learning that is required of them.

DEDICATION

I dedicate this work first and foremost to my true love, Julia, whose sacrifices over the last few years have been immeasurable, and whose support and insights have been invaluable. I also dedicate it to our daughter, Rosie, who asked so many times when I would be finished with my dissertation. I also dedicate this to my parents, Joan and Richard, whose dedication to me has never wavered.

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I wish to thank the 1,693 teachers who took the time to engage in this study with me. I hope I have accurately represented your ideas and opinions in this paper. I also thank my advisor, Breanne Litts, and my committee members for their thoughtful input and guidance. I also thank Dallas Haws and Mykel Beorchia for their research assistance and support during a critical time. Last, I thank our heavenly Father for blessing me with inspiration and strength to complete this work.

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CHAPTER I

INTRODUCTION

For decades, scholars, education leaders, and educators alike have called for meaningful professional learning (PL) for teachers (Bill & Melinda Gates Foundation, 2014; Liao et al., 2017; Lieberman, 1995; Pedder et al., 2005). The recent COVID-19 pandemic made this need even more apparent (Furlong & Spina, 2022) as teachers wrestled with the challenge of transitioning to emergency remote teaching (Hodges et al., 2020; Trust & Whalen, 2021). While much is understood about formal teacher professional development (PD; Darling-Hammond et al., 2017, 2009), less is known about the PL opportunities teachers initiate and pursue for themselves. Understanding this informal PL space is critical to expanding our understanding of teacher wellbeing and how teachers improve their practice.

Currently, thousands of teachers are choosing to leave the profession prematurely (Kamenetz, 2022). This is leaving many schools and districts drastically understaffed, even to the point of calling in the National Guard to substitute in classrooms (Fordham, 2022). Closely examining what teachers are currently experiencing can help to elucidate this problem and how to resolve it. Minihan et al. (2022) surveyed teachers in Ireland and found they felt overburdened and undervalued as they took on the immense challenge of shifting teaching online during the pandemic. In a survey of 830 U.S. teachers by Marshall et al. (2022), 29% of teachers reported low morale. The next year, as many schools returned to full operation and faced the challenge of returning students to a regular, in-person school schedule, this grew to 56%. Heffernan et al. (2022) collected

responses from over 2,400 teachers in Australia and reported that only 41% intended to remain in the profession due to heavy workloads, health and wellbeing concerns, and the status of the profession. Teachers suggested reducing teachers' workload and granting them greater trust and respect as solutions to this problem. In summary, many teachers have recently felt undervalued and overwhelmed to the point of leaving the profession.

A key form of valuing teachers (pre- and post-pandemic) involves empowering them with agency over their practices, their professional learning, and the development of their school (Colbert et al., 2008; Cong-Lem, 2021; Imants & Van der Wal, 2020). Teachers want to feel respected as knowledgeable professionals that have something valuable to contribute to others (Heffernan et al., 2022; Pineda-Báez et al., 2019). Also, teacher learning is known to thrive when driven by teacher choice (Calvert, 2016; Cong-Lem, 2021; Knight, 2007; Lieberman & Pointer Mace, 2008). Teacher professional learning networks (PLNs; Trust et al., 2016) are built upon teacher agency and include professional learning spaces in which teachers pursue learning largely of their choosing (Krutka et al., 2017). In addition to agency, the spaces within a teacher's PLN provide them with community and connection, which are key to supporting teachers in their practice (Hur & Brush, 2009; Krille, 2020; Trust & Horrocks, 2017).

The many disruptions of the COVID-19 pandemic, including moving instruction and professional interactions online, have had an impact on teachers' participation in professional learning spaces, but understandings of recent shifts are just beginning to form. Specifically, we do not have a complete picture of how teacher learning experiences or perceptions of ideal vs. required PL spaces have evolved in recent years. It

is likely that developing understanding in these areas would address teachers' needs and subsequently help keep them in the profession.

In response to this need, I sought to identify how teachers engage in and want to engage in learning spaces. In particular, I ask, "How do teachers describe their professional learning network (PLN) and its benefits?" "What are teachers' perceptions of current and ideal professional learning spaces?" And "How do their experiences in required PL spaces compare with those they personally select?" To address these questions, I surveyed a broad range of teachers about their participation in learning spaces and explored what they now perceive as ideal professional learning spaces. Findings can assist educational leadership as they work to create supportive working environments for and with teachers and increase the likelihood of them remaining in the profession in years to come. Additionally, this research contributes to our understanding of teachers' use of varied spaces and their perceptions of ideal professional learning spaces, giving teachers as users a voice in the future design of these spaces.

CHAPTER II

BACKGROUND

To provide a context for this study, I present an overview of the formal and informal opportunities teachers have for professional learning, how they participate in these, and how teachers benefit from them. Then, I share a recently developed framework for understanding teacher professional learning called "professional learning networks" (Trust et al., 2016) that shifts the focus away from any single event, community, or experience and places it more squarely on the individual teacher. Finally, I select one piece from the PLN framework ("spaces") and explore it in more theoretical detail. After providing this context, I describe a conceptual framework for this study that first applies a PLN lens and then uses it as a backdrop for applying a practice architectures framework (Kemmis & Grootenboer, 2008) to understand the affordances of professional learning spaces.

Teacher Professional Learning

To improve their practice, teachers have multiple learning opportunities in which they can participate (Darling-Hammond et al., 2009). These opportunities can be described using a wide range of characteristics including formal or informal, in-person or online, mandatory or optional, of short or sustained duration, individual or group-based, teacher-led or professionally facilitated, among others. The effectiveness of these various forms of PD has been a topic of academic research for many decades (see Noonan, 2016, for a review of this literature) and multiple researchers have worked to establish general

criteria for effective teacher PD—one recent review summarizes these criteria as "strong content focus, active learning, coherence, sufficient duration, and collaborative and collective participation" (Njenga, 2023, p. 71). These criteria emerged from studies of formal PD but have relevance across the broad spectrum of teacher professional learning opportunities including the PLNs and professional learning spaces which were the focus of this study.

Teacher Preferences in Their Professional Learning

There is a growing body of research about teachers' preferences for PL and PL spaces. Previous studies have focused on preferred format (online or in-person; Bullock, 2018; LeVesseur et al., 2022; Liao et al., 2017; Owens et al., 2018), preferred topics (Bullock, 2018), preferred duration of experience (Bill & Melinda Gates Foundation, 2014; Matherson & Windle, 2017; Owens et al., 2018; Yates, 2007; Yumru, 2015), and preferred type of experience (conferences, reading books, etc.; Aubusson et al., 2015; Das et al., 2013; McElearney et al., 2018; Utami, 2019; Yumru, 2015). Others have examined the factors teachers identify as important to meaningful PL (Bill & Melinda Gates Foundation, 2014; Furlong & Spina, 2022; Matherson & Windle, 2017).

Perhaps most importantly, McElearney et al. (2018) report a mismatch between the types of learning activities teachers engage in most (courses, conferences, and workshops, which they rate as having less impact on their professional practice) and the types of professional learning they prefer (group work, interactive sessions/seminars and cluster groups that provide opportunities for self-reflection, discussing, debating and

using case studies). This begs investigation into ways in which teachers might be empowered to engage in types of professional learning they prefer and find impactful.

Formal Teacher Professional Learning

The discrepancy in what professional learning teachers experience and what they prefer may be explained by the amount of formal, mandated PD teachers receive regularly. This type of professional learning is generally described as highly structured and facilitated by experts with examples given like graduate courses, seminars, conferences, or workshops (D. Richter et al., 2011; Njenga, 2023). Formal PD is usually organized around schedules and topics mandated by the school or district and not the teachers (Jones & Dexter, 2014). Darling-Hammond et al. (2017) reviewed 35 studies that exemplified effective PD and report that the most common format for effective formal PD includes participation in an intensive workshop, followed by teacher attempts to practice the new knowledge in the classroom, followed by additional development days or instructional coaching to ensure teacher learning across time (usually a semester, a year, or more).

Formal PD commonly focuses on skill mastery (A. Kennedy, 2005) and aims to grow professional competency to improve student learning (Desimone, 2009). M. M. Kennedy (1998) identified four predominant foci for formal PD: generic teaching practices, subject-specific teaching practices, curriculum and pedagogy, and how students learn. More recently, formal PD foci reportedly include what to teach (content knowledge and pedagogical content knowledge) and how to teach (teaching strategies, activities, and knowledge; Sancar et al, 2021; Sher & O'Reilly, 2009). M. M. Kennedy (2016) provides

us with a view on how formal PD uses various forms of enactment to impact teacher practices. These include prescription (prescribed methods teachers were expected to adopt as a result of the PD), strategy (in which teachers are trained to be strategic in their planning and teaching), insights (in which teachers are given opportunities to develop new insights they hopefully apply to their practice), and body of knowledge (in which teachers are presented with new knowledge and expected to translate this into changes in their professional practice). Blank and de las Alas (2009) found that more effective programs have active learning methods integrated with the training (i.e., leading instruction, observing others, developing assessments, professional networks, etc.) and follow-up support for teachers after a training session.

Teacher participation in formal PD varies by a range of factors including age, gender, completion of pre-service training, personal needs for income, job security and prestige, personal beliefs, motivation, and past PD experiences (Njegna, 2022). Geographical region and local policy may also be factors. In the United States, for example, age does not appear to be a factor in participation in PD, but in Germany (where participation in PD is not required to maintain licensure), participation peaks (on average) when a teacher is in their mid-40s (D. Richter et al., 2011).

To share more on the U.S. context, on the Schools and Staffing Survey (SASS) administered in the U.S. in 2008, 88% of respondents indicated they participated in PD with a content focus in the past year (Wei et al., 2010). Participation varied across school contexts—elementary teachers reported higher rates of participation in PD than secondary teachers (91% vs. 81%). Also of import, teachers' participation in PD varied

widely across states, with Utah near the top for rates of participation in content-focused PD and reading instruction PD. Utah respondents also reported the highest average cumulative hours of professional development in the last 12 months (56 hours). This indicates that many Utah teachers are engaging in PD, but does not give any insight on the teacher experience with that PD.

Njenga (2023) reports on barriers to teachers' participation in formal PD, including scheduling difficulties, lack of incentives, costliness, lack of relevant opportunities, lack of time, lack of employer support, pre-requisites, and lack of facilities. Contextual factors such as school-level and state-level policies can also impact teacher participation in formal PD (Desimone et al., 2007). Krille (2020) completed a comprehensive review of teacher participation in PD in Germany, Austria, and Switzerland and reported barriers cited by teachers, such as work demands, scheduling conflicts, and issues with the PD program quality or accessibility.

Researchers report some benefits from participating in formal PD. About two-thirds of respondents in the SASS 2008 rated their PD as useful or very useful (Wei et al., 2010). Jones and Dexter (2014) report that formal PD can increase communication within a school or district, develop community within an organization, provide useful training for a selected platform, access to outside experts, alignment of schools' and teachers' learning goals, and give exposure to mandated skills. One popular form of structured PD is school-based PLCs (DuFour & Eaker, 1998) in which teachers collaborate in predetermined teams on a regular basis and Jones and Dexter report that PLCs can improve communication by providing structured collaboration time.

While formal PD has been shown to have some positive effects, it also has many critics. Although Jones and Dexter (2014) identify some positive outcomes from formal PD like PLCs, they also point out that the content and format of formal PD is not determined by teachers, which undermines their voice. In one study, less than a quarter of teachers on average believed that formal PD had any transformational impact on their instruction (Hill, 2009). This is further validated by Darling-Hammond et al. (2009) who also found that many teachers believe formal PD is not useful. This is likely due to identified shortcomings of formal PD—it is often disconnected from teachers' complex needs (Opfer & Pedder, 2011), tends to only focus on content knowledge (Chen & McCray, 2012), treats teachers as deficient, passive recipients that need developing (Apple, 2012; Webster-Wright, 2009), and lacks personalization and transferability (M. M. Kennedy, 2016; Organisation for Economic Co-operation and Development [OECD], 2014). Furthermore, in a 2014 report from the Bill and Melinda Gates Foundation entitled *Teachers Know Best: Teachers' Views on Professional Development*, researchers report that teachers lack confidence in formal PD as a good source of preparation for the changing nature of their work. This is likely demoralizing for teachers as they see their work becoming increasingly complex. Perhaps most concerningly, large investments in formal PD often fail to produce changes at scale. In a study of three large districts and one charter management organization collectively representing 20,000 teachers and 400,000 students, researchers found minimal impact on teacher effectiveness even after investment of more than $18,000 per teacher per year in formal PD (Jacob & McGovern, 2015). The authors conclude, "we bombard teachers with help, but most of it is not

helpful" (p. 2).

Informal Teacher Professional Learning

Teachers acquire new ideas and skills from many different sources in addition to formal PD. Informal PD accounts for these other sources. Teacher engagement in informal professional learning seems to be growing in parallel with the growth of social media over the last 10-15 years (Lantz-Andersson et al., 2018). D. Richter et al. (2011) describe informal PD as activities that can be "engaged in independently, without much planning, and at the teacher's own pace" (p. 117). Njenga (2023) describes it as "characterized by the lack of a predefined structure" (p. 72) and Jones and Dexter (2014) indicate that informal teacher learning is "driven by the learner's interests and shaped by their experiences and context-specific needs" (p. 380). Examples of informal teacher learning include conversations with colleagues or internet searches (Jones & Dexter, 2014), participation in informal communities of practice (Wenger, 1998), reading professional literature (D. Richter et al., 2011), engaging in study groups, unconferences, and classroom observations (Trust et al., 2016), developing learning materials (Njenga, 2023), and attending summer institutes of their choosing (Trust & Horrocks, 2017).

Researchers who study informal teacher learning tend to refer to "professional learning" instead of "professional development" (Jones & Dexter, 2014; Easton, 2008) to acknowledge teachers as agentic learners and not passive recipients of new knowledge or skills. Several factors motivate teacher participation in informal learning, including access to easily implemented materials or techniques, growing one's content knowledge, finding inspiration, connecting with other teachers, and reflecting on professional practice

(Krille, 2020). Engagement in these opportunities for learning involves reading, observing, collaborating, reflecting, browsing, experimenting, sharing, and storytelling (Kyndt et al, 2016).

Engaging in informal learning has many known benefits for teachers. Informal learning provides teachers with agency over the content and process of their learning as well as flexibility in pacing and time of participation (Jones & Dexter, 2014). It also supplies them with just-in-time support that is relevant to their teaching context and specific learning needs (Stevenson, 2004; Jones & Dexter, 2014). A meta-analysis of 74 journal articles on informal teacher learning identified improved subject knowledge, enhanced pedagogical skills and knowledge, and changed professional attitudes and identity (Kyndt et al., 2016) as benefits to participating in informal learning activities. Lastly, informal learning allows teachers to opt into learning communities, which may accelerate collaboration and community development (Jones & Dexter, 2014).

Like formal PD, informal teacher learning also has its limitations. Carpenter (2016) lists the following as challenges to informal, teacher-centered professional learning: “start-up hurdles, the lack of gatekeepers, tendencies to create “silos,” avoidance of difficult conversations, and misalignment with district goals” (p. 30). Jones and Dexter (2014) also point out that informal learning lacks “the ability to advance an organization-wide agenda for all teachers on particular knowledge and skills” (p. 380) and cannot assure that all teachers access learning opportunities they need to reach organizational goals. They suggest viewing formal and informal learning working together as a holistic system to support effective learning environments for teachers.

Similarly, Opfer and Pedder (2011) recommend examining teacher learning on levels that consider both the individual teacher and the larger systems in which they learn and practice (grade-level groups, schools, and sociopolitical contexts). Using the PLN lens is one way to achieve this.

Professional Learning Networks

Many teachers engage in a range of formal and informal learning modalities to inform their professional practice (Trust et al., 2016; D. Richter et al., 2011). Numerous teachers in Trust et al.'s study of over 1,400 teachers "accessed a wide variety of people, communities, and tools, in both traditional and non-traditional PD settings to further professional growth" (p. 28). This is important because although formal PD has been widely researched, we know much less about these other pieces that are significantly informing teachers' professional learning and practice (Evans, 2019). Many years earlier, Wilson and Berne (1998) claimed that professional learning includes a "patchwork of opportunities-formal and informal, mandatory and voluntary, serendipitous and planned–stitched together" (p. 174). To understand this patchwork, researchers have recently adopted a construct they call "professional learning networks" (Carpenter et al., 2022; Krutka et al., 2017; Trust et al., 2016, 2022), which Trust et al. (2022) define as "uniquely crafted and dynamic learning ecosystems, consisting of people, spaces, and tools that meet an educator's professional needs, interests, and goals" (para. 1) and Krutka et al. (2017) as "uniquely personalized networks that can support participatory and continuous learning" (p. 246). What is perhaps most unique about the PLN framing is that it examines professional learning from the point of view of the educator (Carpenter,

2016; Oddone et al., 2019) instead of focusing on the learning activity (incl. content, delivery, etc.), community, or organizational setting. Greenhow et al. (2021) point out,

> A PLN framing prompts questions related to an individual's agency rather than describing the group characteristics, as do community of practice (Wenger, 1998) or community of inquiry (Garrison et al., 2000) frameworks for professional learning. (p. 1436).

The PLN construct has its roots in the business world. Trust et al. (2016) cites Dan Tobin as coining the term "personal learning network," in 1998, referring to "a network of people and resources that support ongoing learning" (p. 17). Couros (2010) later used this term to describe students in an open, online course who built personal learning networks to learn together and build sustainable knowledge networks. Flanigan (2012) used the term PLN but reverted to applying it to communities and not to a learner-developed collection of interpersonal connections and resources to support their learning. Trust (2012) seems to apply the term PLN to both the personal network (centering the teacher as unit of analysis) and the community (centering the community as unit of analysis). She first describes PLNs as something individual teachers build and develop for themselves to aggregate information and connect with other educators (through social media platforms), but then refers to three popular online teacher communities as PLNs. So, in the early 2010s, the PLN construct began filling a gap in the research on the variety of sources influencing teacher professional learning, but it lacked a clear center (teacher or community).

To clarify the definition of a PLN, Trust et al. (2016) sought out an empirical definition by asking teachers to describe their professional learning network (over 1,400 responded). (Note that the researchers explicitly modified the term "*personal* learning

network" to "*professional* learning network" to place the focus more clearly on an individual's professional learning.) Findings indicated that teachers consider their PLN to be composed of various people, spaces, and tools—not a single learning community or network. The authors then offer a revised definition of PLNs as "uniquely personalized, complex systems of interactions *consisting of people, resources, and digital tools* that support ongoing learning and professional growth" (p. 28, emphasis added).

Krutka et al. (2017) added to our understanding of the "people, resources, and digital tools" nature of PLNs, but referred to it as people, *spaces*, and tools. "People," according to these authors, refers to colleagues, administrators, students, parents, professors, authors, politicians, various non-educators and thought leaders (p. 247). Trust, Krutka, and Carpenter recently collaborated on an encyclopedia entry on PLNs (Trust et al., 2022) and refer to people as "individuals who provide career-based feedback, advice, ideas, emotional support, and/or mentoring" (para. 1). Regarding people, Krutka et al. (2017) emphasize that educators now have the means to connect with professional peers around the world with relative ease. Because of its focus on people, the PLN framework is an appropriate lens for examining this increased connectivity to which teachers have access.

Spaces, according to Trust et al. (2022) refer to "physical, digital, and hybrid places that support or enable professional knowledge building with and from others, such as conferences, workshops, webinars, Twitter chats, unconferences, Reddit forums, and massive open online courses" (para. 1). Teacher motives for pursuing learning in online spaces include "to find and share professional knowledge, overcome feelings of isolation,

receive emotional support, seek out help and connect with people beyond their face-to-face networks" (Krutka et al., 2017, p. 247). Professional learning spaces were a key focus for this study which I explore in greater detail below.

Last, "tools" in a teacher's PLN, according to Trust et al. (2022), include "physical resources (e.g., books, curriculum materials) and digital technologies (e.g., Internet search databases, social bookmarking tools, blogs) that are used to access, curate, construct, and disseminate professional knowledge" (para. 1). The lines between spaces and tools can appear blurry at times. For example, is Facebook a space or a tool? For this study, I consider something like a Facebook group as a space because it involves multiple people engaging in meaning making together, but the platform itself as a tool that facilitates knowledge seeking and sharing.

Our understanding of the impact of PLNs on teachers and their practice is still developing. Trust et al. (2016) found that PLNs may provide affective, identity, social, and cognitive development for teachers. They also noted that teachers speak about their PLN as something they possess (i.e., "my PLN") instead of as something done to them, like formal PD. The authors call for further research on how teachers cultivate PLNs, how they navigate the interactions of different components of their PLN, and how teachers' online and offline activities interact and influence learning.

The changing nature of PLNs has also been a research focus. Carpenter et al. (2022) examined shifts in PLNs in a follow-up study (Trust et al., 2016) in which they reconnected with teachers from the original study and asked them to describe changes to their PLN over the previous 4 years. They found that over 90% of teachers' PLNs had

changed over time, in “diverse, dynamic, and interrelated” ways (p. 85). When asked what had influenced changes in their PLNs, respondents replied with the following factors on an open-ended prompt: job-related factors (60.9%), people or organizations (29.7%), technologies (19.8%), and interests or goals (18.8%). Carpenter et al. (2022) concludes that

> Altogether, most educators shifted their PLNs to meet their changing professional needs within their contexts; in contrast, predetermined and standardized PD often struggles to accommodate educators’ diverse and evolving needs. (p. 103)

This has become especially salient as the COVID-19 pandemic began shortly after Carpenter et al. collected their data (in 2018) for their report.

The COVID-19 pandemic was a significant disruptor to teacher practice (Justis et al., 2020; Greenhow et al., 2021). People quickly moved to emergency remote teaching (Hodges et al., 2020) and, based on Carpenter et al.’s (2022) findings on what can change a teacher’s PLN, one might expect that teachers’ PLNs shifted during this time. Post-pandemic studies on how teachers describe their PLN have yet to come forth, however. What we currently know is more narrowly focused on teacher use of social media platforms during this period (Aguilar et al., 2021), including Twitter (Alwafi, 2021; Bozkurt, 2021; Greenhow et al., 2021; Trust et al., 2020), Instagram (E. Richter et al., 2022), and Facebook and Pinterest (Aguilar et al., 2021). On Twitter, teachers’ cognitive and affective posts increased significantly in a study done in Saudi Arabia (Alwafi, 2021). Teacher networks on Twitter also grew as teachers shared information with and supported one another. Alwafi supposes that as teachers’ face-to-face interactions were limited by social-distancing measures, they may have sought additional network support

in this online space. Greenhow et al. also suspect that teachers (during the pandemic) looked for just-in-time support that was not available through local PD. Interestingly, according to Greenhow et al. (2021),

> "tweeters did not flood #Edchat with tweets in response to the pandemic; but rather, the content of #Edchat tweets shifted in 2020, as evidenced by the inclusion of novel hashtags like #remotelearning and #distancelearning alongside #Edchat. (p. 1449)

Aguilar et al. (2021) found an increase in teacher social media use motivated by connecting and sharing with and learning from and following their peers online. So, much has been published about changes in teachers' social media use (spaces and tools), but we have yet to learn how teachers describe their PLNs (people, spaces, tools) after three years of a global pandemic. Also, these studies focus on teachers that use social media, which not all do. Reapplying the PLN framework in this study allowed me to see teachers' learning behaviors across multiple contexts, including online, offline, and blended spaces.

Spaces for Professional Learning

Sustained engagement by teachers in professional learning spaces has become a well-established form of professional learning (Lantz-Andersson et al., 2018). A space in a teacher's PLN could be a school, a room, a website, a listserv, a video-conferencing platform, a hashtag, etc. Engagement across boundaries of time and location has become increasingly possible through the decades as digital technologies have provided teachers with new spaces in which to connect with each other. These professional learning spaces can be formally organized or informally developed (Greenhalgh et al., 2020; Lantz-

Andersson et al., 2018).

For this study, I use a broad definition of "space" that includes material and social elements (Harrison, 2018) because I am interested in both aspects of a teacher's learning experience in an interactive learning environment. Examples of material aspects of a space include things like the physical setting (online, face-to-face, or blended) and technologies, as well as their affordances. Examples of social elements include how teachers in a space interact, build community, relate to one another, and share ideas with each other, among others.

The varied material and social characteristics of different spaces influence participation in these spaces (Lantz-Andersson et al., 2018). Participation in teacher learning spaces has been studied using a variety of lenses, including Gee's (2004) affinity spaces and Wenger's (1998) communities of practice (CoPs). Affinity spaces refer to content, interactions, and portals for a group of individuals interested in sharing ideas and information with one another. Content refers to the shared reason the people come together to form that space and portals represent entry points to the affinity space. There is a significant intersection between the core elements of affinity spaces and communities of practice (Wenger, 1998). CoPs, for example, focus on a shared domain that brings members together (much like the "content" of affinity spaces). CoPs specifically focus on the shared practices of a community of people (like teachers) that work within a shared domain.

Each of these lenses has been extensively applied to understanding social aspects of teacher professional learning spaces (Lantz-Andersson et al., 2018; Vangrieken et al.,

2017). A review of multiple studies over the past 20 years showed that formally organized spaces provide a means for sharing knowledge, collegial support, and emotional engagement and reflection, whereas informally organized spaces provide a place for sharing new ideas, help to filter/curate new ideas, and supply emotional and professional support (Lantz-Andersson et al., 2018). Note that in both settings teachers appear to show support for one another in the form of emotional support (mostly in formally organized) and fostering a sense of belonging and mutual trust (mostly in informally developed; Lantz-Andersson et al., 2018).

Lantz-Andersson et al. (2018) also report on the material (specifically technological) aspects of formally organized and informally developed spaces. Eighteen of 24 studies they examined only spoke vaguely about this point, generically referring to online learning environments, but the other six referred to specific learning management systems (LMSs) such as Blackboard, WebCT, Moodle, and some other single-use platforms. Other technologies referenced in these studies included "email discussion lists, blog tools, Adobe Connect, MOOCs and a web-mediated, character-based simulation game (JCAT Talk)" (Lantz-Andersson et al., 2018, p. 306). Of the 28 studies these authors reviewed on informally developed teacher learning spaces, 10 of them examined spaces on Twitter and five on Facebook. Seven studies examined teacher PLNs or personal learning environments (PLEs), which can comprise several platforms, and the other six referred to community platforms and various discussion forums more generically. Lantz-Andersson et al. found minimal commentary on specific technical aspects of the applications or platforms.

Conceptual Framework

Learning is inherently a social process (Vygotsky, 1978) that can be pursued through formal and informal channels (D. Richter et al., 2011). Carpenter et al.'s (2022) description of PLNs—people, spaces, and tools—provides a basic framework for understanding the personal learning ecosystems teachers create for themselves in today's blended world of formal and informal, in-person and digital learning. I applied this framing to examine teachers' post-pandemic descriptions of their PLNs. In addition to the PLN framing, I applied theories of practice architectures (Kemmis & Grootenboer, 2008) to understand spatial affordances, andragogy (Knowles et al., 2014) to understand teachers' motivations for learning, and connectivism (Downes, 2022; Siemens, 2004) to understand the networked and interactive nature of learning in more detail.

With the PLN context as a backdrop, I examined teachers' participation in professional learning spaces and inquired about their perceptions of an ideal professional learning space. In selecting a conceptual framework for this work, I closely considered Gee's (2004) affinity spaces framework and Wenger's (1998) CoPs framework, since they have been well vetted as appropriate lenses for such research (Lantz-Andersson et al., 2018; Vangrieken et al., 2017). However, these frameworks lack a focus on the material aspects (or tools) supporting a learning space and therefore did not suffice for my purposes.

Practice Architectures

Trust and Prestridge (2021) identified "space dynamics" (p. 4) as a key factor in

studying teachers' activity in their PLN spaces, but do not attempt to outline space dynamics in detail. Spaces have material and social affordances (Harrison, 2018), so I sought out a framework that accommodates both. Kemmis and Grootenboer (2008) offer a valuable framework they call "practice architectures" that can be applied to understanding spaces and their affordances in material and social terms (see Sjølie et al., 2019, as an example). The practice architectures lens specifically focuses on cultural-discursive, material-economic, and social-political dimensions (Kemmis, 2023). "Cultural-discursive" refers to how the space enables or constrains what can be said there (language, topics, ideas). "Material-economic" captures what can be physically done in and because of space. Last, the "social-political" dimension addresses the relatings (how people relate to one another and the world, evidenced by their feelings, emotions, values) that can occur in and because of space. By applying the practice architectures framework, I was able to identify the affordances of a learning space in terms of what teachers feel they can say, do, and relate to in that space, which addresses in new detail the space dynamics (Trust & Prestridge, 2021) of PLN spaces. The results of applying this conceptual approach in this study position me well to design and build a large-scale learning space for and with teachers in Utah, like the work performed by Barab et al. (2004).

Andragogy

Adult learning theory (or, andragogy) focuses on the needs and motivations of adult learners. Malcolm Knowles can be called the father of andragogy (Knowles et al., 2014), first publishing on the topic in 1968. Knowles sought to identify differences in

adult learning needs from those of children and, through the years, published five assumptions of adult learning and four key principles. The assumptions include: (1) Self concept (adults are more independent and prefer more self-directed learning), (2) Adult learner experience (adults are more experienced and their learning should build upon this fact), (3) Readiness to learn (adults are especially ready to learn when they see purpose for it), (4) Orientation of learning (adults are oriented to learning that is useful to them), and (5) Motivation to learn (adult learning is more intrinsically motivated). The key principles include: (1) adults are more self-directed and want to have control over their learning, (2) adult learning thrives when the learner can build upon past experiences, (3) adult learning must be relevant and show immediate value to the learner, and (4) adult learning is usually problem-oriented. Critics of andragogy emphasize that not all adults are motivated to learn or free to do so (Grace, 1996). Despite criticism, andragogy has been often applied to understanding teachers' PL needs as adult learners (Ajani, 2019; Beavers, 2009; Gregson & Sturko, 2007).

Connectivism

Our understanding of teacher PLNs can also be advanced by perceiving teacher learning through the lens of connectivism. This theory, first established by George Siemens in his 2004 paper, "Connectivism: A learning theory for the digital age" describes learning and knowledge as existing in networks (neural or social) instead of in a single location. Siemens called learning "a process of connecting specialized nodes or information sources" (p. 5). Learning can also reside in non-human objects according to Siemens and strengthening or maintaining connections across people and things is

required for continual learning. In speaking of connectivism, Downes (2022) adds that knowledge is "the organization of connections in a network" (p. 70) and learning is "experiencing something frequently enough to form a characteristic response to that thing" (p. 72). Downes also clarifies that connectivism is not a symbolic theory, but quite literally describing learning as physical connections between neurons and/or people and/or objects.

Through a connectivist lens, we can perceive teacher PL as interactions between educators and/or others with any knowledge of teaching or a field of study. We must also include interactions between people and tools as important aspects of an overall network. While the PLN framework described by Carpenter et al. (2022) is referring to an individual's self-curated network of people, spaces, and tools, connectivist proponents add that each individual is part of an interconnected network of people and things that hold our collective knowledge about teaching and learning. In fact, Downes (2022) emphasizes that thriving networks are composed of diverse, autonomous entities. This indicates that examining individual teachers' PLNs can provide insight on the network (and its capacity for growth) as a whole.

Diversity and autonomy are only two of four components of a thriving network, according to Downes (2022), with the others being openness (ability to add entities and ideas) and interactivity. These matter in the context of teacher learning when we think about teachers' ability to autonomously participate in social spaces for learning that can include diverse membership, be open to new members and ideas, and facilitate interaction between independent entities (people and things). The growth of these networks,

according to Downes, “is achieved entirely by the individual through practice and a mechanism that enables a refinement of that network because of that practice” (p. 79). This study focuses on individual practices and seeks understanding of which mechanisms are refining or might help refine our network of educators and researchers in Utah.

Oddone (2022) and Oddone et al. (2019) also examined teachers’ PLNs and interpreted teacher PL through a connectivist lens. They reported teachers’ PL as “individual, social and digitally connected through social technologies” (Oddone, 2022, p. 1), further affirming the connected nature of teacher PL in our day and age. They also highlighted the limited knowledge we have of teacher PL though PLNs. The current study adds to their 13 case studies of global, individual teachers, by identifying patterns across hundreds of Utah teachers and their PL experiences, providing some insight into the overall network activity of teachers in this state.

CHAPTER III

METHODS

The purpose of this study is to gain an understanding of teachers' PLNs and desired PLNs. I also seek to understand the spaces from which teachers draw professional learning and support and how teachers would describe an ideal professional learning space in both material and social terms. Last, I want to know how their ideal differs from what they currently experience in PL spaces they are required to join. This new knowledge builds upon pre-pandemic studies of PLNs and teacher PL and equip those who support teacher learning (education leaders, researchers, teachers themselves) with post-pandemic updates on how teachers learn, where they go for learning, and what kinds of spaces allow their learning to flourish. This, in turn, will hopefully spur increased support for teacher agency and professional learning and decrease the number of teachers leaving the profession prematurely.

Research Questions

My study specifically sought to answer the following research questions.

1. How do teachers describe their professional learning network (PLN) and its benefits to them?
2. What are teachers' perceptions of current professional learning spaces of their choosing?
    a. What are teachers choosing to learn right now?
    b. How do they participate in this learning?
3. What are teachers' perceptions of an ideal professional learning space?
    a. How does this compare with what teachers are experiencing in required learning spaces?

Positionality

I currently lead a dual life as a budding academic and a local practitioner—I am a Ph.D. student in the learning sciences at Utah State University and principal of the Edith Bowen Laboratory School (EBLS). My professional work strongly motivates my research interests—I want to better understand what teachers need in order to learn and improve their practice. More specifically, I am curious about where teachers go for new knowledge, how they share it with their colleagues, and how they contribute to their school and other professional spaces becoming or remaining learning organizations (Senge, 2006), especially after having gone through multiple years of a global pandemic that moved much of their practice online for a time. As a researcher in the learning sciences, I am particularly interested in learners' social interactions and how they can develop collective intelligence (Jenkins, 2009) and collective efficacy (Conway, 2008; Goddard et al., 2000).

I am also a former high school physics and mathematics teacher and have often reflected on my experiences with professional learning. I joined a very active professional community when I did my first master's degree (in physics teaching) at Arizona State University from 2004-2007. The Modeling Physics program at ASU was built upon a social constructivist philosophy that has influenced my teaching and approach to professional training. My instructional design has often avoided lectures and incorporated inquiry and discussion instead. I intentionally structured my physics classroom to be a community of learners and I see those same intentions influencing my approach to professional learning design in my current role as a school leader. Now, as a

leader and researcher, I aspire to better understand how teachers learn through participation in collaborative learning spaces. My dual role uniquely positions me to approach this study with the empathy of a practitioner and the skills of a researcher, allowing me to pursue practical insights (as a principal) in a rigorous manner (as a researcher).

My positionality as a practitioner introduces specific biases in conducting this study. I have had to check my assumptions that since I have been an educator in public schools for 18 years, I easily understand teachers and their responses. I have watched for assigning layers of inference to participant responses based on my experiences that might, at first glance, appear like their experiences. I am cognizant of biases motivated by my desire to build a collaborative professional learning space for teachers in Utah in the future which likely biases me towards focusing on participant responses that argue in favor of my personal vision and blind me to responses to the contrary.

Through my years as a school leader, I have also developed a bias towards bottom-up vs. top-down teacher development (Macias, 2017). Through empowering teachers with time and access to expertise, I have seen them address complex problems of practice in innovative ways. This bias towards teacher agency is a strong motivator for this study—my curiosity about how teachers engage in and want to engage in learning spaces drives me to explore these questions in hopes that we (researchers and educational leaders) might design more effective professional learning with and not just for teachers.

Methodology

I selected a mixed methods approach (Creswell & Creswell, 2017) to examine teachers' descriptions of their PLNs and the spaces in which they participate, as well as perceptions of ideal professional learning spaces. I chose this method for breadth of data (through a quantitative approach), then depth (through qualitative methods aligned with quantitative findings). Specifically, I employed an explanatory sequential design (Ivankova et al., 2006) in which qualitative findings follow and enrich quantitative findings. I collected quantitative data through closed-ended survey questions and qualitative data through open-ended questions. I describe my survey design in greater detail below.

Data Collection

Survey Design

My survey design process was iterative. My first draft of the survey was inspired by Trust et al.'s (2016) survey on teacher PLNs. Then, to capture more details about teachers' use of people, spaces, and tools for PL of their choosing, I separated out those topics and asked teachers a range of questions in each area. First, I asked for broad information about how they approach their learning (through people, spaces, and tools). Then, I asked for more targeted information about a single person, space, and tool that was significantly impacting their learning. In a subsequent iteration inspired by Kemmis and Grootenboer's (2008) practice architectures framework, I added questions that targeted what teachers can say, do, and feel as they engage with specific people, spaces,

and tools of their choosing. I also incorporated Trust and Prestridge's (2021) findings on teachers' PLN goals (affective, cognitive, identity, social, career, and helping others) to formulate survey questions 19, 30, and 39 (see Appendix A). Last, to situate teachers' chosen learning in a context that includes mandated learning, I added an inquiry about teachers' experiences with mandated PL and the people, spaces, and tools they are required to utilize for PL.

I issued a pilot of my survey to a group of 4 or 5 teachers at my school and received helpful feedback. Part of the feedback indicated that this was a topic teachers care very much about. Other feedback indicated that the survey was too long. Knowing that teachers are very busy, I sought to design a survey that would only take 15-20 minutes, but the results showed that my pilot survey took well over 30 minutes. For this reason, I condensed all the new questions about mandated learning to a single question in each of the three sections (about people, spaces, and tools): "How similar would your responses be to the questions above if we asked you about professional learning settings in which you are (or have been) required to participate?" Then, when teachers indicated their answers would have been different, I asked them an open-ended question about how their answers would be different. This made the survey significantly shorter and more manageable. See my final version of the survey in Appendix A.

Participants

After surveying teachers, I intended on interviewing a subset of willing teachers to explore their ideas and experiences in greater detail, but after receiving nearly 1,700 responses to my survey, I recognized that I had ample data to answer my research

questions. My target population for this study was public school teachers in grades K-12 in the state of Utah because I work in Utah and have a vested interest in the success of teachers in my state. I chose to limit this study to teachers in one state because they have their state standards in common. I believe this shared domain of practice (Wenger, 1998) has the potential to unite Utah teachers into a large-scale online learning community in the future.

I used publicly available means for building email lists of teachers throughout Utah and issued my survey through Qualtrics to approximately 35,000 teachers. I encountered various barriers in this process—one of which was district firewalls that blocked mass emails. Despite these barriers, 2,380 teachers participated in the survey, and 1,694 completed at least half of the questions (this was my criteria for including survey data in the study).

The average age of teachers was 40.30 (*SD* = 10.90; range 20-71), with 79% (*n* = 1,337) identifying as women (by writing "woman," "female," or "f"), 19.6% (332) as men (by writing "man," "male," or "m"), 1.1% did not specify (19), 0.1% wrote in "nonbinary" (2), and three teachers listed other genders. Regarding school type, 91% (1,542) of teachers work in district schools and only 8% (142) in charter schools. Another 1% (9) reported working in other schools (private, prison, etc.). Teachers' years of experience teaching averaged 11.3 (*SD* = 8.6; range 1-49). A summary of participant demographics is presented in Table 1.

For comparison on race and ethnicity to all Utah teachers, note that 89.8% of teachers reported being White/non-Hispanic, 5.6% reported being Hispanic (regardless of

Table 1

Demographic Information of Teachers

Variable	n	%	Variable	n	%
Age			Race		
20-29	345	20	White	1,589	93.9
30-39	492	29	Multiple	42	0.02
40-49	474	28	Asian	22	0.01
50-59	296	17	Black or African American	6	0.003
60-69	83	5	American Indian or Alaska Native	4	0.002
70-71	3	0.2	Native Hawaiian or Pacific Islander	3	0.002
Gender			Did not specify	27	0.02
Women	1,337	79.0	School type		
Men	332	19.6	District	1,542	91.1
Other	3	0.002	Charter	142	0.08
Did not specify	19	1.1	Other (private, prison, etc.)	9	0.005
Ethnicity			Years of experience		
Not Hispanic or Latino	1,588	93.8	0-4 yrs	420	25
Hispanic or Latino	69	0.04	5-9 yrs	449	27
Did not specify	36	0.02	10-19 yrs	521	31
			20-29 yrs	237	14
			30-39 yrs	57	3
			40-49 yrs	9	1

N = 1,693.

race), 2% reported being Asian/non-Hispanic, and 1.8% reported being two or more races/non-Hispanic (National Center for Education Statistics, n.d.). To make some national comparisons, note that the average age of K-12 teachers in the U.S. is 43.2 years (Taie & Lewis, 2022). Also, in the U.S. 77% of teachers identify as women and 23% as men (Taie & Lewis, 2022). Ethnicity and race percentages are noticeably different for teachers in this study from the national teacher demographic in the U.S., in which 79% of teachers identify as White (Egalite, 2024).

School District

In the survey, I asked teachers which district they taught in, or, if they taught in a charter school, which school district was closest to them. Figure 1 shows the distribution of responses to this question. Since these responses come from district and charter school employees, the intent of this question was to see where teachers were coming from geographically. Only one county in all of Utah's 29 counties had 0 respondents complete the survey (Piute). Relatively few teachers in Davis School District boundaries (24 of 4,053, or 1%) completed the survey. This appeared to be due to server firewall settings that would not allow mass emails to reach teachers.

Subjects Taught

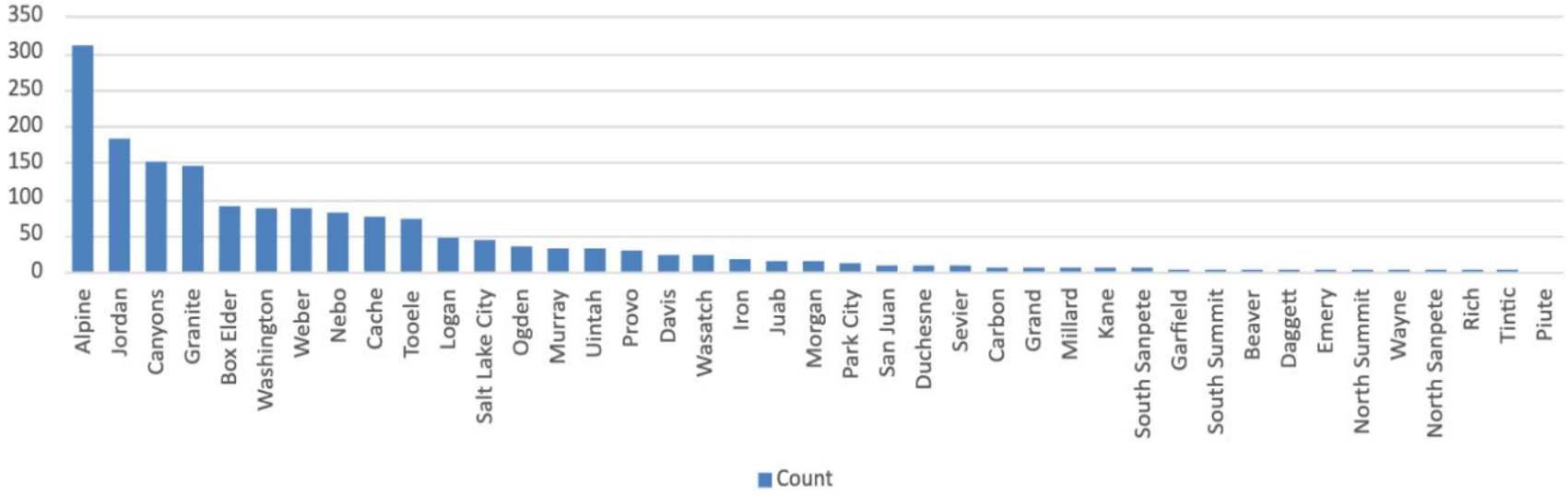
My survey also collected responses from teachers who teach a variety of topics (see Figure 2). State level data is not freely available on this topic so I cannot tell if representation in this category is well distributed. The "Other" category is composed of a wide range of topics and subjects; "CTE" was prominent with 41 typed in responses.

Grades Taught

Figure 3 displays the grade levels taught by survey teachers. Note that many teachers in the study teach more than one grade level. Forty-four percent (746) of teachers indicated they teach elementary grades (PreK-6) while 56% (947) teach secondary grades (7-12). The Utah State Board of Education reported in 2022 that 50% of Utah teachers taught grades PreK-6 and 50% of teachers taught grades 7-12 (Utah State Board of Education [USBE], 2023).

Figure 1

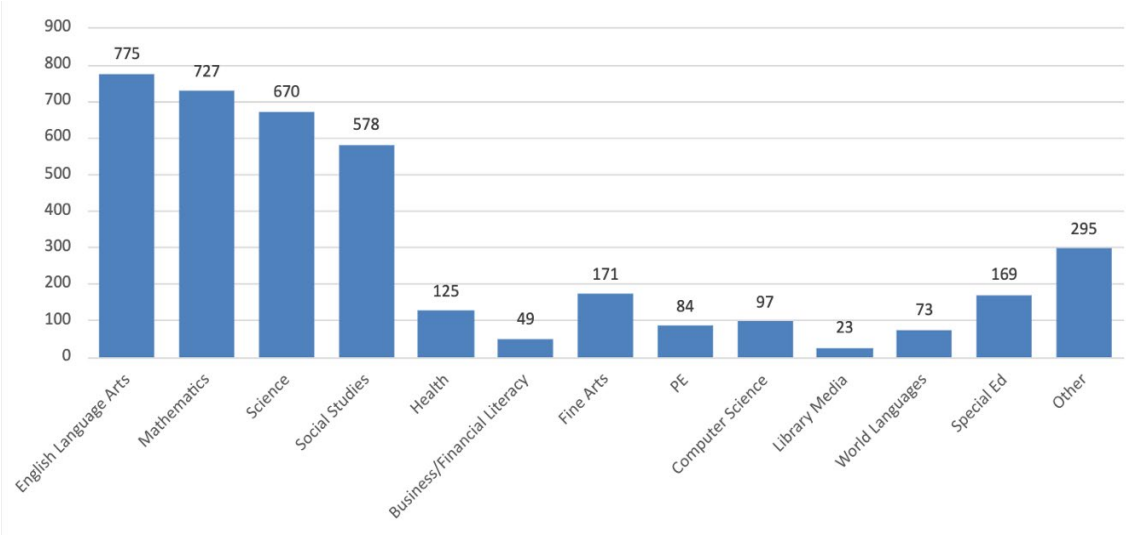
School Districts in Which Teachers Work or Closest School District to the Charter School in Which They Work



N = 1,693

Figure 2

Counts of Teachers by Subject Taught

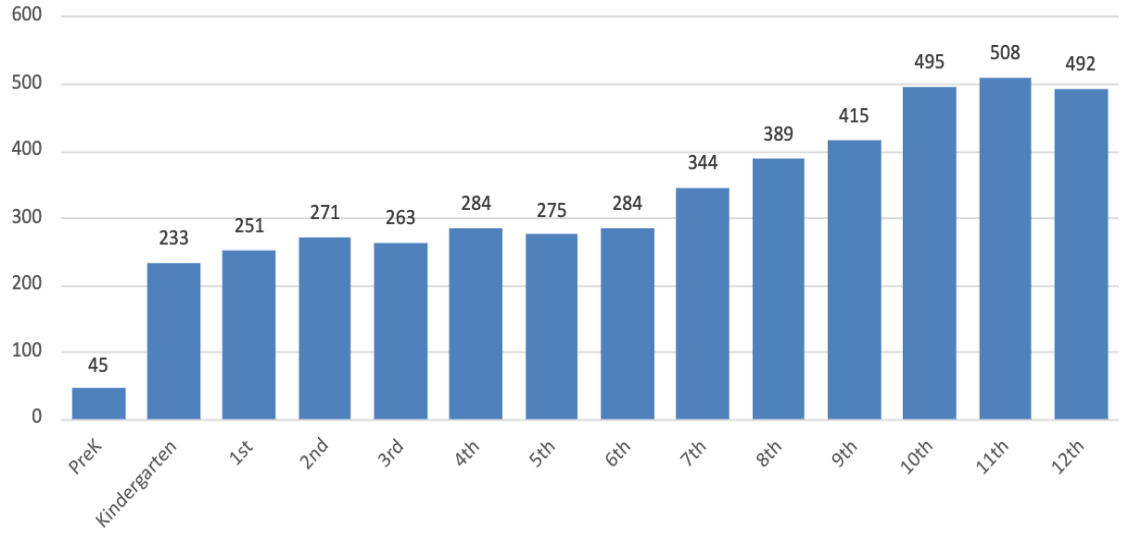


Note. This was a "choose all that apply" question.

N = 1,693.

Figure 3

Grade Levels Taught by Teachers



N = 1,693.

Data Analysis

To answer RQ1, I used descriptive statistics to describe my teachers generally and chi-square tests of independence to identify patterns in PLN descriptions that relate with different participant types. To answer RQ2 and RQ3, I asked open-ended survey questions that elicited information on these topics. I then employed two research assistants (RAs) and we descriptively coded (Saldaña, 2021) responses. For analyzing open-ended questions, we developed codebooks for each question using an open coding process (Saldaña, 2021). Then, for each question, one researcher coded all responses and a second researcher coded 10% of those responses to determine reliability of the coding. I then calculated an intercoder agreement percentage as the number of coding instances in common divided by the total number of coding instances for responses on a given survey question. Finally, I thematically analyzed (Braun & Clarke, 2012) coding results to build an understanding of how teachers in this study participate in PL spaces, what they envision to be the ideal professional learning space, and how their experiences in required learning spaces compare. See Table 2 for a summary of my data analysis strategies and their alignment with my research questions. Details of this analysis are further unpacked in the findings chapters.

Table 2

Data Analysis Summary and Alignment with Research Questions

Purpose/ research question	Survey question(s)	Question format	Analytic strategy	Intercoder agreement
Demographics	1-10	Multiple choice and open response	Descriptive statistics and content analysis	n/a
RQ1	12-15	Multiple choice	Descriptive statistics	n/a
RQ1	19	Likert	Heat map	n/a
RQ1	23-25, 29	Multiple choice	Descriptive statistics	n/a
RQ1	30	Likert	Heat map	n/a
RQ1	34-35	Multiple choice	Descriptive statistics	n/a
RQ1	36	Open response	Content analysis	n/a
RQ1	39	Likert	Heat map	n/a
RQ1	7, 8, 10, 14, 19, 24, 29	Multiple choice and Likert	Chi-square test for independence	n/a
RQ2a	11	Open response	Content analysis	n/a
RQ2b	16	Open response	Thematic analysis	81%
RQ3	20	Open response	Thematic analysis	83%
RQ3a	22a	Multiple choice	Descriptive statistics	n/a
RQ3a	22b	Open response	Thematic analysis	81%

CHAPTER IV

TEACHERS' DESCRIPTIONS OF THEIR PROFESSIONAL LEARNING NETWORK

To answer my first research question regarding how teachers describe their PLN, I asked teachers a series of closed-ended questions that focused on the spaces, people, and tools they turn to for learning of their choosing. In addition to identifying spaces, people, and tools, survey questions explored how teachers engage with and benefit from each of these supports. The following analysis shows quantitative findings in these areas.

Spaces

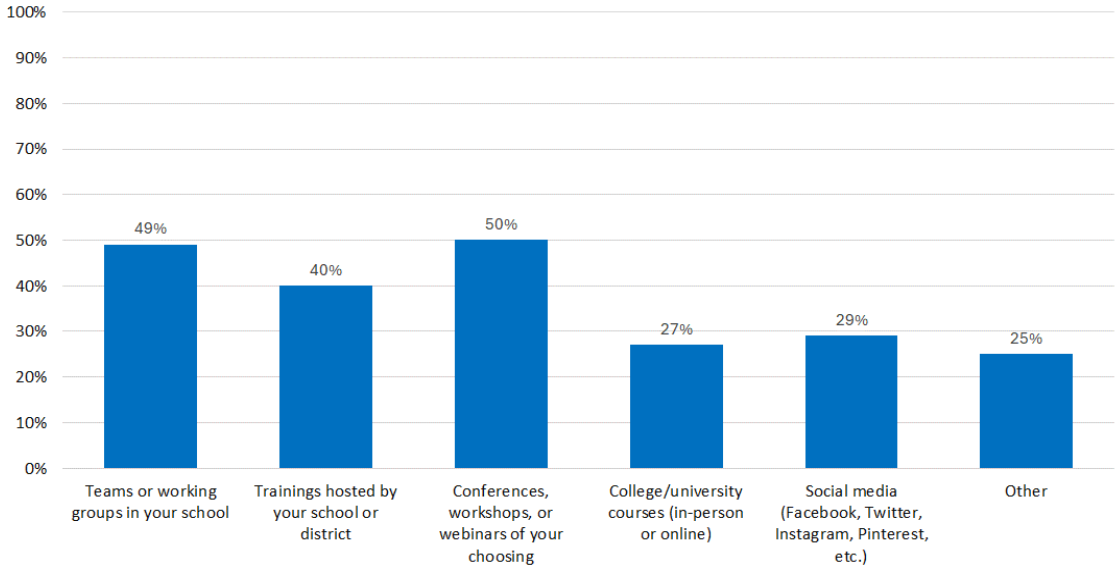
Spaces in Which Teachers Choose to Learn

Survey respondents indicated that multiple settings are supporting them in what they're choosing to learn (see Figure 4). "Conferences, workshops, and webinars" was most popular (50%), followed closely by teams or working groups in their school (49%). Twenty-five percent of teachers entered something in the "Other" field. The most popular entry here, overwhelmingly, was "books" (n = 138, or, 8% of teachers). The next most commonly typed-in words in the "Other" field were "online" (3%), "research" (2%), and "YouTube" (1%).

When asked to select just one setting that is significantly helping them in what they are choosing to learn, slightly more teachers selected "Teams or working groups in your school" (see Figure 5). Notably, no single category dominated, which highlights the diverse learning needs and interests of teachers in this study.

Figure 4

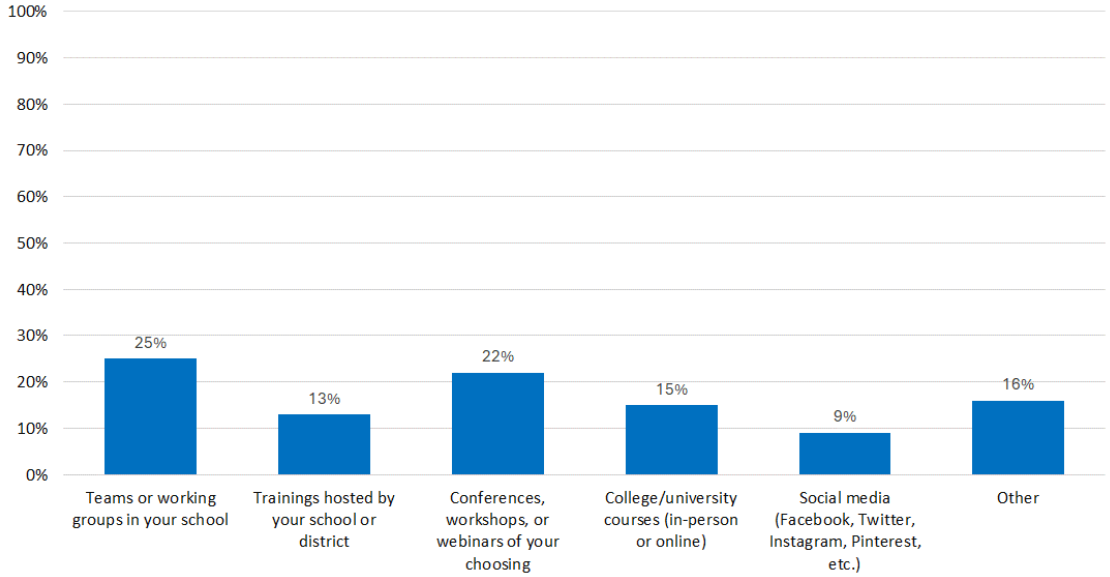
Settings Survey Teachers Indicate Are Helping Them in Learning of Their Choosing



Note. This was a "check all that apply" question.
N = 1,693.

Figure 5

Participant Selections When Asked to Choose One Setting Impacting Learning of Their Choosing

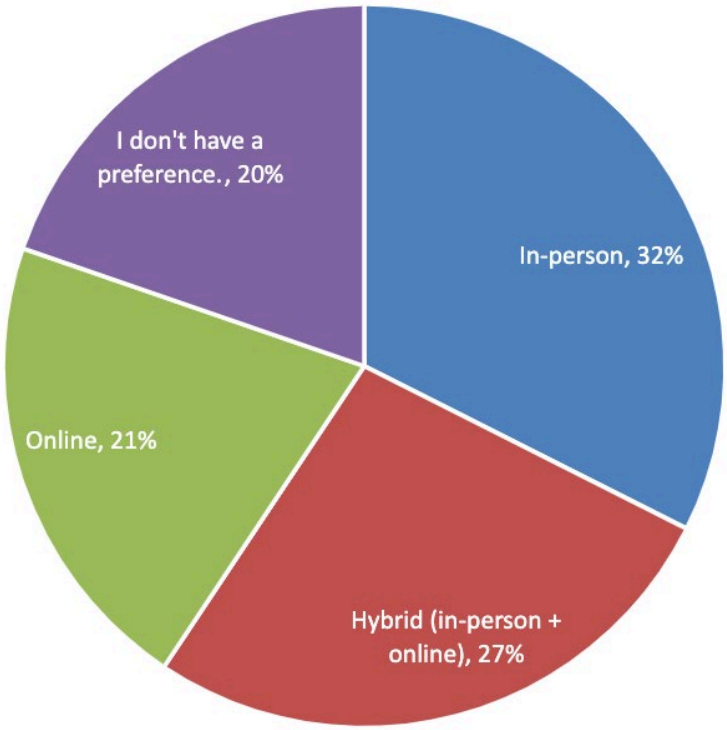


N = 1,693.

I also asked teachers in the survey to indicate whether online, in-person, or hybrid settings were most helpful to them. I expected that few teachers were still interested in online learning since so much of educators' engagement during the pandemic was online. Teachers' preferences, though, were distributed across formats (see Figure 6).

Figure 6

Participant Preferences for Online, In-person, or Hybrid Learning Settings



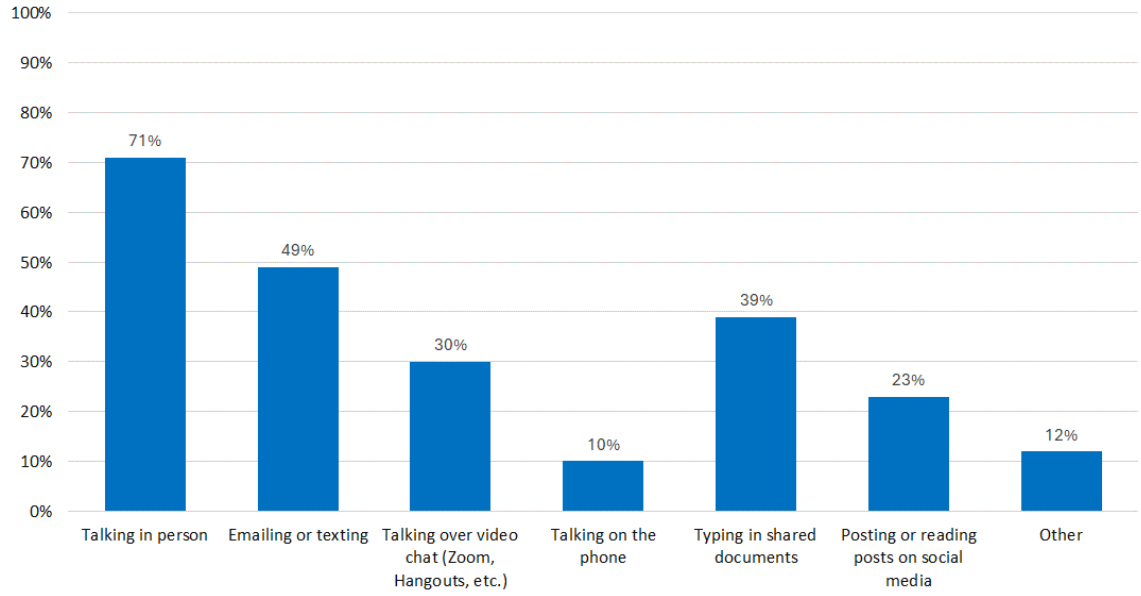
N = 1,693.

Participant Activity in These Spaces

When asked how they engage with others in these settings, teachers largely indicated they talk in person (71%) but also email or text each other (49%) and type in shared documents (39%) (see Figure 7). Notably, 30% of teachers said they chat over video-conferencing platforms like Zoom, Hangouts, etc.

Figure 7

Ways in Which Teachers Engage with Others in Learning Settings of Their Choosing



Note. This was a "choose all that apply" question.
$N = 1{,}693$.

Benefits of Engaging in These Spaces

I asked teachers in the survey how their engagement in these settings benefits them and provided them with Likert scale response options across six different domains that were informed by Trust and Prestridge (2021; see Table 3).

The benefit "It gives me new teaching ideas, strategies, tools, and/or resources" is clearly the most prominent benefit of each learning space. This indicates teachers are using learning settings mostly to get new ideas, strategies, tools, and resources, and less-so for job advancement or even building social connections. It also appears that teachers who selected school-based teams (SBTs) and college courses scored benefit domains higher compared to other settings. Interestingly, social media scored comparatively low

Table 3

Percent of Teachers' Reporting Benefits of Engaging in Learning Spaces of Their Choosing

Chosen learning space	It increases my confidence and/ or provides me with emotional support.	It gives me new teaching ideas, strategies, tools, and/or resources.	It helps me identify with others and/or change the way I see myself.	It helps me expand my social connections and connect or collaborate with others.	It empowers me to take on a new job, role, or position.	It allows me to share my ideas with others.	*n*	% of teachers
College/university courses (in-person or online)	76	96	77	79	81	87	256	15
Conferences, workshops, or webinars of your choosing	84	98	74	86	56	83	374	22
Social media (Facebook, Twitter, Instagram, Pinterest, etc.)	59	95	74	62	40	65	148	9
Teams or working groups in your school	92	95	82	97	64	93	427	25
Trainings hosted by your school or district	80	96	74	83	52	83	212	13
Other:	71	91	58	79	49	65	276	16

Note: $N = 1{,}693$. Percentages represent portions of teachers who chose "agree" or "strongly agree" on a Likert scale rating.

on the benefit, “It helps me expand my social connections and connect or collaborate with others.” This is counterintuitive since social media is designed to create social connections. Perhaps the collaboration aspect of this descriptor dissuaded teachers from selecting it, or teachers may not have felt that social media provides significant social connection since it is an online-only setting. Also, recall that SBTs was the most popular selection amongst teachers (25% chose it as the one setting significantly helping them in their learning of their choosing). It also appears to provide teachers with a high variety of benefits. At the same time, all other settings listed in this study are assisting at least some teachers with their professional learning. This indicates that teachers need choices as they pursue professional learning of their choosing since they are all pursuing something a little different and in different spaces. This insight is further supported across data presented in later chapters.

People

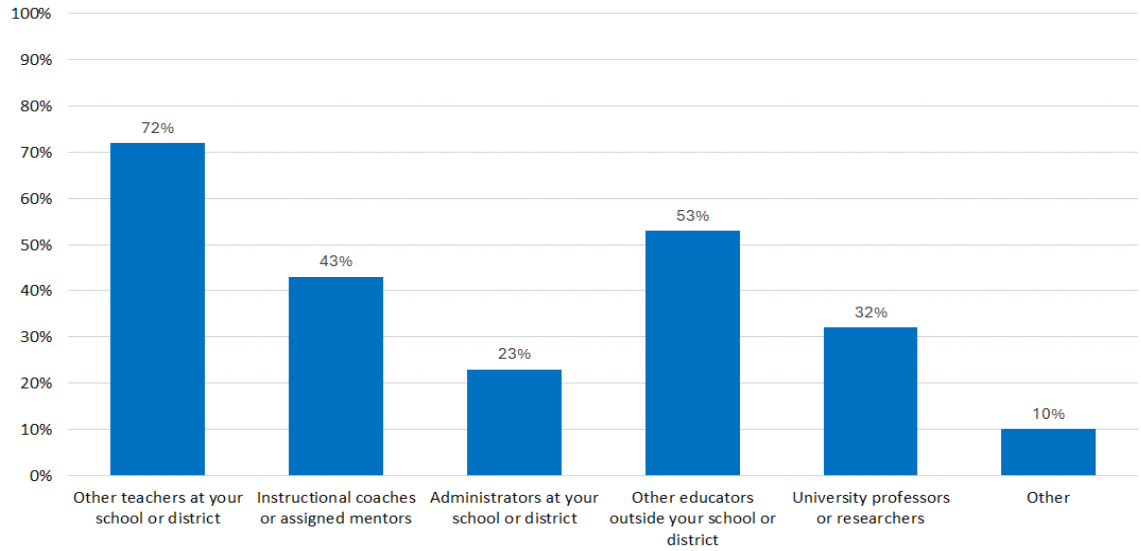
People From Whom Teachers Choose to Learn

Teachers were asked in the survey to describe the people they choose to learn from. First, they were asked to select all that apply from a list of categories of people they might be learning from. See results in Figure 8.

Figure 9 shows participant selections when asked to choose just one type of person that is significantly impacting their learning of their choosing. The most popular category was “Other teachers at your school or district” (40%) followed by “Other educators outside your school or district” (19%) and “Instructional coaches or assigned

Figure 8

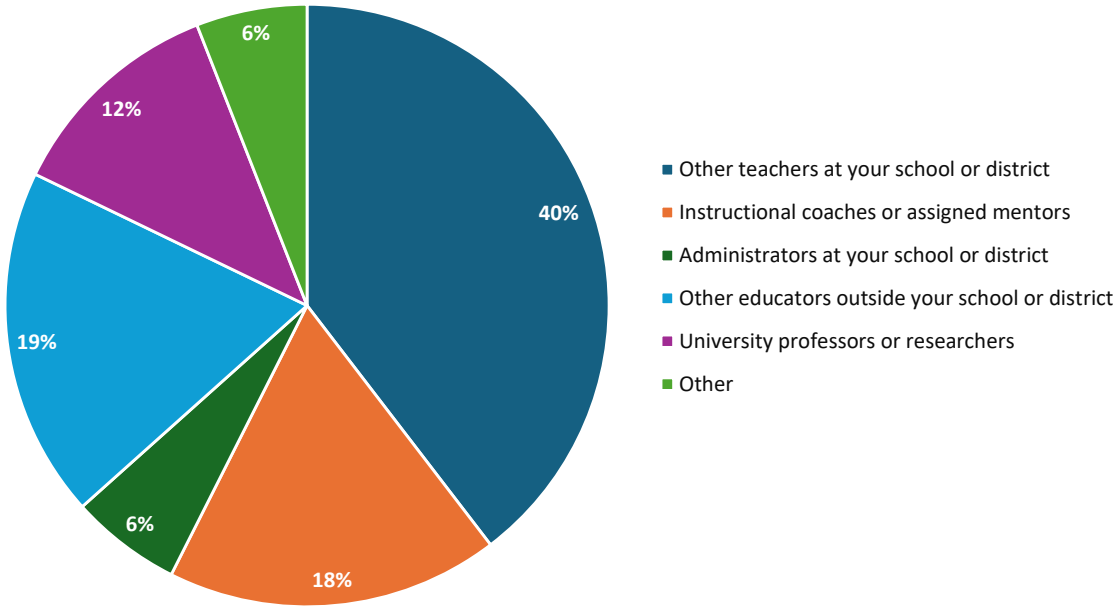
Categories of People Teachers Report Learning From



Note. This was a "check all that apply" question.
N = 1,686.

Figure 9

One Person Who is Significantly Contributing to Learning Teachers Are Choosing to Pursue

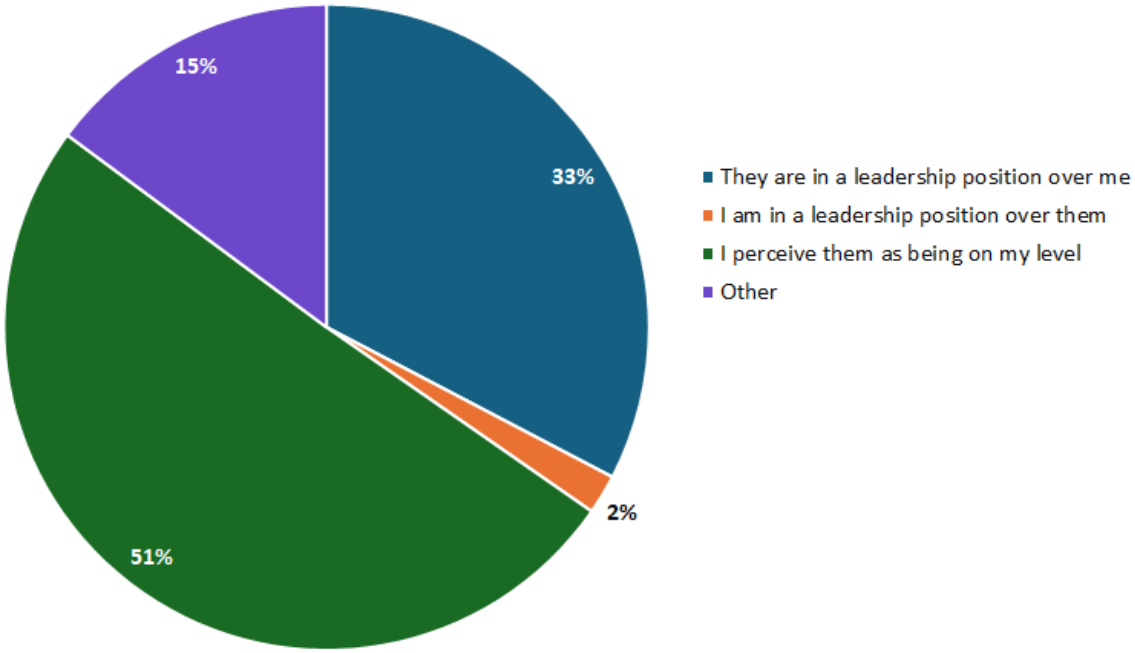


N = 1,682.

mentors (18%). These results in Figures 8 and 9 indicate that teachers are largely choosing to learn from colleagues (almost 60%). Some of these people are in leadership roles over teachers, however, as shown in Figure 10. One example of this might be a department head who is a teaching colleague but also in a position of leadership over the participant.

Figure 10

Relationship to the Person from Whom a Teacher is Choosing to Learn



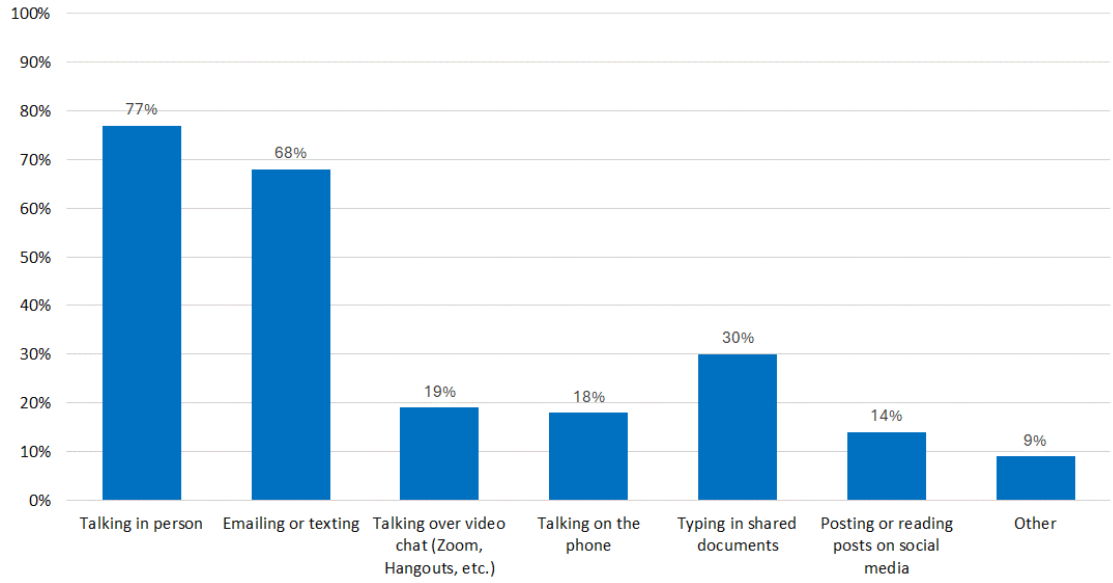
N = 1,608.

Activity With People

When asked how they engage with the person impacting their learning, teachers indicated they talk in person (77%) and email or text each other (68%) and type in shared documents (30%) (see Figure 11).

Figure 11

How Teachers Engage with Another Person in the Learning of Their Choosing



Note. This was a "check all that apply" question.
$N = 1{,}608$.

Benefits of Learning from These People

I asked teachers how their engagement with these people benefits them and provided them with Likert scale response options (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree) across six different domains (see Table 4).

Just as with spaces, acquiring new ideas, strategies, tools and/or resources seems to be the greatest benefit of engaging with the "people" aspect of one's PLN. Unlike spaces, engaging with a person significantly impacting one's learning also appears to frequently offer a benefit of increasing a teacher's confidence and providing them with emotional support. Note that administrators appear to provide multiple benefits to teachers, although very few teachers (6%) selected this type of person as one who is significantly impacting professional learning of their choosing. Also, recall that 40% of

Table 4

Percent of Teachers' Reporting Benefits of Engaging with a Person Significantly Impacting One's Learning

Person significantly impacting one's learning	It increases my confidence and/ or provides me with emotional support.	It gives me new teaching ideas, strategies, tools, and/or resources.	It helps me identify with others and/or change the way I see myself.	It helps me expand my social connections and connect or collaborate with others.	It empowers me to take on a new job, role, or position.	It allows me to share my ideas with others.	*N*	% of teachers
Administrators at your school or district	90	91	84	75	83	88	92	6
Instructional coaches or assigned mentors	94	98	81	75	65	86	296	18
Other educators outside your school or district	86	96	71	67	55	74	290	18
Other teachers at your school or district	94	96	84	79	63	92	643	40
University professors or researchers	86	95	76	66	71	85	95	6
Other:	63	79	51	43	52	61	192	12

Note: $N = 1{,}608$. Percentages represent portions of teachers that chose "agree" or "strongly agree" on a Likert scale rating.

teachers selected another teacher at their school or district as the person significantly helping them in their learning and 18% selected an instructional coach or assigned mentor (see Figure 9 above). “Instructional coaches and assigned mentors” appears to offer similar benefits to “other teachers at my school or district” and many more teachers chose “other teachers at their school or district” than “instructional coaches or assigned mentors.” This highlights the potential added value of instructional coaching, or, a “more knowledgeable other” (Vygotsky, 1978) in a teacher’s chosen professional learning. “Other educators outside your school or district” (selected by 19% of teachers) did not reportedly offer as many benefits as other teachers in their school or district, or instructional coaches and assigned mentors.

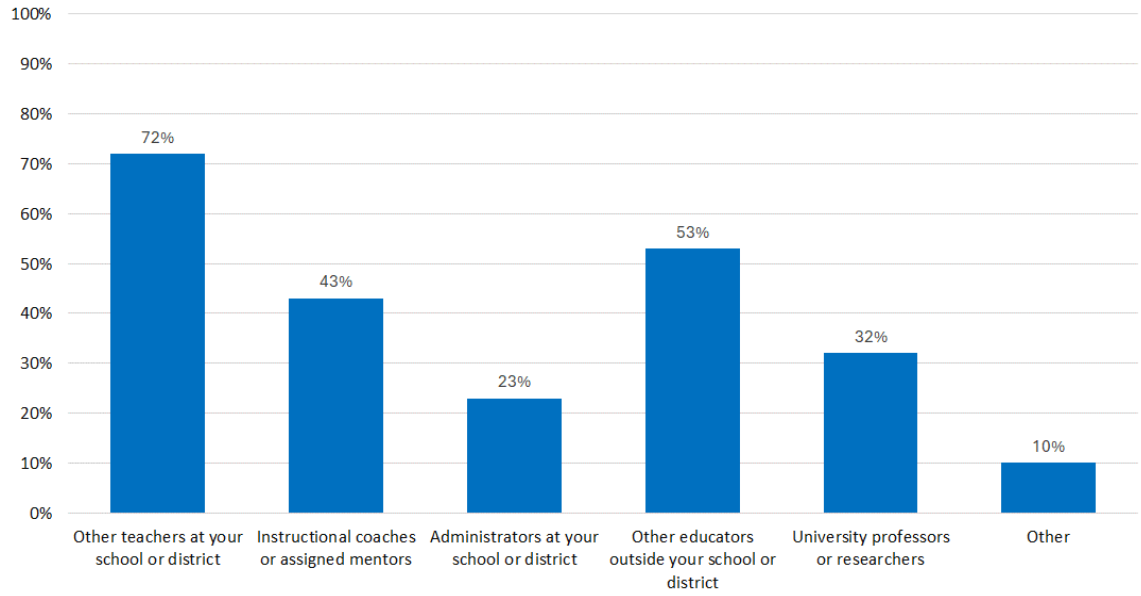
Tools

Tools Teachers Use for Their Learning

I asked teachers in the survey to describe the tools they choose to learn with. First, I asked them to select all that apply from a list of tools they use for their learning (see results in Figure 12). Only 76% of teachers reported using search engines as they pursue professional learning of their choosing. Also, only 29% of teachers reported engaging in social media as a learning setting (see Figure 5) while 40% report using it as a tool. Teachers were not provided with definitions of “setting” or “tool” in the survey, although for this study, I perceive social media as a setting in which people can connect *and* a tool that enables people to share information with each other. Also, note that 35% of teachers indicated they use academic journals as a learning tool. This is important, given that some

Figure 12

Tools Used by Teachers in the Learning of Their Choosing



Note. This was a "check all that apply" question.
N = 1,557.

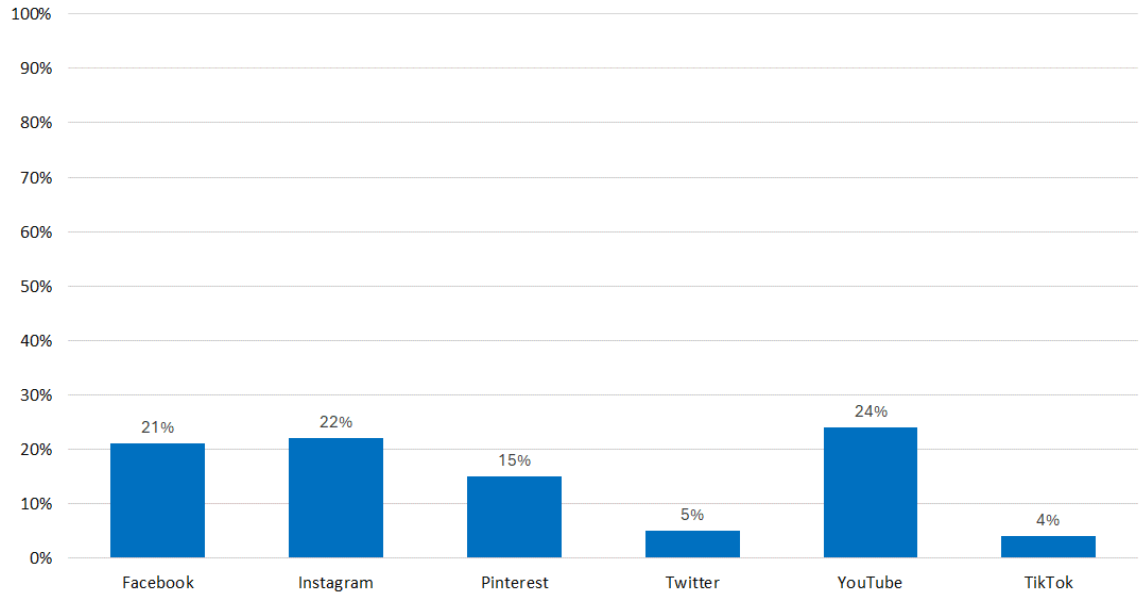
researchers have reported other teachers are not using or accessing research-based information in PL of their choosing (McElearney et al., 2018; Owens et al., 2018).

The survey also asked teachers who indicated they use social media which sites they use the most to access professional knowledge (their top three). See results in Figure 13. YouTube was the most popular social media site, followed by Instagram and Facebook. TikTok was the most popular write-in response with 4% of teachers indicating using TikTok to access professional knowledge. The survey also asked teachers how using a tool of their choosing benefitted them. See results in Table 5.

These results indicate that the highest valued benefit teachers see in the tools they use are the ideas, strategies, tools, and/or resources they provide them. The lowest valued

Figure 13

Social Media Platforms Used by Teachers



Note. $N = 625$. Percentages were calculated with the number of teachers who answered the previous question about tool use (1,557) in the denominator. Also, teachers were asked to mark the top three social media sites they use to add some prioritization to this data.

benefit was that tools help them expand their social connections and connect or collaborate with others. Books were the single-most selected tool (26%), but when all social media platforms are combined, social media has 28%, and when Google, search engines, and websites are combined, they hold 38% of participant responses. Social media appears to have the highest percentages of "agree" and "strongly agree" on benefit domains overall while search engines appear to have the lowest. Of the various social media platforms, Instagram appears to provide teachers with more identity-related benefits [although the percent of those who agreed that Instagram allows them to share ideas (59%) is up from the 35.5% reported by Carpenter et al. (2020)], while Facebook is

Table 5

Percent of Teachers' Reporting Benefits of Using Tools

Chosen tool	It increases my confidence and/ or provides me with emotional support.	It gives me new teaching ideas, strategies, tools, and/or resources.	It helps me identify with others and/or change the way I see myself.	It helps me expand my social connections and connect or collaborate with others.	It empowers me to take on a new job, role, or position.	It allows me to share my ideas with others.	*N*	% of teachers
Books	73	96	61	30	54	55	319	26
Canvas	68	87	48	58	61	81	31	2
Facebook	72	92	64	63	37	72	76	6
Google	59	90	41	38	48	57	100	8
Instagram	59	99	78	69	35	59	74	6
Journals	71	94	64	27	53	44	66	5
Pinterest	68	97	52	42	39	61	31	2
Search Engines	55	94	33	30	42	39	119	10
Social media	78	98	75	75	37	73	51	4
Websites	66	93	41	30	42	47	251	20
YouTube	73	98	45	19	42	45	125	10

Note: $N = 1{,}243$. Percentages represent portions of teachers that chose "agree" or "strongly agree" on a Likert scale rating. Also, these were write-in responses—some teachers wrote in "social media" while others wrote in a specific social media platform.

relatively stronger in allowing teachers a chance to share ideas with others. Canvas (although not a social media platform) appears strongest in allowing teachers to share ideas with others. Noticeably, all tools in this table assist teachers in acquiring new ideas, strategies, tools, and/or resources.

Comparative Findings

To understand teachers' descriptions of their PLNs in greater detail, specifically how different subgroups of teachers describe their PLN, I applied a Chi-square test for independence to determine associations between variables of school level (elementary or secondary), teacher experience (0-4 years or 5+ years), and urban vs. rural teachers. I found statistically significant associations with medium Cramér's V effect sizes (Cohen, 2013) in a few areas, which I report below. These fall under the categories of elementary vs. secondary and less experienced vs. more experienced. I did not find any statistically significant associations with medium effect sizes in the urban vs. rural category.

Elementary vs. Secondary Teachers

I compared elementary and secondary teachers on their responses to multiple closed-ended questions and applied the Chi-square test for independence to determine associations between this variable of school level and the variable targeted in the survey question. I designated a teacher as "elementary" if the majority of boxes they checked were from grades PreK-6 and as "secondary" if the majority of boxes they checked were from grades 7-12.

The first comparison was on types of preferred learning settings, specifically

college/university courses (in-person or online); conferences, workshops, or webinars of your choosing; social media (Facebook, Twitter, Instagram, Pinterest, etc.); teams or working groups in your school; trainings hosted by your school or district, or other (write-in response). A chi-square test of independence was performed to examine the relationship between teachers' school level (elementary or secondary) and preferred type of learning setting. The relationship between these variables was significant, χ^2 (5, N = 1693) = 11.07, $p < .001$, with Cramér's $V = .13$. Elementary teachers preferred trainings hosted by their school or district more, while secondary teachers preferred other options. See Table 6 for a breakdown of learning setting preferences by school level.

Table 6

Percent of Preferred Type of Learning Setting by Teachers' School Level

Group	College/ university courses (in-person or online)	Conferences, workshops, or webinars of your choosing	Social media (Facebook, Twitter, Instagram, Pinterest, etc.)	Teams or working groups in your school	Trainings hosted by your school or district	Other
Elementary	14	21	10	27	15	13
Secondary	16	23	7	24	10	19
Total	30	44	17	51	25	32

The second comparison was on types of people teachers choose to learn from, specifically administrators at their school or district; instructional coaches or assigned mentors; other educators outside their school or district; other teachers at your school or district; university professors or researchers; or other (write-in response). A chi-square test of independence was performed to examine the relationship between teachers' school level (elementary or secondary) and preferred person to learn from. The relationship

between these variables was significant, χ^2 (5, N = 1,682) = 45.37, p <.001, with Cramér's V = .16. Elementary teachers preferred to learn from instructional coaches or mentors more than secondary teachers, while secondary teachers preferred other educators or university professors or researchers. See Table 7 for a breakdown of preferences by school level of who people choose to learn from.

Table 7

Percent from Whom Teachers Prefer to Learn by Teachers' School Level

Group	Administrators at your school or district	Instructional coaches or assigned mentors	Other educators outside your school or district	Other teachers at your school or district	University professors or researchers	Other
Elementary	7	24	16	39	10	4
Secondary	5	14	20	40	14	7
Total	12	38	36	79	24	11

Less Experienced vs. More Experienced

I categorized teachers as either less experienced (0-4 years' experience) or more experienced (5+ years' experience), based on Rodríguez and McKay's (2010) conclusion that "experienced" most commonly means (in other literature) 5 or more years of teaching experience. One comparison I made between less and more experienced teachers in this study was on types of people they choose to learn from, specifically administrators at their school or district; instructional coaches or assigned mentors; other educators outside their school or district; other teachers at their school or district; university professors or researchers; or other (write-in response). A chi-square test of independence was performed to examine the relationship between teachers' experience level and who

they choose to learn from. The relationship between these variables was significant, χ^2 (5, N = 1,682) = 46.55, p < .001, with Cramér's V = .17. Less experienced teachers reported choosing to learn from instructional coaches or assigned mentors more than more experienced teachers. Also, more experienced teachers reported choosing to learn from other educators outside their school or district more than less experienced teachers are. See Table 8 for a breakdown of who teachers in these categories reported choosing to learn from.

Table 8

Percent from Whom Teachers Prefer to Learn by Teachers' Experience Level

Group	Administrators at your school or district	Instructional coaches or assigned mentors	Other educators outside your school or district	Other teachers at your school or district	University professors or researchers	Other
0-4 years	4	28	13	40	11	3
5+ years	6	15	20	40	12	7
Total	10	43	33	80	23	10

I made another comparison for less and more experienced teachers on the relationship between them and the person they choose to learn from, specifically whether the person was perceived as being on their level within the organization, or in a position of leadership over them, or under them, or other. A chi-square test of independence was performed to examine the relationship between teachers' experience level and their perceived relationship with the person they choose to learn from. The relationship between these variables was significant, χ^2 (3, N = 1,608) = 56.26, p < .001, with Cramér's V = .19. Less experienced teachers reported choosing to learn from people in leadership positions over them more than experienced teachers, and more experienced

teachers reported choosing to learn more from people on their same level than less experienced. (See Table 9 for a breakdown of perceived relationships with the people teachers choose to learn from.) This difference indicates that more experienced teachers are more interested in learning from each other than from their leaders. Interestingly, even though less experienced teachers reported choosing to learn from people in positions of leadership over them, these are not commonly administrators but instructional coaches, mentors, or other teachers in their building (see Figure 9).

Table 9

Percent Perceived Relationship with Person Teacher is Choosing to Learn From

Group	I am in a leadership position over them.	I perceive them as being on my level.	They are in a leadership position over me.	Other
0-4 years	1	41	48	11
5+ years	2	54	28	16
Total	12	38	36	79

Summary

In responding to my survey, teachers described their PLN in terms of the settings, people, and tools they turn to for learning of their choosing. Regarding the settings/spaces teachers engage in, I found that most teachers make use of school-based teams or conferences, workshops, and webinars for learning purposes, but other categories like college courses and school or district trainings were also well represented. This highlights the diverse nature of teachers' learning needs. In the next chapter, I explore through qualitative analysis of open-ended survey responses the various affordances of these spaces and how they meet the diverse needs of teachers in this study.

Interestingly, with so much other research coming forward on the topic of social media use by teachers (Aguilar et al., 2021; Alwafi, 2021; Bozkurt, 2021; Greenhow et al., 2021; Trust et al., 2020; E. Richter et al., 2022), less than 10% selected social media as the learning space significantly impacting their learning (even though 29% of respondents indicated they use social media as a learning setting). Perhaps this is because they perceive social media more as a tool than a space (40% selected it as a tool they use for learning).

Also of note, even though 40% of teachers chose school or district trainings as a space they use for learning of their choosing, only 13% chose it as the space significantly impacting their learning, indicating this space is being used but may not be achieving its potential to impact teacher learning. Insights in later chapters will clarify ways in which this potential might be achieved.

Regarding the people teachers choose to learn from, the vast majority selected other teachers as the people impacting their learning the most—40% said teachers in their building and 19% said other educators outside their building. The next most common category was instructional coaches or mentors (18%). Less experienced teachers chose this category more than more experienced teachers (28% vs. 15%). It appears that more experienced teachers prefer to learn from their colleagues—60% chose other teachers (from their school or elsewhere) as the person significantly impacting their learning.

Regarding the tools teachers use for learning of their choosing, a wide range was reported, but Google, search engines, and websites were the most chosen as a tool impacting their learning the most (38%), followed by social media (of various types;

28%), and books (20%). It is also interesting to note that even though only 4% of teachers chose academic journals as the tool most impacting their learning, more than a third of them indicated using academic journals for their professional learning. Critics of teacher-led professional learning might question whether teachers use credible sources for learning of their choosing, but this indicates a significant portion are doing so.

Across the three domains of spaces, people, and tools teachers are turning to for professional learning of their choosing, the benefit of securing new ideas, strategies, tools and/or resources was predominant. Clearly, the PLNs teachers create for themselves are largely designed to provide them with ideas and tools to improve their craft. This falls under the cognitive benefits identified by Trust and Prestridge (2021). How various professional learning spaces do this is described in the chapters that follow.

Finally, to further understand how teachers describe their PLN, I compared various subgroups of teachers to see if they describe their PLN differently. I only found four comparisons with notable effect sizes. The most interesting findings were: (1) elementary teachers in this study appear slightly more likely to select assigned coaches or mentors for their PL while secondary teachers in this study are slightly more likely to select other educators outside their school or district or college professors (Cramér's V = .16), and (2) less experienced teachers in this study are slightly more likely to select assigned coaches and mentors (Cramér's V = .17) and those in leadership positions over them (Cramér's V = .19) for their PL than more experienced teachers in this study. Investigating these differences further through qualitative analysis was not a focus for this study but could be explored in greater detail in future studies.

CHAPTER V

TEACHERS' PERCEPTIONS OF LEARNING SPACES OF THEIR CHOOSING

To answer RQ2a and RQ2b, I included survey questions (questions 11-19 in Appendix A) that inquired about teachers' learning spaces of their choosing. I specifically asked about something they are choosing to learn at this time to improve their practice, what spaces they participate in for this learning, and how these spaces support their learning. I had 1,693 teachers complete these questions. In this chapter, I will first describe my methods of analysis for addressing these research questions, then report findings on RQ2a (chosen learning topics) and RQ2b (participation in PL spaces of their choosing), and finally provide overarching insights at the end.

Methods

To answer RQ2a, I asked teachers (in survey question 11) to "Please describe something you're choosing to learn (as opposed to something you're required to learn) to improve your teaching." Responses to this question averaged 14.2 words. For analysis, I first ran a high-level content analysis through a text search and mass-coding feature of Atlas.ti. I then employed descriptive coding (Saldaña, 2021) to responses that were not coded through the previous mass-coding. For example, responses with the word "math" in them were mass coded as "math," but responses with "calculus" were later coded with a "math" code manually. After each response was coded, I identified a wide range of topics and grouped them into categories that I describe below. I formed these groups in

an iterative fashion—first forming 30-40 groups, then continuing to condense them based on commonalities. For example, a handful of responses were grouped as "project-based learning" which was later combined with topics like "engagement" and "classroom management" (among others) to become "instruction/pedagogy." Because so many teachers referred to reading and math as their topics of focus, I kept these as separate categories. See a complete list of topics teachers reported choosing to learn in Table 10. These categories are not mutually exclusive. For example, a 4th grade teacher (Participant 15) reported that they were choosing to learn "Using iPad/technology in math" which was coded with "math" and "technology" codes. Even within categories, teachers' responses varied widely, which I will illustrate below.

Table 10

Topics Teachers are Choosing to Learn

Topic category	*n*	%
Instruction/pedagogy	536	32
Meeting students' needs	392	23
Content areas other than math or reading	351	21
Technology	276	16
Reading	166	10
Math	159	9
Student data	115	7
Other	106	6

Note. N = 1,693. Categories are not mutually exclusive.

To answer RQ2b and explore teacher participation in PL spaces of their choosing, I first asked teachers in survey question 14 to select one setting (from a list of options) that is significantly helping them in what they are choosing to learn. The list included (1) college and university courses, (2) conferences, workshops, and/or webinars, (3) social

media, (4) teams or working groups in your school, (5) trainings hosted by your school or district, and (6) other (see results in Figure 5). In a follow-up question (survey question 16), I asked teachers, "What is it about this setting that helps you with your learning? What can you do there that helps you with your learning?" I designed this question to help me understand what people are doing in the spaces they are choosing for their professional learning—to show what activity was afforded by these spaces and get a better sense of why teachers go there.

For analyzing this open-ended question, I developed a codebook (see Appendix B) using an open coding process (Saldaña, 2021). Then, after coding all responses, a second researcher coded 10% of those responses to determine reliability of the coding. I calculated an intercoder agreement percentage, which was 81%. I also grouped codes into these themes: information in the space (if the code related to information or ideas accessible in the space), people in the space (if the code related to people they interacted with in the space), or space affordance (if the code described something the participant could do in the space). See Table 11 for themes and their associated codes. I will describe each of these in greater detail in the "Participation in Chosen PL Spaces" section of the reported findings in this chapter.

Findings

In this section, I will first describe the topics teachers are focusing on learning (see Table 10) in response to RQ2a. Then, I will report on teachers' descriptions of how they participate in learning spaces of their choosing (see Table 11) in response to RQ2b.

Table 11

Elements of Chosen Professional Learning Spaces

Theme	Code	*n*	%
Information in the space	Relevance/application to practice	482	28
Information in the space	Research-based	50	3
People in the space	Shared interest/context	164	10
People in the space	Expertise/experienced	145	9
People in the space	Accountability/structure	84	5
People in the space	Different locale/grade/content area	68	4
People in the space	Support	62	4
Space affordance	Collaborative learning	701	41
Space affordance	Get ideas only	388	23
Space affordance	Agency/control	364	22
Space affordance	Get feedback/answers to questions	163	10
Space affordance	Career advancement	17	1

Note. N = 1,693. Codes are not mutually exclusive (other than "Get ideas only" vs. "Collaboration").

Chosen Learning Topics

As seen in Table 10, teachers are focusing on a wide range of learning topics to improve their professional practice including instruction/pedagogy, meeting students' needs, various content areas, technology, student data, among others.

Instruction/Pedagogy

About 1 in 3 teachers (32%) referred to instructional strategies and pedagogy they were exploring as learning of their choosing. Instructional focuses included classroom management, content-specific pedagogy, student engagement, differentiation, and arts integration, among many others.

Meeting Students' Needs

About 1 in 5 teachers (23%) referenced various types of students and their needs as the topic they were choosing to study. Types of students included English language learners (ELLs), students with disabilities, students with severe behavioral problems, gifted and talented students, and students who have experienced trauma. Teachers also mentioned focusing on social-emotional learning (SEL) to meet students' needs—helping students practice mindfulness, develop a growth mindset, or achieve mental/emotional wellness. They also shared their desire to learn about student development (the adolescent brain, the whole brainchild, etc.), connecting with students, culturally responsive practices, and direct references to diversity, equity, and inclusion.

Content Areas Other Than Math or Reading

About 1 in 5 teachers (21%) reported focusing on topics other than math or reading—most notably science, English language arts, social studies, art, music, world languages, computer science, even sewing (n = 4).

Technology

About 1 in 6 teachers (16%) reported focusing on integrating technology in the classroom. This mostly included general references to learning to use technology in the classroom, learning to use specific devices (e.g., iPads, etc.), or learning to implement various software solutions (e.g., Canvas, Google Suite, Nearpod, etc.).

Reading

About 1 in 10 teachers (10%) reported reading instruction as the topic they are

choosing to study at this time, and the majority of these were elementary teachers (by a ratio of about 3 to1). Many of these referred to LETRS training, which has recently been mandated by Utah state officials for elementary teachers in grades K-3, so it is not entirely clear whether this is chosen learning or obligated, but some teachers specifically said they were choosing to engage with it. Many others (n = 45) referred to the science of reading, which is closely related to the recently mandated LETRS training, which is built upon science of reading principles.

Math

About 1 in 10 teachers (9%) reported math instruction as their focus and I identified a wide array of subtopics within this category. Some teachers described integrating technology in their math classrooms. Others described pursuing math endorsements. Some described striving to learn math strategies for various types of students (e.g., students with disabilities) or course levels (e.g., AP Calculus). Others referred to pedagogy like "using a constructivist approach to teaching fractions" (Participant 637).

Student Data

About 1 in 14 teachers (7%) report focusing on student data—how to collect, analyze, report, and/or intervene with information about student learning. Some teachers' responses in this category specifically referred to learning to use PLCs as a teaming strategy for improving instruction. Others referred to response to intervention (RTI) as a topic of interest. Another common subtopic in this category was standards-based grading,

a way of reporting student achievement data per content standard.

Other

I grouped an incredibly diverse range of responses in the "Other" category, including things like adult learning, time management, international education systems, to name just a few. Roughly 6% of teachers provided responses in this topic area.

Participation in Chosen PL Spaces

As seen in Table 11, teachers can and do and access a variety of things and people in the PL spaces of their choosing. Coding frequencies varied significantly across spaces (see Table 12). I describe each of these in greater detail below, grouped under themes of information within space, people within the space, and space affordances.

Table 12

Possible Activity in Chosen Professional Learning Spaces by Type of Space

Possible activity	*n*	College/ university courses	Conferences, workshops, or webinars	Social media	Teams or working groups in your school	School or district Trainings	Other
Relevance/application to practice	482	40	119	54	106	89	74
Research-based	50	17	17	2	3	3	8
Shared interest/context	164	15	35	7	71	24	12
Expertise/experienced	145	24	37	14	41	14	15
Accountability/structure	84	49	3	0	14	7	11
Different locale/grade/content area	68	7	17	18	11	8	7
Support	62	3	6	3	34	11	5
Collaborative learning	701	65	141	31	322	97	45
Get ideas only	388	63	86	83	39	36	81
Agency/control	364	47	129	49	9	17	113
Feedback/ask questions	163	19	20	14	68	27	15
Advancement	17	15	0	0	0	2	0

N = 1,693.

Information Within the Space

About 30% (n = 512) of teachers described information they access in the PL spaces of their choosing. As they described this information, teachers spoke of relevant/applicable ideas and research-based ideas (see Table 11).

Relevance/Application to Practice

About 28% (n = 482) of teachers described seeking or getting ideas that were relevant to them, their practice, or their students in the PL space of their choosing. The distribution of this theme across spaces was not even (see Table 12). The most predominant spaces for accessing relevant ideas were "Conferences, workshops, or webinars," "Teams or working groups in your school," and "Trainings hosted by your school or district." These teachers expressed a need for information they knew would benefit them or their students. Specifically, they valued learning what had worked well for other teachers. This was prevalent amongst those who selected school-based teams as a most impactful learning space. One middle school teacher (Participant 1469) explained, "The best way to learn new techniques is by seeing them modeled by experts, which I luckily have access to at my school." It is interesting to note that this teacher is finding expertise right within the walls of their own school. I will explore this theme further in a later section, but for now this serves as an important example of an educator accessing new knowledge in a format impactful for them (seeing techniques modeled by a colleague). A high school family and consumer sciences (FACS) teacher (Participant 534) also described the value of seeing colleagues' professional work:

I can work with people who teach classes similar to mine, which makes it really

> easy to see how I could use the features of the technology in my classroom. I also can see examples of what other people are creating.

This participant also gives us a clue as to why they find these ideas relevant—because they come from a colleague who is doing similar work (teaching classes similar to them). This was a very common theme I will explore further in the section entitled "People Providing Information and Ideas" below.

Teachers also frequently described getting vetted ideas from other professionals at conferences and workshops. For example, one teacher (Participant 903) stated, "I love conferences because you get some of the best people showing you how to do something that has worked for them. The last conference I went to was very hands on with ideas for the classroom." Another (Participant 1089) described the relevant, "hands on" nature of conferences and workshops— "In person conferences allow me to do hands on activities that help me apply it to my students." By "hands on," I suspect teachers are referring to learning that is experiential or practical. These comments about seeking out practical ideas in spaces where teachers can test them or learn from someone who has already tested them are important because they align with the experiential and relevance principles of adult learning (Knowles et al., 2014) and the importance of accessing a "knowledgeable other" (Vygotsky, 1978). In their search for knowledge, these teachers are opting into and creating learning opportunities for themselves in line with what we already know about impactful learning experiences.

Research Based

In their search for new knowledge, 3% (n = 50) of teachers also referred to

seeking ideas that were research-based. Though this is less than the 28% that referred to seeking ideas that were relevant to them and their students, some teachers explicitly called out a need for accessing ideas that were research-based. See Table 12 for specifics on where teachers are finding research-based ideas. Notably, most research-based ideas are coming through college/university courses and conferences, workshops, or webinars. One secondary science teacher (Participant 783) expressed, "I'm trying to understand what current research says about keeping students engaged and overcoming the apathy." A secondary English teacher (Participant 1341) added, "My university courses introduce me to theories and research applicable to teaching and provide access to professional journals and research." While the number of teachers in this study referring to research was relatively small, it is important to note that some teachers *are* attempting to access and apply research in their practice, and it is enough of a priority to them that they would specifically reference it in a survey response. This prompts the question, "How might other spaces like social media, school-based teams, and school- or district-led trainings be infused with more research?" Additional research and design efforts might answer this question.

People Within the Space

About 27% (n = 458) of teachers made references to the other people within the spaces they choose for their PL. Specifically, they described attributes of people they learn with or from in these spaces and how they rely on these people to hold them accountable and/or provide support. Codes for this theme focused on people with a shared interest or context (grade level, school, etc.), people coming from a different

locale, grade, or content area, people with expertise or more experience, people that provide accountability or structure to their learning, and people providing support (see Table 11).

Shared Interest or Context

About 10% (n = 164) of teachers described choosing to learn from people with common interests, content area, locale, goals, students, or school. Teachers mostly connected with others like them in their school-based teams, but connecting at conferences was also common (see Table 12). Speaking about having things in common with their school-based teammates, a high school math teacher (Participant 203) stated, "I can get feedback from the people who teach in the same environment. Each school has a unique setting and I like to learn from successful people in the same setting." Another teams-oriented high school teacher (Participant 1453) shared similar thoughts: "I love that my colleagues and I have a shared experience at the same school (school culture, etc.) It is helpful to get their feedback and perspective on relevant issues and problems specific to our demographic." These teachers value learning from someone like them—someone who faces similar challenges that might have solutions for them they have not yet considered.

In conferences/workshops/webinars, teachers enjoy finding colleagues who share common interests or goals, especially if they are not able to find that in their school building. A world languages teacher (Participant 556) explained,

> I can hear from other World Language teachers who have been teaching longer and have different ideas. The language department at my school consists of two people.… [T]here is such a benefit of learning from others who have the same

goal and face the same challenges as I do.

Regarding conferences, a fine arts teacher (Participant 907) said "I like that conferences bring in people with a variety of perspectives and also various ways of accomplishing the same goal." Both teachers reference the value of learning around a common goal and are accessing that opportunity through participating in conferences/workshops/webinars of their choosing.

Different Locale/Grade/Content Area

About 4% (n = 68) of teachers referred to accessing other educators from different places, teaching different grades or subjects in describing what they can do in PL spaces of their choosing. While teachers reported valuing learning from others similar to them, they also expressed interest in learning from others different from them. Teachers who chose "Social media" as the setting significantly impacting their learning were most likely to express this sentiment (see Table 12). Teachers in this category commonly mentioned accessing something in this space that was not available in their school. For example, a high school English teacher (Participant 594) said, "I watch a ton of TikTok videos about education and classroom strategies. It allows me to see a broad range of classrooms and ideas that aren't found in my school." Similarly, an elementary teacher (Participant 1136) shared this point, "Connecting with educators in other areas who may have more experience and access to resources that those in my area do not." Another elementary teacher (Participant 1272) described the value of both learning from those like them *and* different from them, "I like the opportunity to hear from other teachers in both similar situations (demographics of school, rural communities) and dissimilar situations."

This paired coding was not uncommon ("Shared interest/context" and "Different locale/grade/content area"). I expect this is because teachers value connecting with others who face similar challenges but under slightly different circumstances (e.g., different state or district) that may have produced solutions they have not yet considered.

Expertise/More Experience

About 9% (n = 145) of teachers referred to accessing experts or more experienced teachers in describing what they can do in PL spaces of their choosing. As we saw above, teachers choosing to learn within school-based teams sometimes refer to their colleagues as experts. This indicates that teachers are finding what they deem to be expertise in their own buildings, which is important because educational leadership spends billions of dollars each year attempting to bring expertise into schools (Bill & Melinda Gates Foundation, 2014) when they might better leverage the expertise in their buildings instead. One elementary teacher (Participant 327) spoke of this expertise when they said, "It all comes from my team. No one else in my school is an expert at teaching reading like the first-grade team."

Even if granted access to renowned experts, a teacher may not change their practices accordingly if they do not believe that expert is facing challenges like theirs. Comments from a teams-oriented elementary teacher (Participant 1553) highlight this well: "It is easier to learn from people who are experts but are also currently in the trenches. Often the big group webinars and conferences people have not [been] in the classroom for a while and seem out of touch." Note that this teacher cites *two* criteria that make someone a person they want to learn from: (1) being an expert, *and* (2) being

"currently in the trenches." We can infer from this comment that this teacher considers "webinars and conferences people" experts, but they apparently fail to meet the second criteria, whereas members of the school-based team from which this teacher chooses to learn do not. It appears that circumstantial relevance may trump externally established expertise in the eyes of practicing educators. An elementary fine arts teacher (Participant 1198) confirms this in their comment about conferences, "Oftentimes, I learn more from hearing how an attending teacher plans to adapt what is being taught, than from the actual presenter."

Accountability/Structure

About 5% (n = 84) of teachers said they have someone holding them accountable or providing structure to their learning in PL spaces of their choosing. The distribution of this code across spaces can be seen in Table 12. It is remarkable in these responses that college/university courses provide as much accountability as all other settings combined. Teachers selecting this space described the following benefits in their responses: having learning mapped out for them in a meaningful way, being compelled to focus and be present, doing assignments that allow them to reflect and apply their learning, being financially committed to learning (after paying for the course), feeling motivated by deadlines, working towards a goal like a degree or certificate, following a set schedule, and accessing quality content (e.g., research-based) and experts (i.e., professors).

Each of these benefits remind us (in this discussion predominantly focused on informal learning) that adult learning can thrive in a structured space. Keep in mind, these teachers chose to participate in these structured spaces, they were not obligated to do so.

They seem to know themselves and their needs well. One fifth grade teacher (Participant 1602) explained, “I struggle to focus. Being in a classroom (and not at home on a computer) helps me to focus on the task at hand.” Also talking about university courses, a high school social studies teacher added, “I find myself more complacent with other learning opportunities that are completely self-directed without checks and schedules in place.” We find in these comments a self-awareness that speaks to the ability of teachers to make sound decisions about their professional learning.

Support

About 4% (n = 62) of teachers referenced accessing support in the PL space of their choosing. The distribution of this code across learning spaces was also unequal (see Table 12), with the majority of codings falling in the “Teams or working groups in your school” category. It comes as no surprise that teachers would access support largely in their school-based teams. It may be worthwhile to designers of other learning spaces, however, to consider how they might provide more support to learners. Many references to “support” in these responses did not elaborate on what that meant (they simply expressed having support), but some responses referred to support in implementing new ideas in one’s classroom, support for their individual questions or problems, or support in being able to talk about instruction or students. Teachers that mentioned support also referred to feeling safe, being able to be vulnerable, and learning alongside friends. Comments from one secondary fine arts teacher (Participant 1147) depict an ideal, supportive team setting:

I love my team. We are coworkers, but also sincere friends. When we meet, we

> can be open and vulnerable, discussing our weaknesses and brainstorming ideas for improvement. We are constantly asking each other questions and sharing what we are learning.

Such close, collegial relationships built on trust and respect are known to help teachers persist with change efforts even when faced with significant challenges (Saunders, 2013). It is valuable to know this can develop when teachers opt into spaces of their own choosing for professional learning.

Space Affordances

About 83% (*n* = 1,408) of teachers commented on what the PL spaces of their choosing allow them to do, including getting ideas only, collaborative learning, exercising agency/control over their learning, getting feedback/answers to questions, or pursuing career advancement (see Table 11).

Get Ideas Only

About 23% (*n* = 388) of teachers described getting ideas only as a possible activity in the PL space of their choosing. Responses that received this code only referred to receptively getting ideas from watching or listening to other teachers, reading their posts online, or seeing them present at a conference. In contrast, many other teachers described learning alongside or with colleagues through an exchange of ideas.

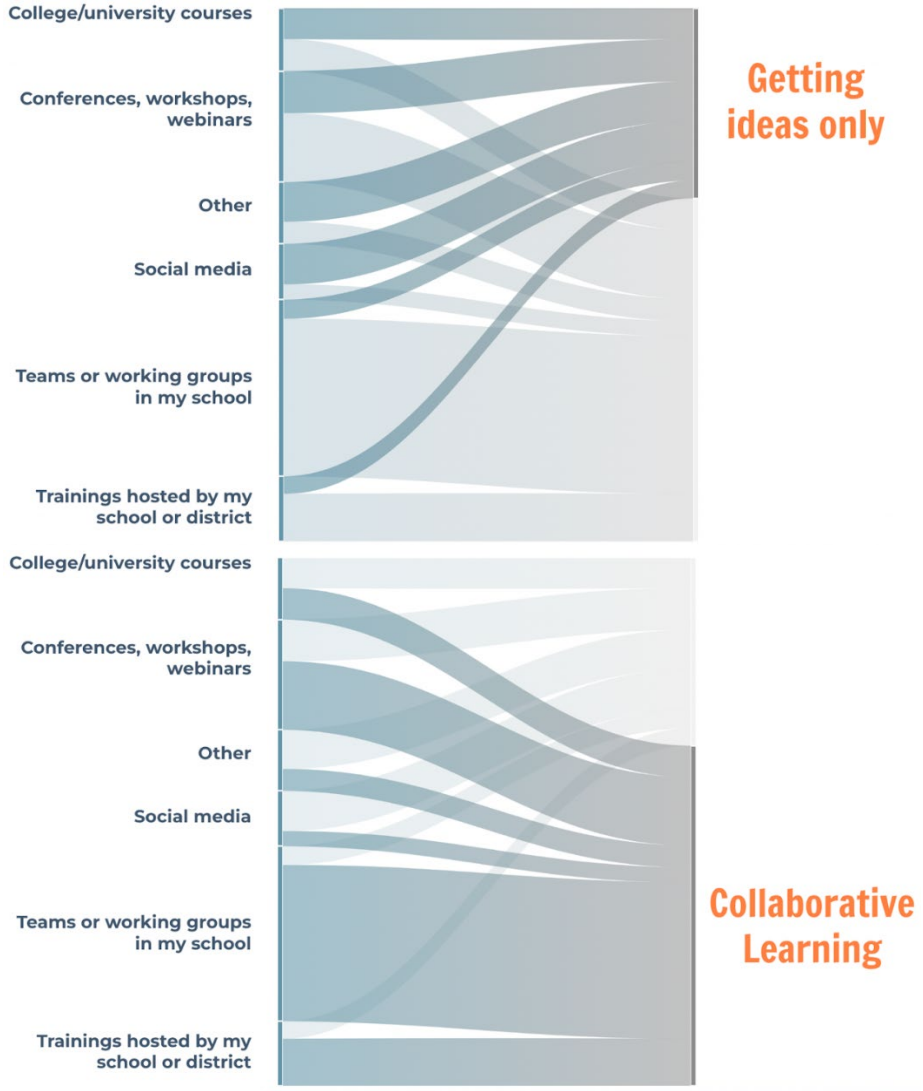
Collaborative Learning

About 41% (*n* = 701) of teachers commented on collaborative learning as a possible activity in the PL space of their choosing. This included discussing, sharing, brainstorming, problem solving, collaborating, working together, etc. These two types of

activity (receptive vs. interactive) are distinctly different forms of activity, with one being more receptive and the other more interactive, and the distribution of these two forms of participation across the various spaces listed in the survey was notably different (see Figure 14). The most notable difference is that while teachers are clearly getting ideas

Figure 14

Distributions of Getting Ideas vs. Collaborative Learning Across Various Learning Spaces



N = 1,693.

from each of these spaces, they are mostly developing ideas in teams or working groups in their school. Clearly, both forms of activity are important to teachers, but it is helpful to know that when teachers are seeking to develop ideas, they are mostly engaging with their teammates and colleagues in their building. This can be attributed (at least in part) to proximity of coworkers (convenience), having more things in common due to working in the same place (relevance), relying on colleagues' experience and perspectives (expertise), and accessing human connection and support through in-person relationships (emotional safety), which I explore in detail below. Since "sharing and developing ideas" was predominantly found in school-based teams in this data set, I will narrow my analysis to that learning space in the rest of this section.

I found evidence of each of the factors above (convenience, relevance, expertise, and emotional safety) in teachers' responses about developing ideas in school-based teams. Regarding the convenience of learning in this space, one teacher (Participant 62) related, "We can collaborate easily because we have a set meeting time and are in the same building." Another (Participant 156) explained that their teammates were "easily accessible, share common interests and background knowledge, and [are] invested in helping each other." Convenience of proximity and having things in common co-occurred frequently in the data, as seen in the previous quotation. As another example, a video/graphic design high school teacher (Participant 8) spoke about being a member of a tight-knit team of first-year teachers at their school: "Having these other teachers who are at the same point in their teaching career, and at the same school, helps us develop strategies that work for us." Being at the same school and having something in common

has allowed this group of teachers to grow close together and develop useful solutions as a team.

"Strategies that work for us" calls out the relevance teachers report accessing in school-based teams. A middle school math teacher (Participant 1195) described developing relevant ideas with like-minded coworkers, "My team is trying to accomplish the same things as me so we can try things and talk about what has worked and what has not." In school-based teams, teachers have multiple shared factors including students, school culture, core standards, curriculum, administrators, among others. All of these influence the challenges and solutions teachers engage with and form the joint enterprise (Wenger, 1998) of their work. One participant (Participant 1416) sums this up well—"We are all facing the same difficulties with the same students."

A clear benefit of learning with and from local colleagues is being able to test out new and contextually relevant ideas from someone facing similar circumstances and then examining together the success of implementing those ideas. A middle school science teacher (Participant 421) confirmed this:

> Bouncing ideas off of a real person who is experiencing the same struggles as you are with similar variables i.e., content, demographics, age group. We have the ability to see what is working and what isn't, then we can share what we are doing.

One secondary teacher's comments (Participant 1079) also highlight team-based relevance, this time through alignment with content area:

> Because teams are content specific, anything we choose to learn about, adopt or incorporate applies to the subject I'm teaching and is more helpful. We work together to adapt the teaching method or technique together to work for our content.

The joint enterprise (Wenger, 1998) of this teacher's team also allows them to adapt their practices together in meaningful ways. The occurrence of changes in practice this comment refers to cannot be understated. Traditional PD has struggled to effectuate change in teacher instructional practice (Bill & Melinda Gates Foundation, 2014; Korthagen, 2017; Patton et al., 2015), whereas we can infer from this teacher's comment that making changes to practice is not uncommon for this team of learners.

An elementary teacher (Participant 452) described adjusting practices with teammates: "We can collaborate about strategies and how we want to implement them in our classrooms, and then observe each other to give feedback and gain insight into the strategy in the classroom." In this description, we find an advanced collaborative learning cycle that includes critical consideration of new teaching strategies, implementation in individual classrooms (a change in practice), observation of peers implementing the strategies, and peer feedback. Teachers in this team have embraced an advanced collaborative learning model that aligns with the involvement and relevance elements of adult learning theory (Knowles et al., 2014) and leverages the many benefits of peer-observation for professional learning (Lombardo, 2021). Recall that this description came in response to a survey question about chosen (not obligated) learning. This example shines a light on the sophisticated collaborative work teachers are capable of and the intrinsic motivation they have to do such work.

In the quotations below, I share examples of teachers accessing and sharing expertise while also referencing emotional safety regarding self-judgment, judgment from others, and trust. An elementary teacher (Participant 507) shared about learning with their

team, “We are able to bounce ideas off of each other. It allows the ‘experts’ to be able to share what they are doing without anyone feeling dumb.” This teacher refers to colleagues as experts (and the choice of quotation marks is intriguing!) and references emotional safety as suspending personal judgment of ability. Their team has created a safe space in which expertise can be freely accessed. A secondary teacher (Participant 517) also spoke about expertise and safety in their team, “I can share ideas and bound thoughts off of other experts. I work well in these teams as we trust each other, and took the time to build this trust.” Again, we see this teacher describing expertise in a safe setting, but in this case the teacher sees themselves as one of the experts. Contrast this to traditional PD in which teachers are sometimes labeled as deficient, or passive recipients only (Apple, 2012; Webster-Wright, 2009). Last, another secondary teacher (Participant 6) explained,

> While I'm with [my team] I can make suggestions, receive feedback, and ask questions to help with my own learning.… I feel like I can go there to get new suggestions and I won't be judged for not doing something the same way that someone else is doing it.

Like a hybrid of the previous two teachers, this teacher describes *providing* expertise (“make suggestions”) and *accessing* it (“get new suggestions”) while not being judged by others. These teachers’ comments about emotional safety align with Saunders’ (2013) call for emotional safety in teacher professional development and describe the opportunities teachers seek to feel like experts with something to contribute (Heffernan et al., 2022’ Pineda-Báez et al., 2019). The examples shared above indicate that teachers are making these experiences happen for themselves by taking advantage of local, everyday experiences in their school-based teams.

Although teachers get ideas from many different spaces, they mostly develop and share ideas in school-based teams. Multiple teachers described the convenience, relevance, expertise, and support they access in this learning space, which sheds light on why the space is so popular for developing ideas. Teachers especially highlighted their ability to develop relevant solutions with people facing similar challenges as them in their school-based teams.

Agency/Control

About 22% (n = 364) of teachers commented on exercising agency or control as a possible activity in the PL space of their choosing. This included control over time (when, frequency, duration, etc.), topic, pace, place, and format of the learning, which I will elucidate in this section. The distribution of this affordance across the various learning spaces was not even (see Table 12). "Conferences, workshops, or webinars" appeared to provide teachers with the most opportunities for agency/control. The next most common space, "Other" was not surprising because these teachers chose to type in a personalized response to the question. These responses varied widely and included things like "reading books," "searching online," "self-directed learning," or learning from an array of different people like instructional coaches or friends. In contrast, school-based teams—a space that has proven popular in this data for many other affordances—had the *least* amount of agency/control of this type reported. Clearly, each type of learning space affords a different type of participation.

Teachers described a few different needs regarding time and their learning, specifically participating in a learning space that would allow them to control when they

learn, how frequently, and for how long. At least 100 other teachers expressed this sentiment regarding the spaces of their choosing (most fell within the "Conferences, workshops, webinars" and "Other:" categories). Teachers especially valued having control over when they engage with their learning. Speaking of online webinars, a middle school business/financial literacy teacher (Participant 135) said, "The flexibility with my time is the greatest benefit." Of all the things this learning space affords this teacher, flexibility with their schedule was the most important. This finding aligns strongly with the involvement principle of andragogy, which states that adult learners seek to control the what, *when*, and how of their learning (Knowles et al., 2014).

Teachers had much to say regarding choice over learning topics and the immediate relevance and motivation that result. A high school business/financial literacy/fine arts teacher (Participant 760) explained, "I can choose what is going to help me the most rather than being required to go to ones that may or may not support my needs." Likewise, a middle school science teacher shared, "When I choose the conference, it's usually more relevant to me than school-wide PD meetings. I can learn more about how to teach my subject and my students in particular." Once more, relevance appears to be a highly sought-after affordance of the spaces in which these teachers are participating. The intrinsic motivation that results from choosing one's learning also appeared often in participant responses. An elementary speech teacher (Participant 990) explained, "When I choose a topic I'm interested in, I tend to be more invested," and an elementary library media specialist (Participant 1199) added, "When I choose the topic it makes me more motivated to engage with the content. I am able to

listen and focus more and am able to set goals of how to try to implement things that I learn." This finding, too, aligns with the involvement principle of andragogy, in that adult learners want control over the *what* of their learning (Knowles et al., 2014).

A significant number of teachers (n = 90) that referenced agency/control as a space affordance spoke about controlling the pace of their learning. A high school math teacher (Participant 314) shared, "I like learning at my own pace and knowing that I can skip/skim sections that aren't relevant or important to me or my teaching." A high school special education teacher (Participant 822) added about books (Part of the "Other" category of learning spaces),

> Being able to read on my own, at my own pace, I'm allowed to think things through and then read other comments and opinions from others. It also allows me to take just a chunk of what I have learned and experiment with it before I take on more knowledge. When I learn a lot of concepts very quickly in one day from a conference, it's just too much information to remember.

This comment gives interesting insight into the value of controlling the pace of learning. When controlling the flow of information, this teacher can pause, reflect, implement, and return to the book, whereas in a conference setting, they become overloaded with information. However, when conferences or webinars are recorded, the pace of learning can be controlled afterward. Speaking of conferences, workshops, and webinars, an elementary teacher (Participant 457) said, "I can watch them and then rewatch them because they send replays." So, again, we find varied benefits and limitations to each learning space and of the different formats of those spaces (i.e., online or in person; see Table 12).

Teachers expressed in their responses an appreciation for being able to select

where they learn and in which format (online, in-person, or hybrid). An elementary fine arts teacher (Participant 1198) compared the benefits of in-person and online learning, describing their ability to choose the place and format for their learning:

> In-person conferences and workshops give me opportunities to learn from presenters and interact with other teachers…[and] encourage me to be more hands on. Online conferences and webinars are beneficial because I can be more selective in what I am learning. Attendance is much easier as I can do it from my classroom or home. I can also multitask more when there are 'down times.' I love that online learning often allows me the opportunity to rewatch a segment again at a later date.

This teacher appreciates in-person interaction at conferences *and* the agency/control allowed by online learning (topic, choice of place, and control over use of time). This example highlights the multidimensional nature of teachers' PLNs—the collection of people, spaces, and tools that provide the learner with ideas, connections, and support.

A large proportion of teachers in this study described participating in learning spaces in ways that allowed them to control their learning, including exercising agency over the time (when, frequency, duration, etc.), topic, pace, place, and format of their learning. Conferences, workshops, and webinars were the most selected space that afforded agency/control to teachers.

Get Feedback/Answers to Questions

About 10% (n = 163) of teachers commented on getting feedback or answers to their questions as a possible activity in the PL space of their choosing. Once again, distribution of this space affordance across types of spaces was uneven (see Table 12), favoring school-based teams. A secondary math and PE teacher (Participant 105) described the experience of getting feedback from their team:

> Because we have several more experienced teachers in our math department, it's nice to collaborate and bounce ideas off of each other. I usually run an idea about a teaching topic (coordinate planes, multi-step equations, etc.) by the team and they give feedback that I can take and apply it in my classroom.

A few elements are at play here that I would like to acknowledge. The teammates bring varied experience levels (novice and experienced) to the team, which grants the novice access to a form of expertise. The access, however, is not passive—it is interactive, which is not always the case in other learning spaces (think of watching an expert on a YouTube video or listening to a presentation). Also, in this scenario, the learner can bring their own ideas to the space and have them critiqued by respected others—ideas that already mesh with their plans, their students, their classroom, etc. This is a different experience from that of hearing others' ideas and retooling them to meet one's needs.

Another benefit to getting feedback within school-based teams is found in this high school math teacher's (Participant 203) response: "I can get feedback from the people who teach in the same environment. Each school has a unique setting and I like to learn from successful people in the same setting." This teacher can get feedback from people similar to them—people teaching under the same circumstances. As described in a previous section, learning from people like the learner appears to immediately certify them as a reliable source that will provide them with relevant ideas or solutions.

Like getting feedback, various teachers commented specifically on being able to ask questions in the learning space of their choosing. In school-based teams (again, the predominant setting of choice with the "feedback/ask questions" code), teachers described being able to ask questions and get answers quickly, ask highly specific questions, ask questions of people more experienced than them, ask as many questions as

they need to, and ask questions without feeling judged. Clearly, school-based teams are best equipped to address those needs, given the convenience, relevance, expertise, and emotional safety discovered earlier that characterizes this learning space.

Career Advancement

About 1% (n = 17) of teachers commented on career advancement as a possible outcome of participating in the PL space of their choosing. This meant that teachers expressed that their participation in the space was motivated by completing a degree or certification that would allow them to earn additional income or advance their practice.

Benefits and Limitations of Various Learning Spaces

As seen above, each learning space provides a unique set of benefits and limitations in terms of the participation it affords. In this section, I summarize findings about teacher participation in each space to answer RQ2b in a format that centers the space itself as a unit of analysis. Table 12 provides a quantitative view of the strengths and limitations of each space.

College/University Courses

About 15% (n = 256) of teachers chose this space as one significantly impacting the professional learning they are personally pursuing (see Figure 5). According to teachers, the most significant benefits of this space are the career advancement and structure and accountability it provides. Note in Table 12 that college/university courses are by far the most popular for these affordances. Lastly, college/university courses grant

their learners access to research and expertise.

The limitations of this space include agency/control, relevance, and collaborative learning. College courses are not a space that provides learners with much control over their learning, unless they are online and self-paced. They are also not a space teachers identify as providing highly relevant ideas. This may be related to professors not being perceived as being frequently in K-12 classrooms, as mentioned in the findings above. Lastly, college courses do not reportedly provide a space for collaborative learning, which may be due to the traditionally lecture-based nature of many university learning environments.

Conferences, Workshops, Webinars

About 22% (n = 374) of teachers chose this space as one significantly impacting the professional learning they are personally pursuing (see Figure 5), making it the second most selected, behind school-based teams. There were many reported benefits of conferences, workshops, and webinars. This type of learning space had the most instances of codes for getting ideas (receptive activity), accessing expertise, interaction, agency/control, and relevance/application to practice. It was also highly popular with codes focused on learning with similar people (recall quotations shared above about having a learning goal in common with other attendees), seeing what other teachers are doing, and being research-based. I did not suspect that conferences, workshops, webinars would be popular for agency/control or relevance, but multiple teachers described their ability to choose topics and timing (for online conferences, workshops, and webinars). The relevance aspect is likely tied to the choice over topic factor, since teachers will

likely not choose a conferences, workshops, and webinars session or course if it is not relevant to their learning needs.

The limitations of conferences, workshops, and webinars included a lack of structure and accountability, support, and opportunities for feedback or asking questions. Teachers do not appear to rely on conferences, workshops, and webinars for these affordances, although a small number of them did reference being able to ask presenters questions.

School-based Teams or Working Groups

About 25% (n = 427) of teachers chose this space as one significantly impacting the professional learning they are personally pursuing (see Figure 5), making it the most selected space significantly impacting teachers' learning of their choosing. Qualitative analysis shed light on the many reasons why, which included most frequent codings of the following affordances: sharing/developing ideas (due in part to the convenience, relevance, expertise, and support in this space), collaborative learning, accessing more experienced others, getting feedback or asking questions (especially without feeling judged), learning with people similar to oneself (recall quotations above about learning from others facing similar challenges in the same school setting), feeling supported, and seeing what others are doing. Additionally, school-based teams reportedly had almost as many codings for "relevance/application to practice" as conferences, workshops, and webinars.

The key limitations of school-based teams were agency/control (lowest number of codings by far) and being research-based. Recalling that agency/control refers to control

over time, topic, pace, place, and format, it makes sense that school-based teams would not afford such control to an individual since the team shares control of these defining features. School leaders may want to consider, however, the possibility of allowing interest-based professional learning teams to form in their schools, which might provide a new type of learning space that could reap the benefits of school-based teams as currently established and introduce an element of agency/control. If such teams were connected with research-based resources, a "Holy Grail" of professional learning might emerge (Korthagen, 2017, p. 387).

School- or District-Led Trainings

About 13% (n = 212) of teachers chose this type of learning space for the survey, and few benefits emerged from survey responses. The top reasons for utilizing this learning space included relevance/application to practice, feedback/asking questions, and sharing/discussing ideas. This space had minimal codings of any other affordances. Those who design these trainings may want to closely examine the affordances of other learning spaces (see Table 12) to determine how they might provide similar benefits or help participating teachers see the intended benefits.

Social Media

About 9% (n = 148) of teachers chose this space as one significantly impacting the professional learning they are personally pursuing (see Figure 5). Professional learning through social media has become a very popular topic in academic research (Aguilar et al., 2021). While 9% of teachers chose this as a preferred space, 23% listed a

social media platform as a tool significantly impacting their chosen learning. Benefits of using social media as a space included accessing people from different locales, etc. (social media had the most frequent coding of this affordance), getting ideas, agency/control, relevance, accessing more experienced and others. Social media had very few coding instances (the least of all spaces) for collaborative learning, accessing expertise, being research-based, accessing others with shared interest/context, and accessing support.

Other

About 16% (n = 276) of teachers wrote in a response under the "Other" category. The predominant write-in response was books, which represented 5% of all respondents. The types of spaces listed in this category varied so widely, it would not be meaningful to comment on the affordances listed by teachers in this category other than to note that agency/control and relevance were frequent codings, which is not surprising since teachers are personally selecting these other types of things to benefit their learning.

Summary

Teachers in this study are exploring a wide variety of ways to improve their practice, with specific focuses on a range of topics, including general or content-specific teaching strategies, ways to better support specific students, technology integration, and tools for assessing and reporting learning, among others. The spaces teachers use to acquire this learning provide them with various ways of participating in the learning process. Some spaces are mostly used for receiving new ideas and information (e.g.,

social media), while others provide more interactive, collaborative learning (e.g., school-based teams and conferences, workshops, and webinars). School-based teams and conferences, workshops, and webinars were the most selected spaces by teachers as a space significantly impacting their learning. School-based teams offer a collaborative learning space where teachers can access relevant ideas and strategies with people who have common interests and circumstances, some of whom are perceived as experts. They can be emotionally safe spaces where teachers can ask questions and receive feedback on their work. However, school-based teams offer little control over time, topic, pace, or format of learning, whereas conferences, workshops, and webinars can. conferences, workshops, and webinars also offer relevant, research-based learning opportunities among experts and others with different backgrounds. Social media spaces, although widely researched in recent years (Aguilar et al., 2021; Furlong & Spina, 2022) were not commonly selected by teachers as a learning space (9%) significantly impacting their learning. Perhaps this is because teachers may have viewed it as more of a tool than a space (40% reported using it as a tool).

Overall, teachers participate in these various spaces to access relevant, applicable ideas that will improve their practice. Teachers face complex challenges in their work that require solutions customized to their unique circumstances—solutions with high granularity that meet the needs of unique students. One teacher (Participant 940) described this well:

> Teaching in theory is easy to learn, but in practice, all teachers are faced with challenges they could not have anticipated. Hearing real-life examples from other teachers and being able to bounce ideas off of others in the same position is the best way for me to learn and grow.

When teachers need ideas generalizable to most students, they can find these in lots of places (and they do!). When they need something more specific, it appears that many develop these solutions locally themselves, with colleagues who are familiar with their circumstances and students. A school building can be a professional learning space that affords this collaborative, customizing activity through creating proximity to other professional learners facing similar challenges.

Upon examining teachers' participation in learning spaces of their choosing, I found many examples of them manifesting principles of adult learning theory (Knowles et al., 2014). I also found teachers describing access to expertise in their buildings and districts and making immediate changes in their practices as they learn alongside each other. Such impact on professional practice has been elusive to traditional, formalized PD efforts initiated by systems leaders (Bill & Melinda Gates Foundation, 2014; Korthagen, 2017; Patton et al., 2015) and should be further explored. Additionally, I was not focused in this study on the nuances between what teachers are choosing to learn and how they pursue this learning, but this could be the subject of future studies. Such research could clarify how PLNs differ for teachers focused on different topics.

CHAPTER VI

IDEAL AND REQUIRED PROFESSIONAL LEARNING SPACES

To address RQ3, teachers were asked the open-ended survey question, "What would be an ideal professional learning setting, in your opinion?" (see question 20 in Appendix A) and 1,693 responded with an average response length of 22.7 words. Then, to answer RQ3a and compare experiences in chosen or ideal spaces with experiences in required ones, I included the following question (number 22b) in my survey to Utah teachers: "How do your experiences in required professional learning settings differ from settings in which you choose to learn?" This question only appeared to teachers that answered question 22a ("How similar would your responses be to the questions above if we asked you about professional learning settings in which you are or have been required to participate?") with "Very different" (which was selected by 22% of teachers), "Somewhat different" (selected by 36%), or "Somewhat similar" (selected by 21%). It did not appear to teachers who said their responses about required learning settings would be "Very similar" (which was selected by 21% of teachers). For this reason, only 1,341 of 1,693 teachers saw and answered this comparison question. Response length to question 22b had an average of 30 words. In this chapter, I will first describe my methods of analysis for addressing these research questions, then report findings for RQ3 then RQ3a, and lastly provide overarching insights in a summary at the end.

Methods

I analyzed responses to survey question 20 with the help of two research

assistants. We analyzed this question by first applying open coding (Saldaña, 2021) to a subset of responses. Then, each research assistant independently began grouping open codes to form higher-level codes that were more inclusive. We then conferred together, compared their groupings, and agreed on nine codes that we felt adequately represented the data (see codebook in Appendix C). One of the assistants then applied this codebook to all responses, while the other only applied it to 10% of responses. On those 10% of responses, the two assistants' applied codes agreed 83% of the time. Teachers expressed a wide range of ideas in their responses, which we organized into themes listed in Table 13. I will describe each of these themes in greater detail in the findings section of this chapter.

Table 13

Themes and Their Coding Frequency Regarding Ideal Learning Spaces

Code	*n*	%
Activity	1,333	79
Format	777	46
Purpose	369	31
People	523	31
Time	306	18
Location	160	10

Note. $N = 1{,}693$. Categories are not mutually exclusive.

We used the same process to develop a codebook for responses to question 22b (see codebook in Appendix D) in the effort to answer RQ3a. One of the assistants then applied this codebook to all responses, while the other only applied it to 10% of

responses. On those 10% of responses, the two assistants' applied codes agreed 81% of the time. Teachers expressed a range of challenges with required learning spaces, which we organized into themes listed in Table 14. I will describe each of these themes in greater detail in the findings section of this chapter.

Table 14

Themes and Their Coding Frequency Regarding Required Learning Spaces

Theme	*n*	%
Relevant instruction	864	51
Motivation	453	27
Time	283	17
Administrators	210	12
Other teachers	128	8
Format	58	3
Positive	56	3

Note. $N = 1{,}341$. Categories are not mutually exclusive and percentages are calculated out of all participating teachers ($N = 1{,}693$), not just those that answered this survey question. "Positive" refers to participants who made positive comments about required learning spaces—all other themes refer to challenges.

Findings

In this section, I first report findings for RQ3 regarding how teachers envision an ideal PL space. Then, I report findings for RQ3a and compare teachers' reports of experiences in required spaces with their visions of ideal ones.

Purpose: Why Teachers Would Engage in an Ideal Professional Learning Space

About 31% of teachers ($n = 369$) commented on their motives for engaging in an

ideal PL space. The predominant purpose teachers shared was to access relevant ideas for their professional practice. In my analysis above (previous chapter) of how teachers participate in learning spaces of their choosing, I described in detail ways in which these teachers access and develop ideas. These teachers emphasized relevance as especially important. I identified this same theme in teachers' descriptions of an ideal PL space. In these responses, I assigned the following sentiments to represent relevance: when PL matches their content area or grade level, addresses their classroom/students' needs, is practical (not only theoretical), or aligns with their personal interest or level of expertise.

In speaking of relevance, multiple teachers described the ideal PL space as one that was content area focused. One special education teacher (Participant 1096) spoke emphatically about this in their description: "Learning with people that teach my same content area and having trainings specific to us and our needs. I hate when I need to go to a training and it barely relates to my content area." This teacher has strong feelings about having to endure trainings that do not seem to relate to them. A high school social studies teacher (Participant 749) added a few more specifics: "Small, content-based groups with specialized instruction relevant to what we teach and how we should teach it." Content-specific training allows teachers to learn content-specific teaching strategies.

Other teachers (elementary, especially) reported age or grade level-specific learning creating relevance in an ideal PL space. A first-grade teacher (Participant 1224) described the ideal PL space as "Working with your grade level peers on items that are specific to your grade instead of generalized professional development." Grade level content provides a level of specificity that makes PL more relevant to this educator. One

pre-school teacher (Participant 1200) explained this in more detail:

> An ideal learning setting would be with other professionals who work with the age group I have. I often find it difficult to take away ideas when it is an elementary-specific training, because I feel like most of the material applies to the older grades, rather than preschool.

This teacher indicates ideas will not be used from a training if they cannot see how it applies to their age-level of students, rendering the training a waste of resources.

Other teachers described relevance as meeting the needs of their specific students or classroom. Some felt very strongly about this. A 4th grade teacher (Participant 15) stated, “I would love someone to come into my actual classroom and provide the instruction with MY students/grade level.” The emphasis on “my” leads me to believe this teacher feels their students have highly specific needs that require very specific PL to address, or that they feel frustration about understanding how to meet their students’ needs. A 6th grade teacher (Participant 310) declared the ideal as “Small group working together to discuss the needs of students,” and a 5th grade teacher (Participant 1671) described it as “Working with those who understand directly (and with firsthand knowledge) my circumstances and my students' needs.”

Some teachers indicated relevance was accessed by allowing teachers to choose their PL. A high school fine arts teacher (Participant 657) described the ideal PL space as “One where teachers got to actually work on things affecting them and their students. Not doing what we are told to do.” This teacher was not the only one to describe the ideal PL space as being teacher-led. A high school math teacher described it as:

> People coming together and sharing ideas and strategies that are important to us and are useful to us in the classroom instead of just going over predetermined things in the meeting that either admin or district leaders determine we need to do.

I infer from these quotes that these teachers feel their leaders have different priorities than they do regarding what they need to learn to address the challenges they are facing in their classrooms. A middle school fine arts teacher (Participant 1210) confirmed this when they explained, "When teachers are allowed to put together their own collaboration or learning opportunities they end up getting the support they currently need, not the support that administrators and superintendents think they need."

A high school English teacher (Participant 1498) also described how administrators lack knowledge of teachers' PL needs and shared insight on why this matters when they said an ideal PL space was:

> One with far less administrative oversight. We are in the classrooms. We have more intimate knowledge of what we need to learn or improve on. When OUR goals are what drive the professional learning settings we are not only more invested, but we get more out of our investment.

Clearly this teacher feels they better understand their PL needs than their administrators do. An elementary teacher (Participant 636)'s frustration about this can be inferred from their brief description of the ideal PL space as "a time to just sit and chat with colleagues about an agenda that WE created."

Various teachers in this study described an ideal PL space as one in which learning was practical. A first-grade teacher (Participant 1663) described this as "Something practical instead of people running their mouths for X amount of time," and a second grade teacher (Participant 1688) as "In the classroom, observing actual practices and how they apply, rather than theoretical practices, where the settings are usually ideal and the students perfectly behaved." These teachers are seeking PL that has immediate

relevance to their practice and students.

Various teachers in this survey described learning in an ideal PL space matching their needs and skill levels. One 5th grade teacher (Participant 870) described the ideal setting as "One that is competency/need based. Teachers generally want to improve in their craft but want to work on what they need!" For this teacher, relevance means PL that meets their learning needs instead of spending time on skills or material they already understand. A high school math teacher (Participant 375) also spoke of PL that matches their ability level—"An ideal professional learning setting, in my opinion, contains modalities and opportunities for learning that are best suited to each individual educator's aptitude(s) and interest(s)."

In summary, teachers in this study envision participating in an ideal PL space to access and develop relevant ideas that will improve their practice. They envision achieving their purposes by participating in PL that matches their needs that arise from the grade level, content area, or students they teach. Teachers' comments about an ideal space clarified why mandated professional development often fails to reach teachers (Korthagen, 2017)—because there is a mismatch between teachers' and administrators' sense of what teachers need to be learning, which diminishes teacher investment in the experience. Teachers also envision an ideal space that aligns with their interests and skill level. Teachers in this study seek learning that has immediate application, which aligns with Knowles et al.'s (2014) Orientation of Learning principle, which explains that adults wish to engage in practical skill development instead of more generalized learning with minimal applicability. Teacher responses also highlighted the relationship between

aptitude and interest for a learner—if an educator feels they already know something, their interest will diminish in having more training on that topic. This desire for progress aligns with Knowles et al. (2014)'s description of an adult's motivation to learn. Teachers also commented on ideal PL spaces providing learning that is practical, which matches the problem-centered nature of adult learning (Knowles et al., 2014).

Activity: What an Ideal Professional Learning Space Would Allow Teachers to do and Feel

Approximately 79% (n = 1,333) of teachers commented on possible activity in an ideal PL space. I interpret activity in this sense as what a person can do, say, or feel in the space, like the practice architectures of Kemmis and Grootenboer (2008). More specifically, teachers described possible activity in an ideal PL space by how it affords collaboration and group learning, active learning, engaging in a learning process (vs. an event), observing other practitioners, asking personalized questions and getting answers, building relationships, and exercising agency or control over their learning in a supportive environment.

Collaboration and Group Learning

Approximately 31% (n = 528) of teachers described an ideal professional learning space as one that affords collaboration. These respondents reported seeking PL experiences that are social and engaging—that allow them to share and develop ideas. They often used words like, "sharing," "discussing," and "working together" in their descriptions. Some contrasted this to more passive learning spaces like one high school and world languages teacher (Participant 65) who described "an environment where we

can have a discussion about stuff instead of sitting there and having to be lectured to about something."

Most teachers simply referenced collaboration as a desired aspect of the space without describing what the collaboration would look like, but some gave insight as to what they would collaborate on. A middle school College and Career Awareness teacher (Participant 672) described the ideal as "Colleagues working together to identify student needs and implementing ways they can meet those needs." An elementary teacher (Participant 690) added, "We should be learning together to benefit each student. I enjoy learning in a positive space that focuses on research-based practices that are best for kids." In addition to collaborating to meet students' needs, one high school health and PE teacher (Participant 1025) described "collaborating with colleges developing engaging lessons," and an elementary teacher (Participant 1037) added, "We would have times of discussion and learning, and also time to plan or implement the ideas that we have gained from the learning." So, purposes for collaboration can include identifying practices that meet students' needs, lesson planning, or learning together and planning to apply that learning.

Approximately 18% (n = 307) of teachers directly referenced learning in groups or teams as an aspect of an ideal PL space and more than 50% of these teachers specifically referred to "small" groups as being ideal. In small groups, teachers said they would "work on something together to better their teaching practice" (Participant 1644), or be "working together to learn and plan" (Participant 48), or "working toward a common goal" (Participant 72). A high school science teacher (Participant 81) described

the ideal as “Small groups of individuals with conversation and reflection” and a middle school English teacher (Participant 74) described it as “A small team of people teaching the same age group, discussing and practicing specific strategies.” In summary, these teachers value learning in small groups where they work together to improve their practice, discuss and practice strategies, and reflect together.

One elementary teacher’s (Participant 17) comments shed light on *why* small groups are preferred—“Small specialty groups…that allow for individualized learning opportunities.” A secondary math and PE teacher (Participant 105) added, “Small group orientation to differentiate on a closer level.” Last, a middle school math teacher (Participant 142) said, “I don't love sharing ideas when the group is too large.” I conclude from these statements that teachers prefer small groups because they individualize and differentiate the learning experience, making it more personally relevant, and are more likely to create a safe space in which teachers feel comfortable sharing. This small-group safety was well articulated by a high school math teacher— “The most ideal setting is one where everyone feels a sense of community, support and trust. A small group setting is preferable. People feel safe to ask questions, speak, and share. Everyone's ideas are listened to and considered.”

Active Learning

Approximately 14% (n = 242) of teachers in the study spoke about learning in an active manner, frequently referring to learning in a “hands on” manner (note that over 60 teachers used this phrase), learning and trying, practicing, observing and then trying, learning by doing, applying, or implementing. A high school fine arts teacher (Participant

170) spoke emphatically about this in describing their ideal PL setting as an “In person hands-on workshop. Don't just spout theory at me. Let me experience/do something with the topic.” An elementary teacher (Participant 292) added, “Something hands on. I have a hard time with lecture base because I want to experience, play, and manipulate it for myself. I want to see how it works.”

At the same time, various other teachers saw value in pairing or preceding applied learning with a theoretical foundation. A 7th grade world language teacher (Participant 77) described this as “Theory at home - Practice in person once a week” and another middle school teacher (Participant 95) described it as “a mix of lecture and hands-on learning and practicing or designing activities around new concepts.” A middle school CTE teacher (Participant 220) added a third step (reflection) to this process when they said, “Long enough time to actually discuss ideas, practice and then reflect. To[o] often we barely can do one of those three.”

Engaging in a Learning Process

Like the teachers above who described engaging in theoretical and then applied learning, many teachers described the ideal PL space as one in which they could engage in learning as a process with multiple, intentional points of engagement across time. Sometimes teachers simply referred to having a learning experience paired with some kind of follow-up later to debrief how things are going. Other teachers described multi-step processes. One high school social studies teacher (Participant 99) said, “I think of it like a sandwich - in person trainings to start, the opportunity to work on my own, and a follow-up training or debrief with the trainer.”

Another common process teachers described was learning from/in a group, then working independently, then circling back to the group. A middle school computer science teacher (Participant 834) described this as "Something starting with a very strong and engaging in-person presence, followed by independent learning and practice, concluded with strong and engaging in-person closure." A middle school math teacher (Participant 413) described it as:

> …new concepts are introduced then you get time to practice them in your day to day teaching then come back together to brainstorm what worked and what didn't work. Then go try again with the changes in place and do that a few times.

This group→independent→group learning process is apparently not limited to in-person learning. One middle school science teacher (Participant 993) explained,

> I like when I can learn through online learning before attendance and then meet up with people and collaborate/practice the things we are studying. Then I go home and apply it and collaborate again through online to follow-up with my experience and/or questions.

Observing Other Teachers

Multiple teachers expressed a desire to see other practitioners in action when they described activity in their ideal professional learning space. Teachers referred to multiple ways of accomplishing this, including visiting other classrooms (Participant 120), having teaching modeled in their classroom (Participant 419), using a two-way mirror as to not disrupt the learning by observing (Participant 575), or watching videos of other teachers teaching (Participant 742). Certain teachers explained why they wish to observe others. An elementary teacher explained this vividly in stating,

> A lot of institutes have gone to the zoom type format. Sadly, that isn't as effective. Why do we travel personally when we can just watch Ruck Steve on

> TV.? It's the personal connections. We want to be there and see it in person. Touch it, taste it, or ride it. Not as fun ir [sic] educational watching it.

This teacher appreciates the tangible and social experience of seeing good teaching in action versus simply hearing about it. Another elementary teacher (Participant 626) described the ideal as "In the classroom actually seeing and experiencing what we need. It's much better to find out what is actually doable in the classroom instead of just trying to implement the mandates." This teacher appreciates observation because it makes new ideas seem more doable than when they hear about them only.

Asking Questions

Another activity teachers commonly described as they envisioned an ideal PL space was asking questions of others. These teachers referred to asking questions specific to their needs (Participant 8), in a safe environment (Participant 198), often after having tried a new strategy they just learned (Participant 272). One middle school language arts teacher captured all of these when they described the ideal space as "Methods of showing that aren't condescending to us. Give us the information, let us understand it, let us practice it, and then let us ask the questions we need that are specific to us and our learning."

Building Relationships

Closely related to learning in groups, teachers also described building relationships as a desired activity in the ideal professional learning space. Their responses referred to things like connecting with others, interacting socially, building networks, building professional relationships, meeting new people, or getting to know each other.

For one elementary teacher (Participant 283), these elements appear paramount in their brief description of an ideal professional learning space: “in-person classes, networking and connecting has always been ideal for me.” A middle school teacher (Participant 91) passionately explained,

> I really enjoy going through extended trainings in a cohort format. These are some of the strongest bonds I've built throughout my life and I love being able to expand my network and get to know my colleagues.

Agency

In addition to describing actions teachers envision taking in an ideal PL space, many also described options they wish they had available as they select PL spaces in which to engage. Some also referred to actions they would take *over* the setting itself or ways in which they would prefer to exercise agency within the space. Exercising control over one’s learning was a prominent point in responses to the survey question about ideal learning spaces. Teachers in this study expressed wanting control over the topic, format, and timing of their learning, among other things.

One middle school math and English teacher (Participant 1211) adamantly exclaimed, “Choice is HUGE for me. Not everything that comes up in PD is applicable to me and it's frustrating to have to be in a setting where I don't feel I can benefit.” Similarly, a 4th grade teacher described the ideal space as one “where the educators get to choose the topic we are studying, ourselves, as opposed to a top-down choice of topic coming from our district.”

Many teachers referred to having options to choose from as being ideal, based on their needs at the time. These needs shift based on who they are learning from, subject

areas they may be teaching, or type of learning they are seeking. One high school science teacher (Participant 1485) expressed this: “That really depends on the person and sometimes the subject. Sometimes I really enjoy the in person communication with classmates and professor, and sometimes I like the autonomy of an online, self-paced class.” A high school fine arts teacher (Participant 1328) adds, “It really depends on the subject. With some things having in person face-to-face is so helpful. With other things a quick poll or inquiry on social media can get you everything you need.” Lastly, an 8th grade social studies teacher expressed,

> If it was about teaching strategies, I would prefer small group, in person, grouped by subject so that I could brainstorm with others who teach my subject about how it would apply in our classrooms. If it was content-based, in person, slightly larger group (class-sized).

So, an individual teacher’s PL needs can vary and the PL spaces available to them need to be varied or vary accordingly.

Atmosphere

Approximately 22% (n = 375) of teachers commented on the type of atmosphere they envision experiencing in an ideal PL space. By “atmosphere,” I mean how teachers want to feel in a space, either physically or emotionally. While some teachers shared points about comfortable chairs, good sound systems (Participant 9), and free food (Participant 231), many others spoke about what they would feel in the setting. This included feeling like a member of a community (Participant 156) where one feels valued (Participant 13), hopeful (Participant 18), supported (Participant 83), safe/free from judgment or bias (Participant 148), and among colleagues with similar interests, focus,

and commitment. A high school math teacher (Participant 156) articulated feelings in an ideal PL space in detail:

> The most ideal setting is one where everyone feels a sense of community, support and trust. A small group setting is preferable. People feel safe to ask questions, speak and share. Everyone's ideas are listened to and considered. Teachers are treated like professionals and not micro-managed. Everyone appreciates each other's strengths. Everyone is open to learning from each other.

This teacher's pairing of emotional safety and a small group setting was not uncommon. Multiple teachers expressed that in small groups, voices are heard and individual questions can be answered. A high school fine arts teacher (Participant 330) commented on this as well: "Feeling like a community of teachers is ideal…. Working in relatively small groups so that everyone is heard and more individual questions can be addressed by the group is what I've benefited from the most."

Another prominent theme in teachers' comments about atmosphere (as mentioned above) was feeling safe. This included being able to express thoughts without fearing ridicule (Participant 393) or judgment (Participant 465), an ability to disagree without any hurt feelings (Participant 406), and a chance to be vulnerable (Participant 539) and heard (Participant 547), among other things. These teachers appear to be describing psychologically safe work environments (Edmondson, 2018) as ideal PL spaces. One 6th grade teacher (Participant 1086) captured this well in describing the ideal as "A safe environment where you feel that you can make mistakes but know that there is support for you and help in correcting those mistakes and improving."

Last, teachers who made comments about the atmosphere in describing an ideal PL space often spoke about the attitude of others in that environment. Specifically, they

spoke about learning with others who are focused on students, motivated, willing, excited, interested, optimistic, and committed to listening to each other. They want to be in a space where everyone has a voice and contributes to a positive atmosphere in which "everyone leaves their egos behind" (Participant 1259) and is "not acting like their students" (Participant 1304). Enough teachers emphasized these points that we might infer that teachers spend time in PL settings in which others are *not* as motivated, invested, or focused. As illustrated above, this is likely due to a lack of relevance or convenience that teachers seek in PL settings of their choosing.

Materials

About 5% (n = 81) of teachers commented on materials they envision accessing in an ideal PL space. Those who did mentioned food, technology, furniture, and materials or resources in general. A middle school fine arts teacher (Participant 485) summed this up succinctly: "In comfortable furniture, with snacks and great tech."

Summary

In an ideal PL space, teachers in this study envisioned doing, feeling, and accessing various things. The activity they would engage in includes collaboration (on meeting students' needs, lesson planning, and applying new learning), learning in groups (typically small groups), learning by doing, engaging in a learning process (not an event), observing others, asking questions, and building relationships. They envision feeling like a member of a community where one feels valued, hopeful, supported, and safe or free from judgment or bias. Teachers also want to feel that they are among people with shared

interests, focus, and commitment. Very few spoke of the materials that would be present in an ideal PL space.

Teachers' descriptions in this study of the activity afforded by an ideal PL space align with other research. Responses describing learning by doing align with the applied nature of adult learning (Knowles et al., 2014)—teachers perceive planning, developing, and implementing as ideals of a professional learning experience and space. Teachers' comments about engaging in a learning process sounded like Kolb's (2014) experiential learning theory that entails abstract conceptualization, active experimentation, concrete experience, and reflective observation. Researchers agree that effective teacher professional learning is a process of sustained duration and not an event (Darling-Hammond et al., 2017). The way teachers described valuing relationships and connection in a PL space aligns with Trust and Prestridge's (2021) study, which found that relationships in a PL space influence interactions there. Teachers in their study reported a desire to expand connections and overcome isolation as a goal of professional learning, like the teachers in this study. Knowing that teachers seek learning experiences that match research findings may give educational leaders greater confidence in granting teachers agency over their professional learning.

Some teachers' responses on this survey question about ideal PL spaces help us understand why teachers want choice over their learning topics—because they have obligated PL experiences in which they feel the topic is not relevant. Unfortunately, this mismatch is quite common for teachers and leaves them feeling undervalued as competent adults (Bill & Melinda Gates Foundation, 2014). This point will be explored

in greater detail later in this chapter.

People: Who the Ideal Professional Learning Space Would Allow Teachers to Access

About 31% (n = 523) of teachers spoke about the people in the space when describing their ideal PL setting. I differentiated this category from "atmosphere" by narrowing it down to the specific people in the space, not the feelings a teacher experiences in a space. Who they are learning with and from appears very important to these teachers. In talking about people in the space, teachers generally spoke about colleagues and knowledgeable others (experts, knowledgeable presenters/facilitators, coaches, mentors, or those with more experience).

In comments about learning with their school-based colleagues, teachers referred to learning new content with them, observing them, and getting feedback from them. A high school English teacher (Participant 21) spoke about learning with their peers when they described the ideal PL space as "in-person with time to discuss with our peers the concepts we are being shown." This is an example of learning *with* peers. An elementary teacher (Participant 34) described learning *from* peers through observation: "Being able to observe other teachers in real time and then discuss." Another example of learning from peers came from a middle school science teacher (Participant 567) who described the ideal as "A mindful group that has a shared purpose, classroom observations and debriefing, and practice teaching and getting feedback from peers." These teachers, therefore, envision the ideal as watching each other, discussing, and getting/providing feedback.

Teachers often reported in this study that the ideal PL space would allow them to interact with others with which they have something in common—this could be a common grade-level, content area, or goal. One high school math teacher (Participant 38) said,

> ...it would be ideal to work with people who have common goals and/or a person who is good at the practice I am trying to do. It would be ideal if they also taught a similar content area as me or at least was familiar with the curriculum or content that I teach….

This comes as no surprise when we recall that teachers envision joining an ideal PL space to access and develop ideas relevant to their practice, which frequently means ideas that pertain to their grade-level or content area. A high school English teacher (Participant 85) made a notable comment about this: "Really there should be a conference that is just 10th grade English teachers. That would be legit." A second-grade teacher (Participant 716) explained in more detail why commonality matters:

> The best learning I have achieved has come from when I have had the chance to visit with teachers who teach my same grade level and hear their good ideas and how they are using the same programs I am using but with different ideas. Sometimes others have figured out a problem you haven't been able to solve. They also have good resources to share if you get the chance to talk to them.

In an ideal PL space, teachers in this study envision learning from a "knowledgeable other" (Vygotsky, 1978). More specifically, teachers often referred to learning *with* peers and *from* a type of facilitator or expert. A high school science teacher (Participant 369) said this succinctly when they described the ideal as: "Learning in a group with a master in a given subject." A kindergarten teacher (Participant 155) described this in much more detail:

> An ideal professional learning setting would be with other teachers in my same

> situation learning the things that impact our students and classrooms the most. A facilitator would allow us to interact and learn from one another, while giving feedback and information, as well as strategies for us to try in our own classrooms.

This teacher's comments highlight multiple dimensions of the ideal PL experience, including accessing relevant information alongside similar others, under the guidance of a skilled facilitator who fosters engagement and inserts their expertise by providing feedback and useful strategies.

A skilled facilitator could be an academic. A high school English teacher (Participant 279) spoke in detail about the potential for connecting instructional practice and research by combining teachers with academics in a collaborative planning space:

> I'd say in an ideal situation, someone who is up-to-date on research can join my PLC team and tell us if there is research supporting our plans. I feel there is too much out there for us to know everything, so we flounder around trying to reinvent the wheel with our assessments and pedagogy. In other words, in the ideal professional learning setting, there wouldn't be a disconnect. Teachers from K-12 AND assistant professors and associate professors could all talk about what they're doing and what's working and what's not working. And it would be concrete conversation, not abstract.

This teacher calls attention to gaps in their knowledge caused by the amount of information available on teaching. Researchers could assist by seeing what practitioners are doing, comparing practice to research with which they are familiar, and then discussing any possible solutions that might bridge the research-practice gap in that specific area.

Some teachers included learning from diverse people in their descriptions of an ideal PL space. A secondary science teacher (Participant 176) said the ideal was "An assortment of people with the same goals but different ideas on how to get there and

wiling [sic] to compromise and modify ideas." A middle school world languages teacher (Participant 691) shared this same perspective in their description: "A regular in-person meeting with a group of diverse people with all different backgrounds, experience, and education but focused on the same passion and subject." These teachers appear to value hearing others' perspectives on a common problem or goal, like participant 716 above who shared that "Sometimes others have figured out a problem you haven't been able to solve."

In summary, as they described an ideal PL space, teachers in this study often described the people they would interact with in that space. They described learning from colleagues who are like them in some way. This might be best understood through the "joint enterprise" lens of the communities of practice framework (Wenger, 1998). Because they are addressing a common problem (e.g., teaching the same grade level), the knowledge they have to offer each other has immediate relevance and value. Teachers also spoke of learning with a knowledgeable other (Vygotsky, 1998). According to teachers, these others in the ideal PL space would provide new ideas, strategies, and feedback. Participant 279's description of the ideal PL space aligns with Coburn & Penuel's (2016) description of research-practice partnerships and provides insight on teachers' ability to envision impactful PL spaces for themselves.

Format: How the Ideal Space Affords Access to People and Information

Approximately 46% (n = 777) of teachers in this study described various formats they would prefer for accessing people and information, including in-person, online, or

hybrid. They also commented on the type of gathering they would prefer, including conferences, classes, trainings, workshops, and PLCs. These comments reflect the various ways in which teachers perceive an ideal PL space as affording access to people and information.

In-person learning was the most popular format described by teachers in this study, with 301 of them referencing it (Participant 18%). Teachers shared multiple reasons as to why, including the level of socialization made possible by in-person interactions and the ability to focus when meeting in person. An elementary teacher (Participant 158) felt that the in-person format was more conducive to high-quality conversations that invites all to contribute: “I think in person allows for way more productive conversations. It also helps others who may be more quiet to share their ideas. I had a hard time sharing as much as I wanted to when I have done online courses.” A high school early childhood teacher (Participant 102) explained that in-person learning allows them to focus and socialize better: “I enjoy being in person where I can focus, ask questions and meet new people.” Last, a high school English teacher (Participant 57) explained that in-person more intimate but virtual was more convenient: “I think there is real value in sitting down at the same table (or tables) and looking people in the eye, but realistically it's so difficult to get people together that virtual tends to work better for most people.”

Approximately 12% (n = 204) of teachers referenced online learning spaces as ideal when responding to this question, largely because of the convenience online provides. A fourth-grade teacher (Participant 73) explained: “Online works the best for

me. It gives me the flexibility I need to learn while still teaching full time." Part of the flexibility and personalization online learning provides is allowing teachers to move at their own pace, which was highlighted by a high school math teacher (Participant 273) who described the ideal as "Remote and at your own pace. Each teacher is in a different place, so having the ability to work at your own pace is ideal."

Several teachers (n = 120, or 7%) envisioned hybrid learning spaces as ideal, largely because of the varied modes of engagement hybrid allows. A first-grade teacher (Participant 104) stated, "I enjoy hybrid learning, some on my own and some in person." For this educator, hybrid learning allows them to vary their learning experience between independent and social. A seventh-grade English teacher (Participant 301) shared more insight about this when they said,

> I really enjoy having hybrid learning settings. I don't think I get the most of my learning when it is only online, so it's nice to have regular meetings for demonstrations in a small group so that we can see first hand how a strategy would be used in a classroom setting. It's also helpful with asking questions. The online setting when paired with this is helpful for reviewing and deepening my learning.

For this teacher, in-person engagement allows them to see strategies in action and ask related questions, whereas online engagement allows them to reflect and deepen their learning. Pairing the two produces an ideal PL space in their perspective.

In addition to describing in-person, online, or hybrid formats, some teachers spoke about types of gathering spaces in their descriptions of ideal PL settings. These included conferences, trainings or workshops, and college classrooms, among a few others. A middle school math teacher (Participant 230) explained that conferences grant motivation and expertise in a focused space: "An ideal professional learning setting

would be a conference with colleagues. The passion and expertise shared at conferences combined with the ability to have your undivided attention would create an atmosphere of growth and learning." A middle school English teacher (Participant 1108) described the ideal as "In-person trainings that have the trainer demonstrate their strategies in an actual classroom of one of the trainees." According to this teacher, there is an element of authenticity made possible through trainings and workshops. Lastly, a high school English teacher (Participant 107) explained, "The college classroom is my ideal setting. Everyone there chooses to be there, and the professors lead a dialogue conversation around shared readings that inspires everyone." Like the description about conferences, this participant feels that college classrooms provide motivation and expertise in a focused space.

In summary, teachers described how they envision accessing people and information in the ideal PL space by referencing both format and types of gathering spaces. Formats included in-person, online, or hybrid learning. Gathering spaces included conferences, trainings or workshops, and college classrooms, among others. In-person learning reportedly allows for more intimate socialization and focus, online affords flexibility and personalization, and hybrid offers varied modes of engagement (observational/practical in-person and reflective online). Regarding the different types of gathering spaces, both conferences and college classrooms reportedly provide motivation and expertise in a focused space, whereas trainings and workshops offer authentic, applied learning experiences.

Time: When Teachers Want to Engage With the Ideal Professional Learning Space

About 18% (n = 306) of teachers made comments about time in their responses to this survey questions, specifically on when and how frequently they would engage with an ideal PL space. Teachers particularly described having ample time to learn during contract hours when they would be compensated for their PL. Others spoke of PL that is of short duration or extended over longer periods of time with multiple touch points.

Teachers in this study often requested time for PL as they envisioned ideal PL spaces. A high school early childhood teacher (Participant 89) described the ideal as: "One that I have time for - it is difficult to make time for professional learning as a full-time educator. I wish more time was built into our schedules." A kindergarten/first grade teacher (Participant 915) agreed with this in stating: "TIME to collaborate, but not feel stressed about taking time from my own lesson planning." A fourth-grade teacher (Participant 667) simply described the ideal as "Paid time to work on what we choose." These teachers, among others in this study, describe the ideal PL space as having more time for PL built into their contracted schedule (or possibly paid additional time). Interestingly, this is not a description of a space, but apparently matters so much to these teachers that it is almost exclusively what they thought of when asked about an ideal situation.

Teachers shared varied opinions about the duration of learning time in an ideal PL space—some spoke of quick engagements, others of quick but frequent interactions, and others of longer engagements that occurred more than once. Speaking of brief learning sessions, a sixth-grade teacher (Participant 1368) described the ideal as "Small group,

short and sweet, have an immediate take away to use tomorrow." A high school science teacher (Participant 989) spoke of short but frequent learning experiences: "Teams that meet frequently and for short amounts of time like 5-10 minutes every other day." And lastly, an elementary teacher (Participant 1296) explained that longer, multi-day learning allowed for reflection and application when they described the ideal as: "Interactive, multiday in person learning is my favorite. I need enough time to soak the new information in and plan a way to implement the new information."

In summary, when asked to describe an ideal PL space, many teachers chose to describe when and how frequently they would engage with the space (often in place of describing the space itself). Teachers in this study picture the ideal as having time to participate in PL of their choosing during paid contract hours. Regarding duration and frequency of participating, we found a variety of descriptions amongst teachers' responses—some requested quick learning opportunities that provided them with immediate solutions or strategies, while others envisioned engaging for longer periods of time and/or more frequently for learning to "soak in."

Location: Where Teachers Want to Be When They Access the Ideal Professional Learning Space

About 10% of teachers (n = 160) commented on where they want to be when they engage in the ideal PL space. Within these comments, I found teachers describing locations like learning at school, at home, or in nature, among others (like college classrooms, museums, or a "fancy hotel with macaroons" [Participant 370]).

Teachers who described learning at school as ideal spoke of convenience and

relevance that would result. A middle school English teacher (Participant 1412) explained how learning at school is more convenient: “The setting needs to be at the local school. It is more convenient to hop into a classroom right after work as opposed to driving to some other location.” Also, recall Participant 15’s vision of learning in their own classroom: “I would love someone to come into my actual classroom and provide the instruction with MY students/grade level.” A high school PE teacher (Participant 419), teaching a different subject and a very different age group from the previous participant gave an almost identical description: “Watching someone demonstrate the skill they are trying to teach in my classroom with the students I see every day.” These teachers have specific challenges that demand specific, relevant answers and they want to see these demonstrated in their very own classrooms.

Teachers who mentioned learning from home described being comfortable (two teachers mentioned learning in their pajamas), focused, and independent. A kindergarten teacher (Participant 108) described both: “I am really liking online learning. I am stay in the comfort of my own home, not distracted by a new environment.” An elementary teacher (Participant 665) inferred you can be more independent at home: “I am an independent learner and prefer to seek out learning opportunities on my own. I think learning at home is best.”

A kindergarten teacher (Participant 1244) said beauty, connection, and destressing matters most in the ideal PL space: “Somewhere beautiful, with connection to nature! De-stress while learning.” A middle school multi-subject teacher (Participant 869) added, “I love being outdoors. My ideal setting would be a beautiful setting in nature where we

would be taught then given time to walk and think…. Finally, we would meet back together in groups to share our insights." Teachers seeking PL in the outdoors value the serenity available there.

In summary, roughly 10% of teachers in this study specified where they would like to be when they engage in an ideal PL space. Most of these spoke of being at school, which is convenient and can be highly relevant when it occurs in one's classroom with one's students. Others described learning from home where they are more comfortable, focused, and/or independent. A small group referred to learning in nature, enjoying the serenity it can provide as they engage in PL.

Comparison With Required Professional Learning Spaces

Upon reviewing coding results, I found that as teachers compared their required PL spaces with their chosen ones, mostly critical sentiments surfaced, which I will explain in my theme descriptions below. Most commonly, these sentiments included issues with relevance, motivation, time, quality of instruction, administrator influence, peer influence, and format in their required learning spaces. At the same time, some teachers shared positive statements about required learning (although usually alongside critical statements), which I will also report on in this section.

Relevant Instruction

Teachers in this study most commonly (n = 864 or 51%) described a lack of relevant instruction as a key difference about required PL spaces. By relevant instruction, I mean that teachers described instruction mismatched with their skill level, content area

or subject, grade level, interests or goals, and/or individual learning needs. Some also explained the extra effort required in finding relevance in required PL spaces and some shared how irrelevance in such spaces can be demoralizing or insulting. I provide more detail for each of these points below.

One frustration expressed by teachers was how often required training does not fit with their skill level. This can be because many different teachers are in the room, each with different needs. A high school FACS/CTE teacher (Participant 7) explained,

> When there is a required training or topic it doesn't apply to the masses, which it is hard to please everyone, but then people zone out. Some teachers have been here for years while others have not, so they need different support and help.

Another call for differentiation came from a middle school social studies teacher (Participant 1320) who, along with over 30 other teachers in the study (2%), expressed frustration about redundant material in required PL spaces: “Since I have been teaching for a long time, often the district required professional development is repetitious and geared to new teacher[s]. I wish they would differentiate for different needs.” A middle school business/financial literacy teacher’s (Participant 23) response adds insight to this point—not only are some teachers hearing the same material over and over, but they are already doing the thing for which they are receiving training: “I tend to be less enthusiastic about required, because more often then [sic] not I cannot apply what I learn in my classroom or I am already doing it.” An elementary teacher (Participant 599) summed up these sentiments in referring to required learning as a “one size fits all” approach that “doesn't take into account the various stages of knowledge, prep, or skills the group might have.”

The point about teachers wanting their PL to be relevant to their skill level may not be overemphasized. A lengthy but passionate response about this came from an elementary special education teacher (Participant 1042):

> This is such a good question! Let me give you a scenario. I teach in special education, so I often have students from different grades together. Imagine if I had a group of 30 students in grades K-6 together for a math lesson. I know that understanding addition is a huge foundational skill in math- so I structure a one-hour lesson about addition. I have a great presentation prepared, time for students to collaborate, learning activities, and success criteria. Am I going to be successful in giving all 30 of those students an engaging lesson? Nope! Each of them are at different levels, each of them has different struggles and strengths and I'm not taking ANY of those things into account. Similarly, when districts pull together hundreds of teachers for professional development and spend thousands of dollars hiring presenters, they are not going to be successful because chances are that many of the teachers in that setting do not need practice with whatever skill the presenters are giving. Teaching teachers has to be one of the hardest jobs out there, because we KNOW bad teaching when we see it and many teachers will completely shut down when they realize that the presentation isn't something they need or want. I've been to many back-to-school PD days when, during the keynote address, half of the teachers are asleep or on their phones. But two hours later during the breakout session on the changes to the healthcare plan, those teachers are alert, taking notes, and asking questions because they are now being presented with information they care about and want to understand. (Sorry for the long rant - this is something that bugs me!)

This teacher makes a powerful point about the efforts teachers make to differentiate instruction for their learners, only to have their own PL delivered in a way that does not feel differentiated.

Another anchor of relevance that teachers described in their comparison survey responses was their content area or subject. A high school social studies teacher (Participant 1480) said this emphatically, “The first question that I begin with is ‘How will this help me’.... If training immediately involves me/my content area, I'm ok... if not I'm disenfranchised!” For this teacher, relevance to their content area is clearly

paramount. An elementary special education teacher (Participant 705; along with other special education teachers in this survey) referred to this happening often, “Often the PDs that are chosen for me don't consider SPED teachers, so the content is not as useful for me (even though I teach the same content and the same grades.)”

Matching a teacher’s grade level also came up in survey responses that referenced lack of relevance as an issue. A middle school English teacher (Participant 35) shared this sentiment, emphasizing that their school level is often forgotten in training design:

> [I]t may not be something I think is relevant or it may be a practice that applies to elementary schools and not so much to jr. high schools. I feel like middle schools and Jr. High schools are often overlooked. … [S]o often trainings are focused on younger or older grades.

A high school math teacher (Participant 214) added that required learning settings rarely provide information they can quickly use in their teaching assignment: “I've been to many [required learning settings] that don't apply at all to my subject or grade level. Chosen learning settings are more handpicked and have a higher chance of resulting in information that can be applied.”

Some teachers spoke about learning in required spaces not aligning with their current PL interests or goals at the time. A middle school English teacher (Participant 26) shared this sentiment:

> Usually, I feel like required professional learning is a waste of my time. The sessions tend to focus on newer teachers or concepts that I have no interest in learning about. I tend to spend forced professional learning time hiding in a corner and working on what I want to work on.

In response to mandated training, this teacher engages in avoidance behavior and pursues learning or work of their choosing. So, when the purpose of the space does not align with

this teacher's goals, they repurpose the space to fit their goals. A middle school social studies teacher (Participant 899) shared how such misalignment can negatively impact a teacher: "[S]ometimes it's focused on something that I'm not trying to improve at the moment. This can create burnout." A middle school English (Participant 712) simply said, "The required PD is focused on the district's goals, not mine."

Some teachers described how a misalignment with their needs or interests impacts their learning. A high school English and film studies teacher (Participant 264) stated, "'Required' rarely ever aligns with preferred. I will always learn more when it is something I am interested in," and an elementary teacher (Participant 787) shared, "If it's a topic we are[n't] interested in, there isn't much change." This teacher then adds, "It is much harder to pay attention and retain the information if I'm less interested in the topic..." According to this teacher, lack of interest diminishes their ability to engage with the training and retain the learning.

Various teachers referred to required learning settings not providing them with what they currently need. An elementary special education teacher (Participant 51) stated, "I definitely absorb more content from things I choose to learn, usually because I need to know them to do my job better.… Required professional learning settings often feel irrelevant…." Like the teachers in the previous section, this teacher believes they learn more when they choose their learning and adds insight regarding why—because they choose things they need to know. A secondary fine arts teacher's (Participant 1147) comments on this point add further insight: "Relevance is the biggest thing--I would obviously choose something that I have prioritized as my #1 thing to improve on while a

required topic is very unlikely to be something I really need in that moment." According to this teacher, it is obvious they would choose the most important thing to improve upon.

Some teachers in this study described challenges with the lack of personalized instruction they find in required PL spaces. For example, an elementary teacher (Participant 181) stated, "I usually have little control over where, when, and how I learn in a professional setting." A high school math teacher (Participant 1285) reflected in more detail about this: "Required school- or district-wide PD is usually too long and starts to lose efficacy as teachers lose interest, it has to be vague enough to apply a little to everyone which means it doesn't apply super well to anyone." According to this teacher, personalization suffers because the training must apply to everyone. An elementary teacher (Participant 647) had similar thoughts: "Required PD sessions do not take into account the needs of all teachers. They are generically developed, tend to target newer teachers, and tend to be ongoing repeats of information already presented rather than new material." So, this teacher feels a mismatch between their needs as a more experienced teacher and what is being provided to them in required PL spaces.

In addition to sharing feelings about the generic nature of instruction in required PL spaces, some teachers spoke more specifically about the impact of large groups that are common in these spaces and how this does not meet their needs. An elementary speech language pathologist (Participant 17) stated that "I find that large groups provide little to no opportunity to discuss unique cases and therefore the material is difficult to apply in practice." Like others above, this teacher feels that group size limits personalization of a space. Another limiting factor for large groups was expressed by an

elementary teacher (Participant 773): “I think that sometimes required learning isn't always applicable to everyone in the group.… Also in large groups it is easy to loose accountability for the learning you are supposed to be doing.” This lack of accountability might explain why participant 26 feels they can hide in a corner in required PL spaces and work on other things of their choosing. A final sentiment about large groups was shared by a high school math teacher (Participant 1336) who stated, “I tend not to participate in required professional learning settings. It makes me uncomfortable to voice my opinion in large groups, particularly because I don't have very much teaching experience.” Large groups inhibit this teacher’s participation because they feel too vulnerable sharing amongst more experienced colleagues.

When teachers are required to engage in PL, they must put forth extra effort to see how the training applies to them, according to teachers in this study. For example, a high school English teacher (Participant 279) shared, “It isn't tailored to me, so I have to sift it. That's exhausting and often produces small results.” A high school special education teacher (Participant 97) added, “It takes me a little longer to engage and “see” the benefit in the material.” These teachers are spending extra time in their required learning, trying to see how it is relevant to their work. A high school special education teacher (Participant 57) also speaks of making extra effort: “I try hard to find learning opportunities that suit me, but often we don't dig in deep enough or we avoid the major elephants in the room.” For this teacher, experiences in required learning spaces are not specific enough to their needs or avoid focusing on topics that might prove impactful to address.

When teachers feel that a required learning space is not aligning with their PL needs, the impact can be demoralizing or even insulting. A 6th grade science teacher (Participant 11) shared, “For some required trainings I feel frustrated because I am already doing those things in my class or because they are asking a lot out of me and I feel inadequate because I am not doing those things.” This teacher is experiencing a sort of “too hot” or “too cold” phenomenon where on one end of the spectrum the training feels irrelevant because they do not need it, while on the other end it feels like an indication that they are failing. A high school English teacher (Participant 1300) added, “[M]any times required PD sessions do not treat teachers like professionals, but instead like the children that we teach. It feels like a waste of time and is even insulting to our professional knowledge and abilities.” This teacher’s comments highlight the differences between pedagogy and andragogy (Machynska & Boiko, 2020) and how adult learners feel when pedagogical practices are applied to them instead of andragogical ones.

Motivation

About 27% of teachers (n = 453) described how their motivation to engage with learning suffers in required PL spaces. Teachers reported that when learning was required, people zone out, get bored, feel less invested, less focused, less excited, go through the motions, see less growth results, work on other things, and have to force themselves to pay attention, etc. An elementary teacher (Participant 656) related, “You just sit there worrying about everything you need to actually be doing rather than wasting your time at a meeting.” According to teachers, decreased motivation to engage diminishes the potential impact of the learning experience on teacher practice. A middle

school fine arts teacher (Participant 502) shared that “They generally don’t engage me, making them less effective.”

Other teachers provided more detail about why this is, specifically in terms of the impact of required learning taking away the motivational effects of choice. A middle school English teacher (Participant 670) explained, “If I don't get to choose the topic, I usually don't have the mental or emotional bandwidth to invest in change.” This sounds similar to teachers cited above that mentioned the extra effort required to find relevance in required PL spaces, but this teacher goes so far as to say they will not invest in change when they have not chosen the learning. An elementary teacher (Participant 941) added, “Sometimes it is hard to feel the need to change or try something new if it was not my idea to begin with,” and a middle school social studies teacher (Participant 1063) shared, “[B]y choosing what I want to do, I'm more invested in learning and wanting to change.” Clearly choice motivates learning and subsequent change. A high school math teacher (Participant 1589) provided even more clarity as to why:

> Because it's my choice, I get to ask questions and find answers to problems that are directly affecting me now. Usually required professional learning is chosen by someone in the district. I'll take notes and pay attention for the most part but it's frustrating when I walk away feeling like I got nothing out of the time I spent. When I choose, I walk away with ideas and things I can do immediately to improve.

For this teacher, being able to choose their learning allows them to get personalized help that provides them with ideas they can implement immediately, whereas engaging in required PL spaces can leave them feeling frustrated and unfulfilled.

Time

About 17% of teachers (n = 283) referred to misuse of time when comparing

required PL spaces to chosen ones in their survey responses. This involved referring to time being wasted (Participant 59 teachers explicitly stated this), not having control over the pacing of learning, meeting at inconvenient times, and time not being assigned well to various activities. One high school fine arts teacher expressed frustration about seat time and pacing when they said, “The required ones are always about time even if it isn't necessary. We have to have so many hours in a seat even if we learn faster than that. That is ridiculous.” Apparently, this teacher’s supervisors are monitoring the success of required PL by recording how much time they spend in training.

In addition to requirements about the amount of time, other teachers commented on requirements about when required PL occurs. An elementary teacher (Participant 665) stated, “professional learning settings in which I am required to participate are outside of regular teaching hours. It makes having a home/work balance much more difficult.” Lastly, in speaking about how required PL time is used, a middle school social studies teacher (Participant 890) explained, “Often they have a speaker, but there is no time for collaboration or nuance and never any follow up or follow through.” This teacher appears to be looking for sustained engagement within a collaborative PL space. An elementary teacher (Participant 1006) expressed a desire for time to apply what they have learned: “[T]ime isn't provided during the training for me to think or plan how to incorporate or apply the learning to my teaching practice and to the realities of the classroom.” These teachers cited above place a high value on their time and have expressed frustration regarding required PL spaces that do not make good use of it (in their eyes).

Administrators

About 12% (n = 210) of teachers spoke of the influence of authority figures in their responses. Specifically, teachers described the negative effects of mandated training and not feeling understood by administrators saying that it is ineffective, and builds animosity, frustration, and discouragement. One elementary teacher (Participant 1189) explained:

> It felt overwhelming and pushed me to teach in ways that I may not have agreed with or felt was best for my students. In conversations with colleagues there were feelings of bitterness or frustration towards those who were pushing us to implement certain structures. Ultimately, I felt it created more of an environment of animosity.

The challenge for this teacher originated in the misalignment between their and their administration's understanding of their students' needs. One reason for this misalignment, according to a high school media specialist (Participant 1473), is the perceived lack of time administrators spend in classrooms:

> It is hard to hear from people who are not in the classroom every day. Admin or district staff telling me how to teach or adding weight to my load in what I have to do, is discouraging. Someone telling me to do something, when they don't actually have to do it too is disheart[en]ing.

A high school social studies teacher (Participant 632) shared similar thoughts and gave more detail about the impact this has on them personally: "They almost always pull in someone who depresses me and makes me want to quit. Their suggestions are often impractical, based on little to no first-hand knowledge."

Last, some teachers commented on how they perceive the motivations of administrators mandating training. A middle school science teacher (Participant 517) described this as "The stupid hoops (lesson plans, and other paperwork that doesn't help

us, but lets admins feel like they are doing something),” and a high school math teacher (Participant 682) simply stated, “Required settings suck. It's all for show and a tremendous waste of time and resources.” One high school social studies teacher (Participant 1013) pointed at district leadership specifically in their criticism: “Required professional learning settings are a waste. They are started because someone in the district wants to push a new idea without experience of what is happening in the schools.” Then, this teacher suggested, “If there is a required professional development then it should mostly be at a school setting. Allow a principal or PLC leader to determine what is needed at that specific school.” This teacher believes local authorities would better understand their PL needs than district administrators.

Various teachers commented on administrators not understanding their needs. An elementary teacher (Participant 1413) described the difference between required and chosen learning spaces as “Too many administrators talking about teaching strategies or classroom management that are not real world experiences. They act like we only have 10 kids in a class, not 30.” A high school computer science teacher (Participant 269) felt this way about district and state leadership:

> Sometimes what the district or state think we need is based upon biased perceptions that come from a small group of people with a lot of power but little to no real experience, or out of date experience. The teaching profession changes more than most other professions because students are constantly evolving.

Both teachers are expressing concerns about administrators’ understanding of the current demands of their profession. A high school special education teacher (Participant 822) believed this was because “Sometimes admin live in an all ‘theory no practice’ environment and they have no idea whether something can really be implemented or

not." Some teachers in this study would prefer that administrators ask what they need but have not had this experience. A middle school math teacher (Participant 1021) said:

> I have never been asked what kind of resources I am looking for, struggling with, or needing in my classroom. Administrators seem to see the next big fad in classroom management, self-care, or plc, and decide to share those along.

A secondary math teacher (Participant 557) added to this and described a sort of whiplash experience with trying out new mandates (that come without anyone asking for teachers' input):

> After 29 years of teaching…you go to the training, they don't ask your opinion nor answer your questions about specifics, so you jump through the hoops, you try to make the new cool thing work, then after 4 years, there's a new cool thing, and you start over.

A simple solution was put forth by a middle school fine arts teacher (Participant 1210): "We know what we need and we should be given more trust to lead our own learning."

It is unfortunate that teachers can experience such negative feelings towards their leadership—this punctuates how strongly teachers value choice in their learning, just as Knowles et al. (2014) believed. An elementary teacher (Participant 119) specifically drove this point home: "I don't like being forced to do anything, so even if it's exactly the same as something I chose to do, I won't like it if you make me do it." Another elementary teacher (Participant 113) described this principle more positively, "Choosing makes me feel like I am in control and my thoughts and feelings matter." Choice in learning, then, is not only related to motivation but to feeling valued as well.

Other Teachers

About 8% of teachers (n = 128) commented on the influence of their peers in

required PL spaces. In contrast to how teachers spoke positively of collaborating with peers in ideal learning spaces, here they spoke overwhelmingly of the negative influence their peers can have in required ones. They specifically mentioned peers getting off topic or not wanting to be there, and the influence that had on them personally or on others generally. An elementary teacher (Participant 1006) expressed that "I'm bugged when colleagues won't stay on topic or keep telling personal stories or - conversely - they won't participate at all" and a middle school fine arts teacher (Participant 887) added that they "argue about stupid things [which] doesn't really help me and what I am trying to learn." These teachers are not feeling connected with what the other teachers in the space want to talk about and appear to be frustrated as evidenced by their language (e.g., "bugged" and "stupid").

A lack of a shared goal can become more serious, according to teachers, when those who do not want to be there bring others down. A high school English teacher (Participant 6) shared, "What is most difficult in required professional learning settings is that some teachers don't want to be there or don't want to participate. Sometimes they can negatively dominate a conversation and skew the tone of the learning setting." This teacher's comments imply that some of the teachers want to be there and if they were not, perhaps the others could maintain a positive tone. A high school social studies teacher (Participant 99) added, "In required settings, a lot of teachers don't care about being there and are off task, which detracts from those who want to be there and learn." So, according to these teachers, peers in required PL spaces can negatively affect the experience for others either by dominating the conversation or by getting off-task and

detracting from others. Unfortunately, this can inhibit others from participating in the space. A high school fine arts and computer science teacher (Participant 544) stated that, "Sometimes our district/school PD is dominated by louder personalities that I never get a chance to ask questions." According to this teacher, the presence of overassertive peers in mandated spaces can diminish the ability of those spaces to personalize learning for each learner.

Format

About 3% (n = 58) of teachers commented on this. Most of these said required learning is usually in-person (n = 42), which some did not mind, but others said is not efficient, does not allow for flexible learning, and/or is less comfortable. An elementary teacher (Participant 1439) shared, "We are forced to be in person so my feelings of comfort go out the window." Unfortunately, they did not elaborate on why meeting in person makes them less comfortable.

Positives

Although infrequent, 3% of teachers (n = 56) described some positive aspects of their experiences in required PL spaces. These teachers shared a wide range of positive elements of these spaces, including exposure they would not have otherwise had, being paid for their time, accountability to others, food, being pushed outside their comfort zone, and collaboration with more people since they are required to be there. Additionally, some teachers spoke of finding value in participating in required PL spaces, even if it was not anticipated. For example, an elementary teacher (Participant 975)

stated, “Sometimes, I have a negative approach to required PD, but often times it turns out to be very helpful.” Others commented on the value they have found in these spaces but added caveats about the quality of the experience. Another elementary teacher (Participant 40) shared, “I hear more complaining about these settings, but they still are valuable—just not implemented as well.” A high school world languages teacher (Participant 1062) also spoke positively about required PL spaces, but shared there is still some misalignment of learning goals: “My professional learning settings are always relevant, supportive, helpful, and generally efficient. They just aren't always MY personal goals, but helpful none-the-less.” Last, a middle school fine arts teacher (Participant 1449) described a mix of positive and negative experiences in required learning:

> I have been to required professional development that has been very helpful in areas I feel I need work in, and then there are some that I feel a lot of time is spent on areas that do not impact me as a teacher as much, and my time could be better served.

This teacher’s description of experiences seems most likely—that some required PL spaces can add value while others do not.

Summary

As a part of this study, I asked teachers, “What would be an ideal professional learning setting, in your opinion?” After analyzing nearly 1,700 responses, I found patterns that I organized into why, what, who, how, when, and where teachers would engage with the ideal PL space. Regarding *why* teachers would engage in the space, we found that teachers seek relevant and research-based ideas and strategies to improve their practice. *What* they envision doing in such a space included collaborating with trusted

colleagues in small groups, moving through various stages of learning (whole group, then independent practice, possibly peer observation, then group reflection), and building relationships in the process. Teachers' descriptions of *who* is in the ideal PL space frequently included peers with which they have much in common, a knowledgeable other, and sometimes others with diverse perspectives on how to achieve a shared goal. According to teachers, *how* the ideal PL space grants access to people and information could be through in-person means (most frequent), online (next most frequent), or a hybrid of both. Although not a descriptor of a space, multiple teachers reported *when* they would engage in the ideal PL space and how frequently—these responses varied widely. Multiple teachers agreed, however, on wanting to engage in PL of their choosing during paid contract hours. Lastly, teachers who describe *where* they want to be when they participate in PL spoke of learning at school for convenience and relevance; from home for comfort, focus, and independence; or in nature for its beauty and ability to facilitate destressing.

The various actions teachers wish to take in an ideal PL space indicates that no single learning space will likely meet the diverse needs of an individual teacher, let alone those of multiple teachers, which highlights the importance of examining a teacher's PLN—their personal collection of people, spaces, and tools informing their learning. Identifying patterns across teachers' descriptions of their PLNs, however, gives insight regarding the most sought-after characteristics of different types of learning spaces, informing the design of such spaces.

In contrast to the PL spaces teachers envision for themselves, teachers reported

various challenges in required spaces such as finding relevance (PL that aligns with their skill level, content area, grade level, interests, or individual needs), feeling motivated, and feeling like their time was well spent. These findings are like other reports that formal PD is often disconnected from teachers' complex needs (Opfer & Pedder, 2011), lacks personalization and transferability (M. M. Kennedy, 2016; OECD, 2014), and is often impeded by a lack of time and relevant opportunities (Njenga, 2023).

They also described the negative impact those above them can have when PL is mandated as well as the negative impact their colleagues can have when required to join a PL space. Teachers' critical comments highlight the differences between pedagogy and andragogy (Machynska & Boiko, 2020) and how adult learners feel when pedagogical practices are applied to them instead of andragogical ones. In andragogy, adults play a more active role in designing the learning experience (Knowles et al., 2014). Granting more ownership to teachers over their PL would, according to Marshall et al.'s (2023) recent findings, positively impact teacher morale, which has been a matter of great concern in recent years (Kamenetz, 2022).

Some teachers shared positive perspectives about required PL spaces, seeing value in having others choose learning for them, but still clarified that the experience is typically not ideal.

While there was immense variety in teachers' responses on this subject, there are two recurring themes that appear to capture the sentiments of a majority of teachers in this study. First, the relevant learning they seek in their PL. Teachers appear tired of having to engage in learning that does not apply to them and want more agency over their

PL to ensure its relevance to their specific students and classroom. Second, the social nature of meaningful PL. Teachers want to learn with and from their peers in the presence of a knowledgeable other (which may very well be one of their peers) so they might engage in substantive conversations centered around their joint enterprise and access new ideas, strategies, and solutions they had not previously considered. Interestingly, being with colleagues in optional spaces appears positive while being with colleagues in required spaces can be negative (due to poor attitudes negatively impacting the learning experience for others).

At multiple points within these findings, teachers' perceptions of an ideal PL space aligned with principles of adult learning theory (Knowles et al., 2014) such as having an orientation to learning and valuing problem-centered, practical learning that can be immediately applied to their practice. Teachers' visions of learning processes with sustained duration also aligned with other research findings about impactful teacher PL (Darling-Hammond et al., 2017; Kolb, 2014). This provides evidence of teachers' ability to seek out and create high-quality PL for themselves.

CHAPTER VII

DISCUSSION

For decades, scholars, education leaders, and educators alike have called for meaningful PL for teachers (Bill & Melinda Gates Foundation, 2014; Liao et al., 2017; Lieberman, 1995; Pedder et al., 2005). The recent COVID-19 pandemic made this need even more apparent (Furlong & Spina, 2022). While much is understood about formal teacher PL (Darling-Hammond et al., 2009, 2017), less is known about the PL opportunities teachers initiate and pursue for themselves. Understanding this informal PL space is critical to expanding our understanding of how teachers approach their teaching practice. This study sought to understand where teachers in Utah turn for PL of their choosing and how they envision ideal PL spaces. Across research questions and thousands of survey responses, this study's findings indicate that, generally, teachers are seeking relevant ideas from experts in collaborative spaces that they can personalize to meet their PL needs and often do not perceive to have these features (relevance, access to experts, collaboration, personalization) in obligated PL spaces. In this chapter, I situate my findings in a broader context of what we know about teacher PL and call upon various conceptual frames to elucidate the meaning and importance of these findings.

Teachers' Current Use of Professional Learning Spaces

Many recent studies clarifying what we know about teacher-initiated PL have focused on teachers' use of social media to improve their professional practice (Aguilar et al., 2021; Furlong & Spina, 2022). Like this study, some of these have applied the lens

of a PLN (e.g., Oddone, 2022) to center the teacher in their analysis. These studies clarified how teachers that use social media conceive of their PLN (Trust et al., 2016), how PLNs shift over time (Carpenter et al., 2022), and some of the benefits of having a PLN (Trust & Prestridge, 2021). To expand our understanding of teachers' PLNs beyond the realm of social media use, I recruited teachers through email (unlike previous studies that recruited on social media platforms) and found only 40% of teachers using social media to inform their practice. This indicates that many teachers pursue learning of their choosing in meaningful ways beyond social media spaces. In connectivist terms (Downes, 2022; Siemens, 2004), this means we need to not only examine the connections teachers make with distant others through social media but also maintain a focus on teacher's local, in-person connections. Both form important parts of a teacher's PLN and appear to serve slightly different purposes.

Recall that, in this study, teachers most commonly selected other local teachers and school-based teams as the people and spaces significantly impacting their learning (see Figure 9 and Figure 5). Within school-based teams, teachers reported accessing collaborative learning alongside more experienced others in a supportive environment. They did not, however, report having much control over the scheduling, pace, or format of this learning (see Table 12). School-based teams appear to be powerful places for collaborative learning like brainstorming and problem-solving (see Figure 14), but when teachers in this study merely want to grab ideas (and not develop them) they reported taking advantage of multiple spaces and tools. These may be understood in terms of practice architectures (Kemmis & Grootenboer, 2008), o, what people can do, say, or

relate to in a space. In school-based teams, teachers have much they can relate to (students with similar needs, curricular standards, content area, local policies, etc.) They can also carry out complex problem-solving in-person, with people with whom they have active, daily relationships and interactions. According to some teachers, they can also be more vulnerable, allowing them to say more honest things and ask questions they would not feel comfortable asking in other spaces.

Despite the many benefits of collaboration within a school or school-based teams, only 7% of the more than 1,300 teachers in the *Teachers Know Best* report (Bill & Melinda Gates Foundation, 2014) reported having strong models for collaboration within their school. Educational leaders could benefit from hearing teachers' visions of collaboration in this study and explore ways in which they might increase collaboration within their organizations, increasing connections between teachers within their schools and districts and subsequently growing the capacity of their organizations to adapt to change like connectivism describes (Downes, 2022).

The possible doings, sayings, and relatings are different in each space examined in this study, but the most common motive behind teacher activity within each space was to acquire new ideas, strategies, and resources (see Table 3). While most of my findings describe teachers' acquisition of ideas (see Table 5), their learning is solidified when they attempt the ideas they have acquired and then reflect on the experience, ideally in the presence of a knowledgeable other. (Recall comments from multiple teachers in Chapter VI who felt the ideal learning experience involved practicing what they had just learned as part of the learning process.) In terms of the goals teachers have for their PLNs

(affective, cognitive, identity, social, or career growth, or supporter of others' growth; Trust & Prestridge, 2020), these points indicate that cognitive growth is the most important to teachers in this study. Examining Tables 3, 4, and 5 further indicates that affective and supporting others' growth are the next most important. Future research might examine more closely the differing benefits of various PL spaces teachers choose for their PL. Specifically, while Trust (2017) and others (Prestridge, 2019; Seo, 2014) have identified roles teachers assume in online learning spaces (like contemplator, curator, crowdsourcer, contributor), a similar framing of teachers' roles in offline spaces like school-based teams would clarify ways in which school-based teams benefit teachers.

Importantly, teachers' reported activity within this study often aligned with research-based principles of high-quality teacher development, unlike what was reported in Owens et al. (2018). They also appear to access high-quality learning, unlike what was reported by McElearney et al. (2018). For example, Njenga's (2023) summative principles of high-quality teacher learning (strong content focus, active learning, coherence, sufficient duration, and collaborative and collective participation) had strong representation within teachers' responses in this study when they described why they engage in specific spaces of their choosing and how they envision an ideal PL space. (Recall teachers' comments about ideal PL aligning with their content area, being "hands on," connected to their practice, part of an enduring process, collaborative, and alongside motivated peers.) Educational leaders can take confidence from the empirical evidence within this study that teachers are proactively seeking and accessing learning that is

known to be impactful. They may consequently consider granting teachers more autonomy over their PL. Recall that autonomy of individuals within an organization determines that organization's ability to adapt to change (Downes, 2022).

Teachers' Professional Learning Preferences

Previous studies of teachers' PL preferences have focused on preferred format (online or in-person; Bullock, 2018; LeVesseur et al., 2022; Liao et al., 2017; Owens et al., 2018), topics (Bullock, 2018), duration of experience (Bill & Melinda Gates Foundation, 2014; Matherson & Windle, 2017; Owens et al., 2018; Yates, 2007; Yumru, 2015), and type of experience (conferences, reading books, etc.; Aubusson et al., 2015; Das et al., 2013; McElearney et al., 2018; Utami, 2019; Yumru, 2015). Others have examined the factors teachers identify as important to meaningful PL (Bill & Melinda Gates Foundation, 2014; Furlong & Spina, 2022; Matherson & Windle, 2017).

Regarding format, studies prior to 2022 (Bullock, 2018; Liao et al., 2017; Owens et al., 2018) indicated that face-to-face learning was preferred by teachers, although Liao et al. (2017) reported that 60% of teachers found online learning to be useful. LeVesseur et al. (2022) was able to parse out preferences according to the nature of the learning experience—online learning was preferred for unidirectional information sharing while preferences were equally split when the motive was to understand and apply new concepts. In my study, 21% preferred online learning over face-to-face (32%) or hybrid (27%) (see Figure 6), which is important since we recently experienced a global pandemic in which most teacher interactions were online for a time. Apparently, this

experience did not persuade a large portion of Utah teachers to view online learning as ideal.

This study also adds insight on what teachers in Utah are choosing to learn currently (mostly content-specific instructional strategies, learning to meet students' needs, and how to implement technology effectively—see Table 10). Bullock (2018) reported on special education teachers' preferred learning topics (developing behavior improvement plans based on functional behavior assessments was their top request). In this study, teachers from all grade levels and content areas shared their learning interests. Disaggregating these interests by grade level and content areas was beyond the scope of this study, but the data set I have collected could be further analyzed to make those determinations.

While Owens et al. (2018) found that teachers preferred short, one-day or half-day trainings, I found that many teachers prefer PL that involves a process extending beyond a single experience, just like teachers in other studies (Bill & Melinda Gates Foundation, 2014; Matherson & Windle, 2017; Yates, 2007; Yumru, 2015). Not only did teachers in this study want follow-up, some described sophisticated learning processes similar to Kolb's (2014) experiential learning model.

Regarding preferred learning spaces, like teachers in Das et al.'s (2013) study, teachers in my study reported conferences and workshops as a highly preferred learning space (see Figures 4 and 5). Teachers' preferred learning activities reported by Utami (2019; web-browsing, collaboration with colleagues, reflecting, reading, and doing research) also had representation in my study (see Figure 12 and Table 11). McElearney

et al. (2018) reported teachers' preferences for collaborative and interactive learning but indicated they were not able to access such learning (like teachers in the survey conducted by the Bill & Melinda Gates Foundation, 2014). Teachers in my study, however, reported both preferring and accessing collaborative learning (in spaces of their choosing but not always in required spaces). Like Aubusson et al. (2015), I found teachers preferring access to expertise, sequences of learning experiences, time to apply their learning and reflect, and collaborating with colleagues who have similar interests. Last, like Yumru (2015), I found teachers valuing practical and meaningful activities that help them reflect on their practices. This study confirms much that has been recently reported in similar research, and provides some new understanding about what teachers in Utah are able to access for their PL. This access is likely an effect of privilege that should be further explored in future research.

Teachers have, in previous studies, identified descriptive factors of learning they wish to access in PL spaces. For example, one survey of over 1,300 educators found that teachers wanted learning that is relevant, interactive, led by expert teachers, sustained over time, and that recognizes teachers as professionals (Bill & Melinda Gates Foundation, 2014). A literature review confirmed these points and reported a request from teachers for learning that is practical (Matherson & Windle, 2017). What's more, a 2022 study reported that teachers seek PL that is accessible, relevant, consistent, and teacher-chosen (not imposed; Furlong & Spina, 2022). My study confirms all these points and adds rich insight into what these elements look and feel like to teachers. Relevance, for example, might manifest itself as alignment with a teacher's students' needs, grade

level, content area, experience level, school-based circumstances, or goals. Collaboration can look like problem-solving in school-based teams, trying new approaches, then reflecting together afterward. Accessibility to learning can be described as a quick conversation with a teammate or signing in to an online course at one's convenience.

In addition to reaffirming and deepening our understanding of these concepts, my study also adds that teachers are seeking agency over their learning by having control over the timing, topics, pacing, and format of their learning spaces. According to teachers, conferences, workshops, and webinars (online or offline) provide teachers with a relatively high level of agency over their learning (see Table 12). Granting teachers such agency closely aligns with the self-concept principle of andragogy (Knowles et al., 2014) and may address their request to be treated like professionals (Bill & Melinda Gates Foundation, 2014).

While previous studies have focused on preferred format, topics, type of experience, and other contributing factors to meaningful PL, my study also adds new insight on who teachers wish to learn with/from in the spaces of their choosing. Specifically, findings indicated that teachers seek to learn from experts or more experienced others who have goals or interests in common with them and who have new insights or perspectives. They also want to learn with these colleagues in a trusting environment where they can say what they need to without fear of judgment. These elements call out once more the practice architectures described by Kemmis and Grootenboer (2008) who explained that spaces have cultural-discursive, material-economic, and social-political dimensions. Based on my teachers' comments, they seek a

cultural-discursive space that allows them to speak in common, relatable terms and a social-political space in which they can speak freely about their practice without fear of judgment or supervisory correction. I will explain this in greater detail in the following section.

Design Recommendations

The underlying philosophy of Practice Architectures assumes we are social beings and that "the relationship between the individual and a state, society, culture, or class is one of mutual constitution: each constitutes the other" (Kemmis & Grootenboer, 2008, p. 38). This principle of mutual influence is represented in the PLN framework (Trust et al., 2022) when we acknowledge that a teacher's PLN is not simply people, spaces, and tools operating in isolation but in unison with one another in ways that a teacher actively controls. For example, they may read a book (a tool), which then inspires them to attend a certain conference (a space), where they meet other educators (people), that present them with ideas they later put into practice in their classroom and share with other educators in their building. (Note that this flow could have occurred in any order under various circumstances.) Clearly, a teacher's learning ecosystem (or, PLN) constitutes the teacher, and the teacher mutually contributes to and constitutes the culture, society, or state in which they act. Connectivism likewise acknowledges this mutual constitution principle in describing the growth of networks as "achieved by the individual through practice and a mechanism that enables a refinement of that network because of that practice" (Downes, 2022, p. 79). If we are to strengthen individual teachers' PLNs and their practices, we

must therefore strengthen the conditions and networks surrounding them that constitute good practice. In this section, I will use the practice architectures framework and findings from this study to make specific recommendations about how we might improve conditions for teacher learning, PLN development, and practice.

Cultural-Discursive Design Recommendations

Kemmis (2023) describes cultural-discursive arrangements as supporting the sayings or communication in a space (i.e., the language and ideas brought to and made possible by a space). The predominant cultural-discursive elements I found in teachers' descriptions of their chosen or ideal learning spaces included dialogue with others who have common objectives and easy access to relevant ideas. Throughout my inquiry about chosen and ideal learning spaces, teachers frequently commented about the need for discourse or collaborative learning (41%, see Table 11). Those who were more specific in their responses described communicating with colleagues who had things in common with them (e.g., grade level, content area, etc.). Furthermore, a large portion of teachers in this study reported wanting access to ideas that are relevant to their practice (28%, see Table 11). Note that over 50% mentioned their frustration over *not* accessing relevant instruction in required learning spaces (see Table 14). Put simply, these teachers seek learning that is socially interactive and focused on relevant topics.

My recommendation, then, is to ensure that professional learning experiences allow teachers to connect with one another and openly discuss problems of practice. The following questions might assist in guiding such design: (1) How will we create opportunities for teachers to discuss their problems of practice and share ideas with one

another? (2) How will we allow teachers to connect with others who teach the same grade level or content area or have some other interest in common? (3) How will we grant teachers access to learning that is relevant to their needs? (4) How might we help teachers perceive the relevance of a required training? Some ways of accomplishing these objectives might include building in designated time for teacher-led discussion (see Justis & Reina, 2023), allowing teachers to choose from an array of professional learning experiences, providing a digital platform through which teachers could find others who teach their same grade level or content area or share a learning interest, designating lunch tables at a conference for certain grade levels or content areas, or designating conference session topics after surveying potential conference attendees about their learning needs.

Material-Economic Design Recommendations

Kemmis (2023) describes material-economic arrangements as supporting the doings or activity in a space. The predominant material-economic elements I found in teachers' descriptions of their chosen or ideal learning spaces included controlling mechanical aspects of one's learning experience (time, topic, pacing, location, format), working in a space that affords collaboration or quick access to ideas, and accessing tools and materials relevant to their learning. A large portion of teachers (22%, see Table 11) indicated wanting control over the timing, topic, pacing, location, or format of their learning. As mentioned above, many teachers in this study expressed a desire for a collaborative learning space. However, a significant portion of other teachers (23%, see Table 11) described their activity in a chosen space as simply getting ideas only (not discussing or collaborating). These teachers use tools like social media or search engines

to meet their needs. Only 5% of teachers spoke of materials they envision accessing in an ideal professional learning space, which indicates that these teachers think more about how they feel in a space (see next section) than the materials they find there. In summary, teachers requested material-economic elements that afford access to a variety of learning experiences, as well as control over and personalization of one's learning experience.

My recommendation in this regard is to build learning experiences that afford teachers control over their learning. The following questions might assist in guiding such design: (1) How might we grant teachers control over when or where they engage with this material? (2) How might we grant teachers control over the pacing of this learning? (3) How might we present various topics to teachers in a way that allows them to choose when they engage with each one? (4) How might we present this learning in various formats? Some ways of accomplishing this objective might be to take advantage of various online or hybrid learning platforms that have such learner-centered affordances built in, to record presentations and make them available afterward, and to ensure internet access throughout the spaces teachers inhabit (work, home, community, etc.) to allow their self-initiated learning to connect across these spaces.

Social-Political Design Recommendations

Kemmis (2023) describes social-political arrangements as supporting the relatings (involving values, feelings, and emotions) or roles and relationships in a space. The predominant social-political elements I found in teachers' descriptions of their chosen or ideal learning spaces included feeling empowered to exercise agency over their learning, connecting with a knowledgeable other in an emotionally safe space, and learning from

fellow educators (as opposed to administrators) they could identify with. A teacher's ability to exercise agency over their learning is largely influenced by social-political factors. Some teachers in this study reported having time and access to learn with school-based colleagues whereas others reported having little time or even permission to pursue learning of their choosing. A large portion of teachers spoke negatively about their experiences with required learning, expressing an associated lack of motivation to learn (27%, see Table 14) when agency was removed. In contrast, many described high levels of motivation to change their practice when they chose their learning experience.

Access to experts or more-experienced others surfaced multiple times throughout this study, across multiple survey questions. Almost 10% of teachers spoke of this in referring to their chosen learning spaces (see Table 11), with school-based teams showing the highest percentage of this access amongst learning spaces (28%, see Table 12). Additionally, over 30% of teachers commented about the people they would learn with and from in an ideal space, many of whom referenced knowledgeable others in their descriptions (see Chapter VI). Last, 22% of teachers described a positive, emotionally safe, supportive environment as an ideal learning space (see "Atmosphere" section in Chapter VI). Also recall that 59% said they pursue learning of their choosing with other educators, whereas only 6% do so with administrators (see Figure 9). In summary, teachers in this study seek spaces in which they can exercise agency and speak freely with experts about their practice without fear of judgment or supervisory correction.

My design recommendation for social-political arrangements, then, is to provide teachers with increased agency over their learning and time to connect with more-

experienced others to whom they can relate and with whom they feel comfortable. Some guiding questions to assist in this process include: (1) How much time are we giving teachers to pursue learning of their choosing? (2) How often do our teachers connect with each other on learning of their choosing? (3) How comfortable are teachers with expressing their needs to administration? (4) Which experts are our teachers accessing and can we connect them with additional experts they would trust? Some ways these objectives might be achieved include setting aside early-out time for teacher-chosen learning experiences, surveying teachers about their perceived relationships with colleagues and administrators and connecting teachers with local researchers or district content specialists (retired specialists can work well).

Of the three dimensions of practice architectures, teachers in this study appeared to have the most to say about cultural-discursive and social-political arrangements. Only a handful of teachers amongst the nearly 1,700 in this study mentioned physical characteristics of a learning space, which surprised me. Teachers shared many more thoughts about how they talk and feel in a space than about how the space itself looks or what it materially contains or how it is laid out. For this reason, I recommend designers and overseers of teacher professional learning think carefully about the language, culture, and relationships within learning spaces. Doing so will further assist teachers in improving their practice and grant them increased access to the learning they currently pursue. While it may be appealing to demand improvement of teachers through increased monitoring and regulation, such efforts can be counterproductive. I conclude this point by borrowing words from Kemmis and Grootenboer (2008), who wrote:

> Improving practices like the practice of education may require improving the *praxis* of individual practitioners, but it also requires creating the institutional and social conditions that will support improved or other forms of practice.… Better educational practice requires not just better educators but also better schools, colleges and universities, better resources, better funding, and better support and regard.… Similarly, if government and professional regulatory bodies take the view that the overall quality of professional practice is less than it could be because some practitioners are not following guidelines about best practice, increasing the regulation and accountability of professional practitioners can, by itself, undermine and subvert good practice whenever the administrative burden of compliance is transferred to practitioners, reducing the time they have to conduct the practice which is their primary concern. (Kemmis & Grootenboer, 2008, p. 60)

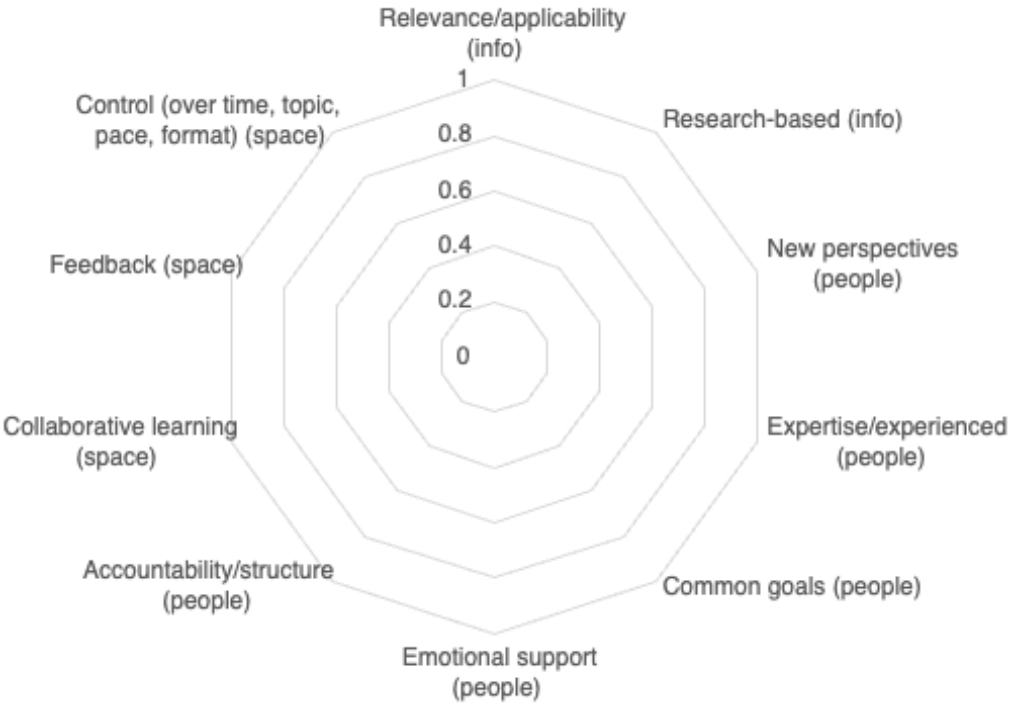
To improve teacher practice, I suggest a move from increased regulation to improved relationships, pairing increased accountability with increased agency, and opening more channels for teachers to connect and grow their collective efficacy to meet the needs of their students. These are applications of connectivist principles that determine an organization's ability to adapt to change (diversity, autonomy, openness, and interactive; Downes, 2022, p. 77). Granting teachers greater agency or autonomy over their learning allows them to develop in diverse ways that can benefit the whole school or district. Improved relationships create interactivity and connections through which these diversified forms of knowledge can spread and benefit the whole. And finally, empowering teachers to connect with expertise within and beyond their building fosters the openness connectivism emphasizes, which allows a network to flourish.

The vast array of PL options and interests described by teachers in this study highlights their varied PL needs and interests and emphasizes the importance of making various spaces and tools available to teachers for their PL. Findings in my study reveal important insights to how teachers perceive their own professional learning. These

insights can directly inform future iterations of not only chosen learning spaces but also required learning spaces for teachers. As designers of professional learning for teachers consider the findings of this study, I provide Figure 15 as a potential first step toward a framework for considering the elements teachers in this study felt are most impactful to their professional learning experiences. Teachers might also use this information to evaluate PL opportunities and think critically about which of these factors matter most to them.

Figure 15

Dimensions of Preferred Professional Learning Spaces



In this figure, I have categorized various dimensions as describing information available in the space, people available in the space, or space affordances. As a radar

chart, this tool might be used to evaluate various PL spaces or opportunities in a visual manner. Those using the tool can determine whether each dimension is crucial for their current PL needs, or if only a few matter for the needs at hand. If, for example, a teacher only needs a new idea for a project on habitats, they may only need to prioritize the control and relevance/applicability dimensions to get what they need.

Required Professional Learning Spaces

One unique aspect of this study was its focus on comparing required PL spaces to chosen/ideal ones. Almost 60% of teachers described their experiences with required PL spaces as very or somewhat different from the PL spaces they choose for themselves (see Chapter VI). Many teachers were highly critical of required PL spaces, pointing to irrelevant, disengaging, and impersonal content and instruction they have experienced there. From other literature, however, we know that obligated PL can be useful (Wei et al., 2010) and improve organizational coherence (Jones & Dexter, 2014). We might conclude that even if an obligated training might benefit a teacher, they may not perceive it as beneficial and therefore disengage, thus undermining the many resources committed to mandatory PL. PL designers might be more successful if they further clarify for teachers the benefits of the space or experience they have created.

Another approach would be to cease mandating training of teachers and let them choose when, where, what, and how they learn, but Jones and Dexter (2014) recommend a balance between formal and informal (or mandated and optional) PL to support organizational agendas while simultaneously addressing teachers' individual needs. The

results of this study indicate that teachers are seeking relevant, collaborative, and personalized learning and many are not perceiving their formalized PL as meeting these needs, so it appears the balance Jones and Dexter speak of needs to be further examined for teachers in Utah. The empirical evidence from my study that reaffirms principles of andragogy (Knowles et al., 2014) and connectivism (Downes, 2022; Siemens, 2004) indicates these theories have more to offer in the successful design and implementation of PL spaces moving forward. Other ways of thinking about teacher learning are also informative. For example, multiple teachers in my findings referred to appropriating ideas and modifying them to meet their needs, indicating that teachers are learning as members of a participatory culture (Jenkins, 2009). Also, borrowing from the communities of practice model (Wenger, 1998), we can understand why teachers expressed interest in connecting with other teachers with shared interests or contexts as them—they are looking to share practices within their shared domain of teaching and joint enterprise of teaching within a common grade level or content area. Each of these frameworks help us understand a different aspect of teacher behavior within the learning spaces they choose or envision for themselves.

As we wrestle with the question of who should decide what teachers learn and acknowledge that both teachers and administrators have important insights on how teachers improve their practice, we would do well to recognize how quickly teachers report changing their practice when they find something that will address their or their students' needs. In contrast, we know that "$18 billion is spent annually on professional development, and a typical teacher spends 68 hours each year—more than a week— on

professional learning activities typically directed by districts" (Bill & Melinda Gates Foundation, 2014, p. 3) but much of this has been shown to be ineffective (Guskey, 2002; Jacob & McGovern, 2015). Guskey believes this is due to ignoring two critical points: "(1) what motivates teachers to engage in professional development, and (2) the process by which change in teachers typically occurs" (p. 382). From my study, we see that teachers can be motivated by their students' needs and the autonomy to choose PL that will address those needs. When they do so, enacting change seems to follow naturally. Future research might compare more closely the impacts of mandated learning and teacher-initiated PL on individual teacher professional practice to see if one brings about change more than the other.

Scope of Study and Next Steps

This study was exploratory by design. Any of these findings might be further solidified by more focused analysis. For example, what percent of teachers feel that required PL spaces are appropriate for their skill level? While some teachers mentioned this, the study did not directly ask each participant this question and cannot make statistical claims about percentages of teachers feeling this way. Additionally, although this study gathered data on spaces, people, and tools teachers utilize for PL of their choosing, my research questions focused explicitly on spaces—additional analysis of this data set could uncover new insights about the people and tools teachers in Utah benefit from in their PL.

I will also note that data collection for this study concluded in the spring of 2023,

prior to artificial intelligence (AI) becoming highly prominent in the education sector (Linderoth et al., 2024). Less than 1% of teachers in this study mentioned AI or ChatGPT as a tool or resource they use for their professional learning. Future research might build upon this study by exploring how AI tools like ChatGPT play a role in teachers' PLNs. For example, do teachers perceive a tool like ChatGPT as a space, a knowledgeable other, or a tool, and how do they interact with it to improve their teaching practice?

Last, while this study has explored teachers' perceptions of what influences the quality of their PL experiences, we know little about what happens with student learning when these factors are present, especially in any kind of combination. For example, what happens with student learning when teachers select PL spaces that afford them access to relevant, collaborative learning in a personalized format? Any schools or states implementing such models with teachers could provide possible settings for such studies.

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APPENDICES

Appendix A

Teacher Survey on People, Spaces, and Tools They Use for Professional Learning

Teacher Survey on People, Spaces, and Tools They Use For Professional Learning

1. Are you currently teaching in Utah in grades PreK-12?
- o Yes
- o No

2. What is your age?

_____

3. What is your gender?
- o Please specify:_____
- o Prefer not to say

4. What is your race?
- o White
- o Black or African American
- o American Indian or Alaska Native
- o Asian
- o Native Hawaiian or Pacific Islander
- o Multiple
- o Prefer not to say

5. What is your ethnicity?
- o Hispanic or Latino
- o Not Hispanic or Latino
- o Prefer not to say

6. In what type of school do you teach?
- o District
- o Charter
- o Private
- o Other:_____

7. In which district do you teach? If you teach in a charter school, which district is closest to you?

▼ Alpine ... Weber

8. For how many years have you worked as an educator?

_____

9. What subjects do you currently teach? Check all that apply.

o English Language Arts
o Mathematics
o Science
o Social Studies
o Health
o Business/Financial Literacy
o Fine Arts
o PE
o Computer Science
o Library Media
o World Languages
o Other:_____

10. What grade level(s) do you teach? Check all that apply.

o PreK
o Kindergarten
o 1st
o 2nd
o 3rd
o 4th
o 5th
o 6th
o 7th
o 8th
o 9th
o 10th
o 11th
o 12th

For this next set of questions, please think of something you're choosing to learn right now to improve your teaching. Keep this in mind as you respond to the questions.

11. Please describe something you're choosing to learn (as opposed to something you're required to learn) to improve your teaching.

_____
_____
_____

12. What settings are supporting you in what you are choosing to learn? Check all that apply.

o Teams or working groups in your school
o Trainings hosted by your school or district
o Conferences, workshops, or webinars of your choosing
o College/university courses (in-person or online)
o Social media (Facebook, Twitter, Instagram, Pinterest, etc.)
o Other: _____

13. Which of the following types of settings have you found most helpful in what you are choosing to learn?

o In-person
o Online
o Hybrid (in-person + online)
o I don't have a preference.

14. Please select below one setting that is significantly helping you in what you are choosing to learn. Then, keep this setting in mind as you answer the questions that follow.

o Teams or working groups in your school
o Trainings hosted by your school or district
o Conferences, workshops, or webinars of your choosing
o College/university courses (in-person or online)
o Social media (Facebook, Twitter, Instagram, Pinterest, etc.)
o Other:_____

15. How do you engage with others in (selected space)? Check all that apply.

o Talking in person
o Emailing or texting
o Talking over video chat (Zoom, Hangouts, etc.)
o Talking on the phone
o Typing in shared documents
o Posting or reading posts on social media
o Other:_____

16. What is it about (selected space) that helps you with your learning? What can you do there that helps you with your learning?

_____
_____

17. Please describe how you relate or do not relate to others in (selected space).

_____
_____
_____

18. What feelings do you experience when learning in (selected space)?

_____

_____

_____

19. How does your engagement in (selected space) benefit you?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
It increases my confidence and/or provides me with emotional support.	o	o	o	o	o
It gives me new teaching ideas, strategies, tools, and/or resources.	o	o	o	o	o
It helps me identify with others and/or change the way I see myself.	o	o	o	o	o
It helps me expand my social connections and connect or collaborate with others.	o	o	o	o	o
It empowers me to take on a new job, role, or position.	o	o	o	o	o
It allows me to share my ideas with others.	o	o	o	o	o

20. What would be an ideal professional learning setting, in your opinion?

_____

_____

_____

21. Is there anything else you'd like to share about settings that help you in pursuing what you choose to learn to improve your teaching?

_____
_____
_____

22a. How similar would your responses be to the questions above if we asked you about professional learning settings in which you are (or have been) required to participate?

o Very different
o Somewhat different
o Somewhat similar
o Very similar

22b. How do your experiences in required professional learning settings differ from settings in which you choose to learn? (This question only displayed if previous answer was NOT "Very similar").

_____
_____
_____

23. Which of the following categories of people are you learning from most as you pursue the learning of your choosing that you described before? Check all that apply.

o Other teachers at your school or district
o Instructional coaches or assigned mentors
o Administrators at your school or district
o Other educators outside your school or district
o University professors or researchers
o Other:_____

Please consider one person who is significantly contributing to the learning you are choosing to pursue. Keep this person in mind as you respond to the next set of questions.

24. Which of the following categories of people does this person fall under?

o Other teachers at your school or district
o Instructional coaches or assigned mentors
o Administrators at your school or district
o Other educators outside your school or district
o University professors or researchers
o Other:_____

25. How do you engage with this person? Check all that apply.

o Talking in person
o Emailing or texting
o Talking over video chat (Zoom, Hangouts, etc.)
o Talking on the phone
o Typing in shared documents
o Posting or reading posts on social media
o Other:_____

26. What are some specific things you do with this person that helps you learn?

_____
_____
_____

27. What are some specific things you talk about with this person?

_____
_____
_____

28. How do you feel when you engage with this person?

_____
_____
_____

29. What is your relationship to this person?

o They are in a leadership position over me.
o I am in a leadership position over them.
o I perceive them as being on my level.
o Other:_____

30. How does your engagement with this person benefit you?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
It increases my confidence and/or provides me with emotional support.	o	o	o	o	o
It gives me new teaching ideas, strategies, tools, and/or resources.	o	o	o	o	o
It helps me identify with others and/or change the way I see myself.	o	o	o	o	o
It helps me expand my social connections and connect or collaborate with others.	o	o	o	o	o
It empowers me to take on a new job, role, or position.	o	o	o	o	o
It allows me to share my ideas with others.	o	o	o	o	o

31. What do you value most about your engagement with this person?

_____

_____

_____

32. Is there anything else you'd like to share about what or how you learn from other individuals in your professional practice?

_____

_____

_____

33a. How similar would your responses be to the questions above if we asked you about someone with whom you are (or have been) required to learn?

o Very different
o Somewhat different
o Somewhat similar
o Very similar

33b. How do your experiences differ when you are required to learn from someone compared to when you choose to learn from someone? (This question only displayed if previous answer was NOT "Very similar".)

_____
_____
_____

34. Which physical and/or digital tools are you using in learning about what you've chosen? Check all that apply.

o Search engines (Google, Bing, Yahoo!, etc.)
o Social media
o Websites
o Academic journals
o Books
o Other:_____

35. Which social media platforms do you use the most to access professional knowledge? Please select your top three. (This question only displayed if previous answer included "Social media".)

o Facebook
o Instagram
o Pinterest
o Twitter
o YouTube
o Other:_____

Please consider one specific tool that is significantly contributing to the learning you are choosing to pursue. Keep this tool in mind as you respond to the next set of questions.

36. Which tool did you select?

_____
_____
_____

37. What do you do with this tool that helps you in your learning?

_____
_____
_____

38. How do you feel when you use this tool?

_____
_____
_____

39. How does your engagement with this tool benefit you?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
It increases my confidence and/or provides me with emotional support.	o	o	o	o	o
It gives me new teaching ideas, strategies, tools, and/or resources.	o	o	o	o	o
It helps me identify with others and/or change the way I see myself.	o	o	o	o	o
It helps me expand my social connections and connect or collaborate with others.	o	o	o	o	o
It empowers me to take on a new job, role, or position.	o	o	o	o	o
It allows me to share my ideas with others.	o	o	o	o	o

40. What would be an ideal professional learning tool, in your opinion?

_____
_____
_____

41. Is there anything else you'd like to share about how you're learning through tools of your choosing?

_____
_____
_____

42a. How similar would your responses be to the questions above if we asked you about tools you are (or have been) required to use for your professional learning?

o Very different
o Somewhat different
o Somewhat similar
o Very similar

42b. How do your experiences differ with tools you are (or have been) required to use for your professional learning? (This question only displayed if previous answer was NOT "Very similar".)

_____
_____

Appendix B

Codebook for Survey Question 16 (What Spaces Do for Learners)

Codebook for Survey Question 16 (What Spaces Do For Learners)

Code	Description	Sample Quotation(s)
Accountability/ structure	Being held accountable, deadlines, structure, course assignments, helps one focus	I find that when I have someone to complete my work/trainings with that I am more motivated and accountable for my learning. (Participant 11)
Advancement	Allows a participant to get a degree or promotion	I take them because they work with USBE and the courses are affordable and help with lane changes. (Participant 862)
Collaborative learning	Working or learning together, interacting, bouncing ideas of each other, sharing ideas, discussing, brainstorming, etc.	The ability to see demonstrations and then collaborate to bounce ideas off of each other is helpful. (Participant 301)
Different locale, grade level, content area	Learning from teachers with a different background, school, grade level, locale	I have access to hundreds of teachers all over the US. This diverse set of experiences isn't available anywhere else. (Participant 249)
Expertise/ experienced	Accessing experts or expertise, accessing people with more experience	I like brainstorming ideas with educators with different levels of experience. I still have a lot to learn as a new educator, and I feel like I greatly benefit from the knowledge they've accumulated in their years of teaching. (Participant 1336)
Get ideas only	Getting ideas or strategies or takeaways but does not mention discussing or any type of two-way exchange	I am able to get ideas from other people that could be useful for me to implement curriculum in ways that I might not think of myself. (Participant 910)
Feedback/ask questions	Getting feedback or being able to ask questions	I like having a group to share ideas with and get feedback from in real time. (Participant 885)
Agency/control	having control over time, topic, pace, or format of learning	I can learn at my own pace (Participant 459)
Relevance/ application to practice	Accessing applicable learning that has relevance to a teacher's grade level, content area, goals, interests, skill level, etc.	There are a lot of experiences from other seasoned teachers and educators with lots of ideas and strategies I can apply directly or modify to work for my situations. (Participant 386)
Research-based	Refers to research, best practices, or working with researchers	It gives me access to the most current research and provides opportunities for me to learn and apply relevant content. (Participant 646)

Code	Description	Sample Quotation(s)
Shared interest/context	Accessing people with common interests or circumstances (same school, content area, grade level, etc.)	It is helpful for me to talk to someone who is currently doing the same thing as me and get ideas on how to teach certain concepts. (Participant 76)
Support	Accessing support, companionship, friendship, a safe space, helping each other improve	We have a shared community that wants to work on the same things so we support each other by sharing ideas on social media and through emails (Participant 1689)

Appendix C

Codebook for Survey Question 20 (Descriptions of Ideal Professional Learning Spaces)

Codebook for Survey Question 20 (Descriptions of Ideal Professional Learning Spaces)

Code	Definition	Sample Quotation(s)
Activity	Descriptions of what teachers would do in an ideal PL space, including collaboration, learning in groups, building relationships, asking questions, engaging in a learning process, observing others, practicing, reviewing, etc.	My ideal professional learning setting is when I am grouped with a table of people that I can discuss and collaborate with at the appropriate times. (Participant 1109)
Atmo-sphere	Descriptions of how the space feels physically or emotionally.	You trust those you work with, you are friends with those you work with, you share your ideas with those you work with freely meaning you aren't afraid of being judged. (Participant 921)
Agency/Control	Having control over the topic or pacing of one's learning, having options, engaging in self-directed learning.	An ideal professional learning setting that is ideal is one that isn't regulated by anyone. When I'm free to pursue what I want to learn, which is influenced by what my students want to learn, I flourish. (Participant 729)
Format	Descriptions of the place and setting where teachers want to learn (i.e., workshop, conference, classes, PLCs, training, hybrid, online, in-person)	I like in-person, short workshops. (Participant 37)
Location	Descriptions of where teachers prefer to learn (at school, home, NOT at school, in nature, etc.).	Probably an in-person setting at a location disconnected from the physical school. (Participant 70)
Materials	Descriptions of any tools, materials, devices, or technology that teachers want to use (e.g., tools, technology, devices, food).	a mixture of comfortable chairs and environment to use technology but also opportunity to be/go outside in a calm natural setting. Food and drinks accessible. (Participant 1461)
People	Descriptions of the people teachers want involved in their professional development. Referring to wanting to learn from those who have more experience, expert, knowledgeable presenter/facilitator, coach, mentor, people who have experience, presenters, people similar to them, people different from them, etc.	I like to listen to a presenter (who knows how to engage an audience) speak on a topic for a bit, then be given the opportunity to share my thoughts with a neighbor, and listen to theirs. (Participant 1343)

Code	Definition	Sample Quotation(s)
Purpose	Reasons for participating in an ideal PL space - accessing relevant info, staying informed, having a focused objective or shared goal.	An ideal professional learning setting would be small groups with a set goal and education on a certain subject that we choose. (Participant 278)
Time	Descriptions of the timing or learning rhythms that teachers want to use. Having time to learn, learning on contract time, frequency of learning.	Paid time to work on what we choose. (Participant 667)

Appendix D

Codebook for Survey Question 22b (Experiences in Required Professional Learning Spaces)

Codebook for Survey Question 22b (Experiences in Required Professional Learning Spaces)

Code	Definition	Sample Quotation(s)
Adminis-trators	References to school, district, or state educational leaders.	The stupid hoops (lesson plans, and other paperwork that doesn't help us, but lets admins feel like they are doing something) (Participant 517)
Format	In Person, online, or hybrid	They are usually in-person, set days/times. (Participant 103)
Location	Responses that describe the specific location or physical setting of the learning space.	It's usually not in a comfortable place and because it's required they either drag it on too long or they go too quick. (Participant 1634)
Motivation	Responses that mention the personal motivations and interest of the people involved in the learning space.	Sometimes i feel that if i am required to do something my motivation is not near the same (Participant 984)
Other Teachers	Responses that describe the other people/students in the learning space.	The negative coworker is unprofessional when required to be involved. (Participant 588)
Positive	Responses that speak positively of required learning spaces.	I feel like the ones that I am required to attend do have more support than the ones I choose to learn about that are not required. (Participant 76)
Relevant Instruction	Responses that mention concerns of whether the learning experiences are relevant for their needs.	Sometimes it is boring because you might already have experience in the subject matter or it does not even really apply to you but everyone has to do it. (Participant 12)
Time	Responses that mention factors of time in their required learning spaces, or seem to indicate whether the learning space is a good or effective use of time.	Usually I learn something new (or relearn), but in a professional learning setting of an hour, 5 minutes of that time was worth it to me. (Participant 865)

CURRICULUM VITAE

NATHAN JUSTIS
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EDUCATION

UTAH STATE UNIVERSITY **Logan, UT**
Ph.D., Instructional Technology and Learning Sciences **2018-2024**

HARVARD UNIVERSITY **Cambridge, MA**
M.Ed., School Leadership **2013-2014**

ARIZONA STATE UNIVERSITY **Tempe, AZ**
M.N.S., Physics Teaching **2005-2007**

BRIGHAM YOUNG UNIVERSITY **Provo, UT**
B.A. Physics Teaching & Math Education **1998-2004**

EMPLOYMENT

EDITH BOWEN LABORATORY SCHOOL **Logan, UT**
Principal and Special Education Director **2018-Present**

- Sustained a top 5% ranking among elementary schools in Utah
- Received a 96% positive approval rating from employees
- Designed and implemented a new professional learning model for teachers, a new character education curriculum, and new STEM programs (e.g. a makerspace, science academy, and astronomy night)
- Created and facilitated a school principals professional learning network for other school leaders

AMERICAN INTERNATIONAL SCHOOL OF UTAH **Murray, UT**
Chief Academic Officer and Acting Superintendent **2014-2018**

- Supervised an elementary, middle, and high school comprising 1,400 students and 160 employees
- Interviewed and hired more than 30 new employees
- Instituted grade-level teams, school-wide committees, and a building leadership team
- Developed an innovative blended, competency-based, and project-based learning model
- Directed development of curriculum and instruction across grades K-12

TECHBOSTON ACADEMY, BOSTON PUBLIC SCHOOLS **Boston, MA**
Administrative Intern **2013-2014**

- Assembled and led a Technology Integration Leadership Team, comprised of 20 staff members
- Assisted in rebuilding the school governing board through new community partnerships
- Evaluated and coached individual teachers
- Assisted with training all staff in using Data Wise methodology for improving instruction

CANYONS SCHOOL DISTRICT **Sandy, UT**
Instructional Coach **2012-2013**

- Coached over 20 teachers individually at Jordan High School
- Assessed instruction within more than 50 classrooms in high schools and middle schools
- Recorded, edited, and shared videos of effective mathematics, English, and science instruction
- Created and facilitated professional development for math and science departments as well as

whole-staff training in student engagement methods

Mathematics Teacher **2011-2012**

- Taught AP Statistics and precalculus at Brighton High School
- Created and delivered a new AP Statistics curriculum

JORDAN SCHOOL DISTRICT **West Jordan, UT**
Physics and Astronomy Teacher **2004-2011**

- Taught AP Physics, honors and conceptual physics, and introductory astronomy at Riverton and Herriman High Schools
- Founded the physics and astronomy program at Herriman High School
- Advised three students who competed at the Intel International Science and Engineering Fair

Student Government Head Adviser **2007-2011**

- Advised student body officers in raising over $275,000 for charity over a four-year period at Riverton and Herriman High Schools
- Founded the student government program at Herriman High School

THOMAS JEFFERSON NATIONAL ACCELERATOR FACILITY **Newport News, VA**
Assistant Researcher **2004**

- Collaborated with nuclear physicists and doctoral students of various nationalities
- Developed new methods for measuring glass thickness using interferometry and existing equipment

MISSIONARY TRAINING CENTER **Provo, UT**
French Instructor **2002-2003**

- Taught the French language to pre-service missionaries
- Instructed pre-service missionaries in teaching techniques

PUBLICATIONS

Justis, N., & Reina, L. (2023). Rethink staff meetings. *The Learning Professional*, *44*(4), 51-51.

Mecham, E., Kozlowski, J., Messervy, F., Player, C., Lopez, J., Reina, L., and **Justis, N.** (2023). Onboarding Experienced Teachers in a New School. *Educational Research: Theory and Practice*, *34*(3), 117-132.

Justis, N., Litts, B. K., Reina, L., & Rhodes, S. (2020). Cultivating staff culture online: How Edith Bowen Laboratory School responded to COVID-19. *Information and Learning Sciences*, *121*(5/6), 453-460.

Justis, N., Chen, J.P. (2005). Measuring glass thickness of a reference cell used in a polarized ^{3}He experiment. *Journal of Undergraduate Research, U.S. Dept. of Energy*, 5.

PRESENTATIONS

Justis, N., Reina, L., Seifert, M., López, J. (2023, December). *Empowering Teachers To Innovate Together.* [Conference session]. Learning Forward Annual Conference, Washington, D.C.

Justis, N. (2022, March). *Engaging The Heart and Mind to Empower a Positive Working Culture* [Professional workshop]. UAPCS Administrators Training, Salt Lake City, Utah.

Justis, N. (2021). *Learning Frameworks, Nobel Prizes, and World Peace* [Conference presentation]. Connected Learning Summit 2021, virtual.

Justis, N., Litts, B. K., Reina, L. (2021, April). *Evidence of Participatory Culture in Elementary Teachers' Shift to Teaching Online During COVID-19* [Roundtable presentation]. AERA 2021, virtual.

Justis, N. (2015). *Designing the Student Experience at AISU* [Conference presentation]. Personalized Learning Summit, Provo, UT.

AWARDS

ITLS GRADUATE RESEARCHER OF THE YEAR **2024**
Utah State University

FULBRIGHT SCHOLAR—LEADERS FOR GLOBAL SCHOOLS **2022**
Singapore

BRIGHTON COMMUNITY COUNCIL PARENTS' CHOICE AWARD **2011**
Brighton High School

OUTSTANDING PHYSICS TEACHER FOR UTAH **2006**
Micron Technology, Inc.

OUTSTANDING NEW TEACHER OF THE YEAR **2005**
Jordan School District

SERVICE LEADERSHIP

ALLIANCE FOR YOUTH SERVICE (NOW HXP) **Nuku'alofa, Tonga**
Trip Leader **2009-2010**

- Co-led organization's first expedition to Tonga
- Supervised 20 youth volunteers each summer on two separate construction projects
- Managed budgets of over $30,000 covering food, housing, recreation, and project work
- Coordinated recreational activities including kayaking, snorkeling, and island tours

THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS **Bordeaux, France**
Missionary **1998-2000**

- Trained more than 200 missionaries in over 20 cities as assistant to mission president
- Partnered with service organizations including Resto du Coeur and La Croix Rouge
- Taught English language lessons

ADDITIONAL INFORMATION

- Technical Skills: Microsoft Office, Google Workspace, ChatGPT, Zoom, Social Media (Facebook, Instagram, X), Adobe Applications, Canva, Canvas, Multimedia (iMovie, Garage Band)
- Personal Interests: Sprint triathlons, soccer, fly-fishing, hiking, camping, travel, music composition