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## How Do Teachers Experience Lesson Study?

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*Syracuse University*

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## **Abstract**

For the past 20 years, an increasing number of American educators have employed the Japanese model of lesson study as a process to structure their professional development experience. This study endeavored to understand how teachers experienced this relatively new and foreign process in their local contexts, using the overall research question, “How do teachers experience lesson study?” Leveraging hermeneutic phenomenology, the research was based on semi-structured phone interviews of 15 educators. These educators were from various regions in America, two from the Far East, and one from Europe. In describing their professional development experiences prior to lesson study, participants overlapped their terms, which signaled confusion. This was emblematic of their overall experiences with professional development. In general, participants found their professional development to be inapplicable, ineffective, and random. Additionally, they experienced issues sustaining their new learning even when they felt their professional development events were effective. Overall, participants believed their professional development time prior to lesson study was squandered. Participants experienced lesson study as an effective approach to professional development. Out of the 15 participants, 14 stated lesson study was the best form of professional development they experienced in their careers. They felt confident in the formal, yet flexible process. Lesson study offered the participants practice-based, shared experiences learning about standards, curriculum, materials, and content fueled by structured collaboration. It changed their dispositions towards professional development. They contended lesson study assisted them in learning more about their students. Participants reported increased feelings of efficacy and professionalism after completing lesson study cycles. However, participants also described how their lesson study work was impeded by systemic obstacles including time, competing initiatives, misconceptions about lesson study, principal

turnover, and interpersonal complications. This study adds information about lesson study obstacles in relation to school climate. They were frustrated by the local facilitation of their lesson study professional development. The participants found that the American system was ill-suited to support their lesson study experiences in the way that it is supported in Japan. This research informs those interested in using lesson study as a professional learning community. Further, it adds information to the discussion about professional development in general and the role of collaboration in this regard.

*Keywords:* lesson study, collaboration, professional learning community, professional development, professional development choices, principal turnover, Oswego Movement, hermeneutic phenomenology

How Do Teachers Experience Lesson Study?

by

Francis Kevin Moquin

B.S., State University of New York-Cortland, 1985

M.S., Syracuse University, 1986

Dissertation

Submitted in partial fulfillment of the requirements for the degree of  
Doctor of Philosophy in *Teaching and Curriculum*.

Syracuse University

May 2019

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## **Chapter 1**

### **Dissertation Overview**

This first chapter is designed to provide an overview of this dissertation, which was driven by the research question, “How do teachers experience lesson study?” First, this chapter includes a short section on the purpose of the study. Second, to provide background knowledge, this chapter provides the reader with a section titled Key Concepts. These concepts weave throughout the dissertation and are placed at the beginning of the dissertation to assist any reader unfamiliar with lesson study or related concepts. Lastly, after the Key Concepts section, I offer a roadmap of the dissertation to describe how it is organized and to present an overview of each chapter to orient the reader.

### **Study Purpose**

In April of 2006, Catherine Lewis, Rebecca Perry, and Aki Murata published an article entitled, “How Should Research Contribute to Instructional Improvement? A Case for Lesson Study.” In this article, the authors proposed three types of studies that were needed in regard to lesson study. The three types of research were: (a) development of a descriptive knowledge base, (b) explication of the innovation’s mechanisms, and (c) iterative cycles of improvement research. Lewis and her colleagues argued that these kinds of research were necessary to accurately describe and uncover what lesson study offers to the profession. Plus, they contended, research was necessary to prevent inaccurate presumptions about lesson study. Misinformed perceptions of lesson study could lead educators to implement this approach with limited knowledge and possibly judge the model to be another fad.

Lewis’ team of researchers created a tentative model connecting lesson study’s observable features and instructional improvements for the purpose of provoking productive



discourse regarding lesson study's essential components. Their model titled, "Intervening Changes," compared two distinct conjectures. The first conjecture was more general in nature. It said that lesson study improves instruction through the refinement of lesson plans. Lewis et al. (2006) believed that this type of conjecture may lead educators to neglect the full complexities of lesson study and only implement surface features of the model. Thus, research is needed to illuminate the innovation's mechanisms in terms of how it affects instruction. The results of the research could lead to a more detailed, fluid model of lesson study for those interested in implementing the model. The second conjecture provided more information and may enable stakeholders to understand lesson study with sensitivity to the constellation of features fundamental to this approach. It said that lesson study strengthens three pathways to instructional improvement: teachers' knowledge, teachers' commitment and community, and learning resources. Table 1 describes these three pathways of the second conjecture in more detail. This table has been constructed from information taken directly from Lewis et al.'s 2006 article.

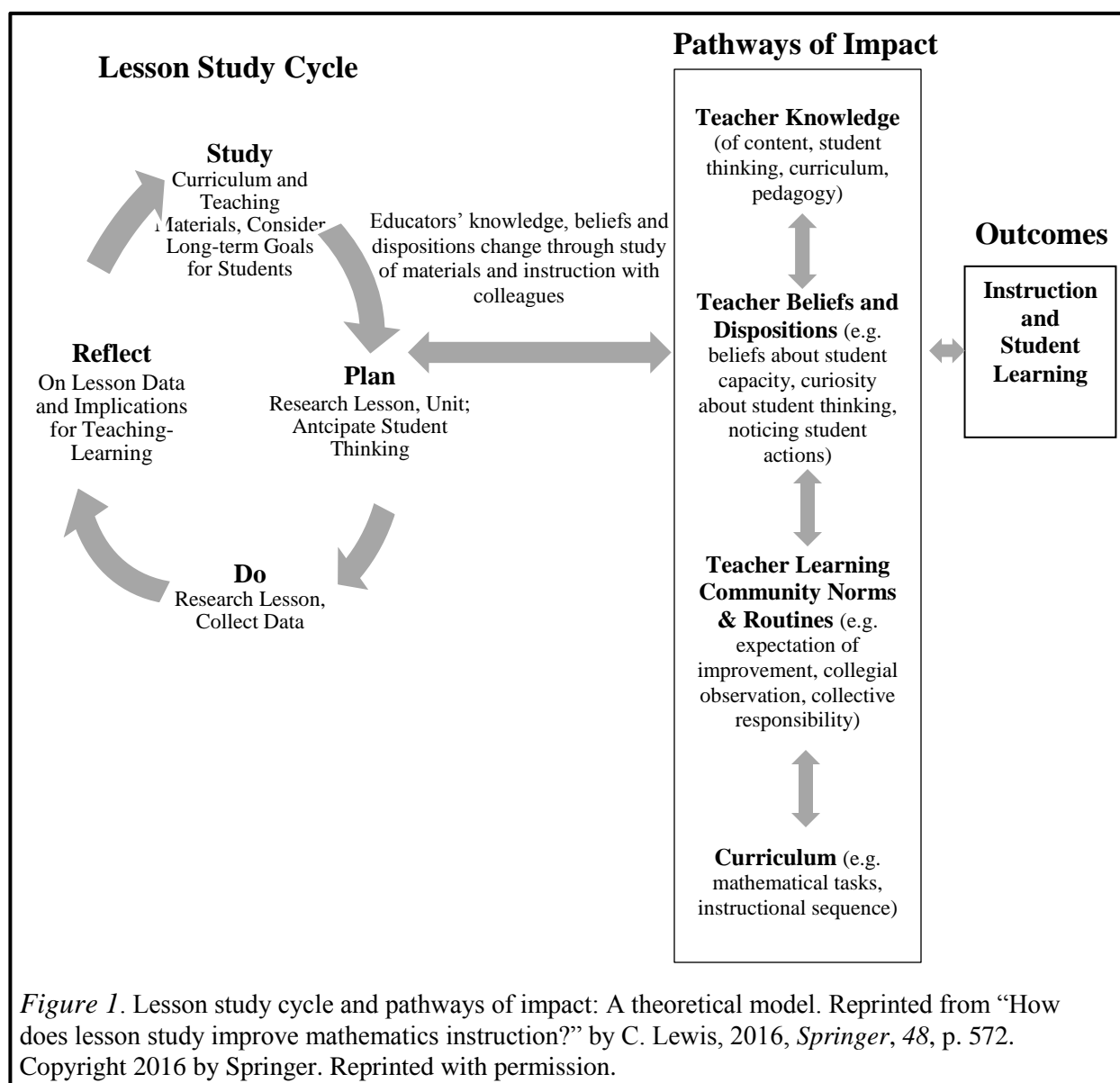
Table 1

*Conjecture 2: Three Pathways Leading to Intervening Changes for Improved Instruction*

Three Pathways to Instructional Improvement	Examples of the Three Pathways
Strengthens teachers' knowledge	Knowledge of subject matter Knowledge of instruction Capacity to observe students Connection of daily practice to long term goals
Strengthens teachers' commitment and community	Motivation to improve Connection to colleagues who can provide help Sense of accountability to a valued practice community
Learning resources	Lesson plans that reveal and promote student thinking Tools that support collegial learning during lesson study

*Note.* The information in this table is from Lewis, Perry, and Murata (2006, p. 5).

In 2016, Lewis constructed an updated model of the pathways of instructional improvement as shown in Figure 1. As the pathways are improved, teachers' collaborative interactions are enhanced, leading to changes in beliefs, dispositions, and knowledge. All of this collaboration and strengthening of pathways is structured by the steps in the lesson study cycle. It all works in concert. And that is not all. When instruction improves, and student learning is evident, it provides more information and data to inform the teachers' collaborative work. In other words, lesson study is a system of multiple, interconnected components that operate in synchrony to produce a constant feedback loop between those components. See Figure 1.



My research about lesson study is intended to address Lewis et al.'s second conjecture. The question for my study addresses Lewis' second conjecture about teachers' commitment and community. More specifically, I concentrated my research on how lesson study affected teachers' learning communities. That is, I attempted to uncover if lesson study's innovation mechanisms affected collegial relationships. I was wondering if lesson study's unique process

involving the study of a lesson with “live” students influences how teachers interact with each other on their lesson study research teams.

Lewis and her colleagues addressed a further significant, related complication to the effective implementation of lesson study, which also influences how data is collected about lesson study.

Were lesson study like aspirin—an innovation changed little by local settings—the features listed might be sufficient to define lesson study. These features do not automatically result in change... many local factors intervene. The study of curriculum and standards fosters teachers’ knowledge only to the extent that local curricula support rich disciplinary and pedagogical discussions. (Lewis, et al., 2006, p.8)

The development of a professional knowledge base is a complex process with a number of critical factors that must be in place to ensure knowledge production. It is complicated because it involves the education of the leaders, the knowledge itself, the community of educators and finally the teachers who implement the knowledge in the classroom (Hiebert, Gallimore, & Stigler, 2002). Lesson study is designed to transform local capacity; however, it is also dependent on local capacity for it to succeed.

Transformation of local capacity involves both human capital and social capital. This idea of capacity includes far more intricate factors than just individual skills and knowledge of teachers. Human capital has to do with the leaders within districts, their orientations to learning, their knowledge of the innovation and their skills to move the agenda forward. Social capital relates to social networks within and outside the district, norms of trust to support healthy discourse, and the allotment of funds and time necessary to engage in knowledge production (Spillane & Thompson, 1997). “Learning is the process through which human capital is

developed and the development of human capital depends on the development and exploitation of social capital” (Spillane & Thompson, 1997, p. 199).

Therefore, it would be inappropriate to base judgment on lesson study if local capacity were ineffective in regard to the intricate work of innovation. Lesson study processes build local capacity if given the correct foundational supports (Lewis & Hurd, 2011). In terms of my data collection, it was prudent for me to involve questions that address local capacity, culture, and historical perceptions of the participants in relation to their professional development.

My analysis was affected by the respondents’ actions, which were influenced by their lived culture, time, and place. I comprehended that I could not fully replicate the experience of the participants. I wanted to learn how participants constructed their understandings of their work in lesson study groups and why they choose to persist in this approach. I recognized that for the most part, individuals project their beliefs onto others unconsciously. They internally and externally react to what they believe others are thinking. Humans’ interpretations of their experiences are complex and relate to psychosocial conditioning. By offering a forum for participants to communicate their idiosyncratic views of reality, their ideas could potentially become fertile ground for analysis. I was open to the idea that as the research moved forward, I would learn more about the participants’ experiences. What the participants see and do not see relates to their values and became a point of interest as we engaged in our understandings together. I aspired to uncover implicit and explicit beliefs of the participants knowing that their beliefs create their rules of action; their rules of action become their truths. Individual’s truths become manifest through relationships and daily situations (Charmaz, 2006).

## Key Concepts

- *Climate*- Climate is based on perceptions (Anderson, 1982). It is the feeling or atmosphere of a school. Climate is the spirit, attitude, morale, or collective mood within a school (Gruenert, 2008). Climate is subtle, ambiguous, and inferred from behavior. As a psychosocial phenomenon, it relates to unseen processes within individuals, yet can be observed in concrete forms (Maxwell & Thomas, 1991). Cohen, McCabe, Michelli, and Pickeral (2009) relate climate to the perceptions school members have about the following four characteristics of a school:
  - physical and emotional safety;
  - quality of instruction involving social, emotional, and ethical learning;
  - structural cleanliness, space, and materials; and
  - respect for the relationships within the community including collaboration, morale, and connectedness (this characteristic is a critical concept in this dissertation).
- *Collaboration* – This term refers to teachers working together to achieve an agreed-upon goal. However, collaboration is an umbrella term used to label a variety of types of interpersonal interactions or activities designed to leverage collegiality. In schools, collaboration ranges from *coaching*, consultation, brief *meetings* or communications, shared decision making and grade-level teams, cross grade-level teams, and disciplinary or interdisciplinary teams among others. According to Little (1990), collaboration falls on a continuum from independence to interdependence. *Storytelling* and *scanning* are information-gathering events based on quick exchanges of information in the staff room or in social situations. Teachers give *aid* and *assistance* through one-to-one interactions

among peers. *Routine sharing* of materials and methods, or the exchange of opinions or ideas, provides teachers with the opportunity to display artifacts of their instructional practices to their colleagues publicly. At the end of this continuum is *joint work*. Joint work is collective action where teachers agree on a course of action to apply to an educational problem or to adopt the plan to implement it to their classrooms. Joint work includes feelings of shared responsibility for student outcomes. Lesson study is on the joint work (interdependence) end of the collaboration continuum.

- *Culture* – Culture is the set of cognitive ideas that guide an organization; it is the what and the how that governs the behaviors of a learning community. Culture refers to the historically transmitted cognitive structures encompassing a school that abstractly—in degrees—shape teachers’ shared beliefs, assumptions, decisions, and actions (Kaplan & Owings, 2013; Van Houtte, 2005). Culture encompasses teachers’ assumptions about their established, long-term practices and rationales about their beliefs that affect relationships, behaviors, and expectations. The critical components of a shared culture are: (a) belief systems; (b) value systems—those things held in high regard; (c) norms—what should be done, what should not be done; (d) standards—what is rewarded or punished; and (e) patterns of behavior—the actions involved (Sergiovanni & Starratt, 1988).

Administrators can alter culture by modifying or making changes to a school’s cognitive structures (Maxwell & Thomas, 1991; Rajbhandari, M.M.S., Rajbhandari, S., Loock, & Du Plessis, 2017).

- *Culture and Climate* – There is considerable historically-based discussion in the literature about how to operationally define and clarify the definitions of culture and climate as they relate to school effectiveness; these terms are interrelated and confusingly

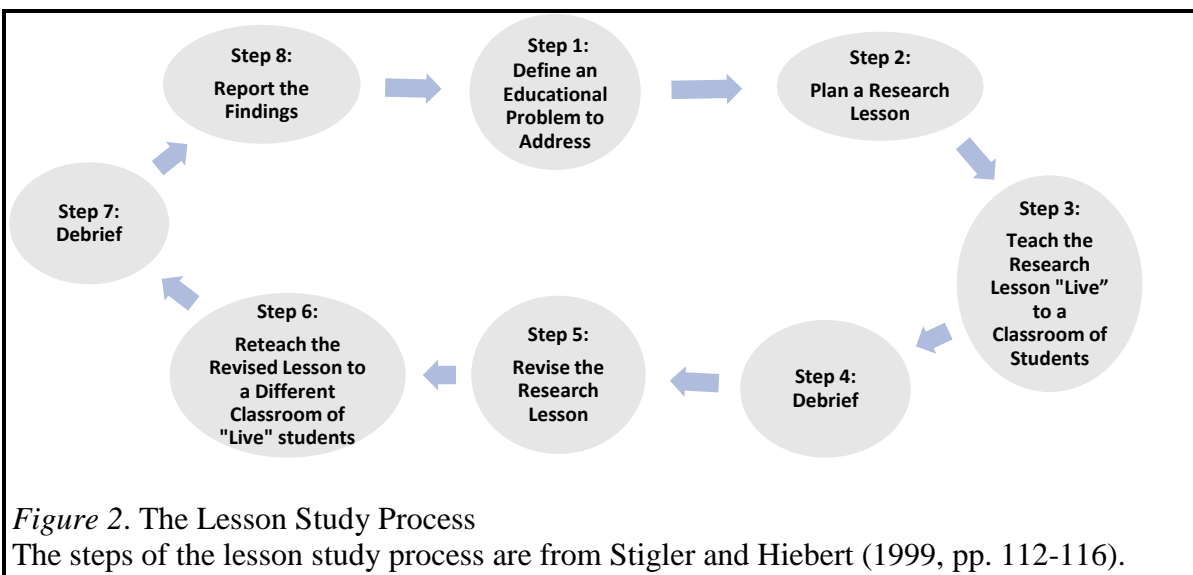
ambiguous. There is interplay between culture and climate; they both influence the other. Still, the terms are not interchangeable; yet, they are understandably conflated. Culture is easier than climate to determine. Climate is more resistant than culture; climate is rigid because it is indirectly controlled, making it more challenging to modify (Rajbhandari et al., 2017). It is important for researchers to be aware of the distinctions between the two (Van Houtte, 2005). Throughout this dissertation, I defined these two related terms using the previous definitions.

- *Hermeneutic Phenomenology* – A philosophical discipline and qualitative research approach that honors both terms. Hermeneutic is an interpretive methodology, and phenomenology is a descriptive methodology. It is the study of human science texts (i.e., transcripts). Researchers in this discipline capture the essences of humans’ lived experience using language and rich descriptions in a process that is inherently interpretive (Van Manen, 1990).
- *Informal Teacher Leaders* – In this study, informal teacher leaders refer to the participants’ who were facilitators of lesson study. Formal leadership applies to principals, department heads, curriculum developers and the like; informal teacher leaders engage in leadership activities without a designated title, set of responsibilities or roles (Whitaker, 2015). Informal teacher leaders lead from the middle, and are situated in the challenging professional space between their colleagues and administrators (Donaldson, 2007).
- *Konaikenshu* – *Konai* means “in school” and *kenshu* means “training.” These two Japanese terms refer to an individual, school-based professional development program which focuses the entire faculty of a school. The purpose of *konaikenshu* is to address an



overarching school-wide goal to raise student achievement through collaborative, sustained problem solving (Fernandez & Yoshida, 2004).

- **Lesson Study** – The study or examination of teaching practice and student learning. These two words are a translation of two Japanese words, *jugyo* and *kenkyu*. *Jugyo* means lesson and *kenkyu* means to study or research. The full Japanese term is *jugyokenkyu* (all one word) (Fernandez & Yoshida, 2004).
- *Lesson Study Process* – Stigler and Hiebert’s (1999) description of the Japanese model of lesson study includes eight steps as shown in Figure 2. Teachers employ this research-based approach to improve their teaching practices. In this process, teams of teachers address an educational issue by using a systematically-driven research process focused on a lesson embedded in a unit. A team of teachers collectively constructs a research lesson proposal that is designed to be taught in a “live” classroom of students. The classroom serves as a type of “laboratory” to collect information regarding research questions (hypotheses) collectively constructed by the team. Students’ thinking about the activities in the research lesson serves as the primary source of data collection. The findings of the research lesson are eventually reported. In Japan, lesson study is honored as a trusted process; it is used to inform the profession regarding pedagogical techniques and to influence educational policy. Below is the eight-step process as defined by Stigler and Hiebert (1999).



- Lesson Study Research Proposal* – After the team members have selected a research theme, studied curriculum, standards, and materials associated with this theme, they collectively construct a teaching/learning document in the form of a research proposal. The lesson study research proposal is a complex, comprehensive document with multiple purposes. The research proposal is not an ordinary lesson plan; it is a plan to guide the teaching, to provide a focus for observers as they gather data during the lesson, and to guide the discussion of the lesson before and after the teacher enacted the lesson. It is also used to document the learning that occurs on the lesson study team. The research proposal contains the research question and associated hypotheses. It provides an extensive explication of the lesson, the unit it is embedded in, the content involved, and the rationales that undergirded the pedagogical decisions of the team. Additionally, the research proposal is a data-gathering tool for observers to document their thinking, their insights, and their observations of student thinking during the research lesson (Fernandez & Yoshida, 2004; Lewis & Hurd, 2011; Takahashi & McDougal, 2016). Observers use

the data they collect in this public lesson to inform the discourse during steps four through seven in the process.

- *Micro-climate* – Climate implies how individuals or groups of individuals experience the general environment associated with a school. Each school contains a unique set of individuals who interact in ways that create a certain feeling or tone that permeates the community. Factions can form, and these factions within a school of teachers can potentially create their own micro-climates. Therefore, it is possible for one school to have a variety of climates (Rajbhandari et al., 2017).
- *Micro-politics* – Despite the rhetoric and apparent wide-spread acceptance of collaboration as a method to increase teachers' knowledge to improve student achievement, interpersonal conflicts complicate collaborative events. The term micro-politics refers to issues of power that affect the interpersonal relationships within a school. Power struggles occur as individuals seek to navigate the goals of a school or district, and at the same time, pursue specific personal or professional goals. Micro-political issues arise among teachers as they interact, between teachers and administrators, between teachers/administrators and students, and between teachers/administrators and parents (Saito & Atencio, 2015).
- *Norms* – The criteria or standards of conduct created to honor the intelligence and capabilities of each member of a group during collaborative events. During the first meetings of a lesson study research cycle, team members proactively construct a list of norms of behavior to guide their interpersonal interactions (Lewis & Hurd, 2011). Team members use consensus to create norms as a tool to promote a respectful atmosphere conducive to the intense, collaborative work inherent to lesson study research cycles.

Ideally, norms are venerated and held in the awareness of the team members during each meeting.

- *Oswego Movement* – The Oswego Movement, lasting approximately 30 years (1860s-1890s), was an initiative by Dr. Edward Sheldon of the State University of New York at Oswego. Sheldon adapted Pestalozzi's (1898) *object lessons* as an alternative pedagogical method to memorization. To study the effectiveness and improve the approach, Sheldon coupled the object lessons with *criticism lessons*. Sheldon designed criticism lessons to help instruct his pre-service teachers and graduate students on how to effectively implement object lessons. Sheldon also persuaded a large number of educational leaders from around America and other countries, including Japan, to leverage this approach. Hideo Takamine, Sheldon's graduate student, imported the Oswego Movement to Japan in the late 1800s. Because of Takamine's efforts, the coupling of object lessons and criticism lessons is the foundation for the present-day Japanese lesson study model for professional development (Makinae, 2010).
- *Principal Turnover* – This term relates to the phenomenon of principals leaving their leadership positions in a school (which can happen for a variety of reasons). The role of a principal is a significant component of any school's *culture* because she or he drives the manner in which a school addresses their goals to increase student achievement. The principal's role in school climate is critical; yet in relation to school climate the principal has less influence (Rajbhandari et al., 2017). When a principal either voluntarily or involuntarily departs her or his position of leadership, it can cause considerable adjustment challenges to a school community. Principal turnover is negatively related to

school climate, school culture, teacher turnover, student achievement, and resources (Rajbhandari et al., 2017).

- *Professional Development* – Teacher professional development refers to the processes, contexts, and content teachers are offered, or choose to attend, in order to increase their professional capacities. High-quality professional development is ideally systematic, long-term, focused on content, comprehensive, linked to standards, includes collective participation, provides active learning opportunities, sustained throughout a teacher’s career, and intended to offer teachers leadership roles (Desimone, Porter, Garet, Yoon, & Birman, 2002). Professional development can include formal experiences (*workshops, conferences, meetings, coaching, mentoring, learning communities*) or informal experiences (reading professional literature, watching documentaries, sharing with colleagues). Professional development is broader in scope than staff development, an *in-service, or training*. This dissertation centers on professional development for in-service teachers, not professional development programs designed for the credentialing of pre-service teachers at the college level or teacher district-level induction programs for first-year teachers. In the American professional development system, a wide range of professional development options are available, and American educators perceive lesson study as one of those options.
- *Professional Development Choices* – Professional developers in America offer in-service teachers a plethora of professional development options to choose from to accommodate individual, school, or district interests. Districts mandate certain professional development events (Borko, 2004; Desimone, Porter, Garet, Yoon & Birman, 2002). Local districts also offer teachers options to honor the notion of teacher autonomy

regarding their professional knowledge growth. The use of choice to address issues of autonomy has created both beneficial and problematic consequences for the American professional development system (Wilson, Rozelle, & Mikeska, 2011).

- *Professional Learning Communities* – This is an ambiguously defined term used to describe teacher professional development efforts intended to exploit the benefits of collaboration. Professional learning communities are designed to reform existing practices in ways to increase professional knowledge and improve student learning outcomes in teachers. Educators, however, have labeled grade-level teaching teams, high school departments, school committees, school districts, or even a state department of education as types of professional learning communities. Because educators apply this term loosely and use it in a variety of ways beyond its intended scope, educational stakeholders have unintentionally diluted its meaning. I define professional learning communities as cooperative, interdependent groups of teachers honoring the core principles of professional learning communities as described by DuFour (2004). These principles include: (a) supportive conditions for collaboration, (b) a focus on results, and (c) shared goals to ensure student achievement. For this to occur, teachers need to engage in honest reflection, de-privatize their practice, come to a consensus about community norms, construct and maintain a shared purpose, and in turn employ a set of commonly held values regarding their students and their academic growth (Louis & Marks, 1998). Teachers in professional learning communities engage in collaboration to assist each other in learning about their teaching practices through the application of collective wisdom, sharing common experiences, and employing inquiry-based methods to increase

their professional knowledge. The lesson study process fosters this kind of educational ethos.

- *Semi-structured Interviews* – Interviews where researchers ask the same questions to each of the participants included in the study (Bogdan & Biklen, 2003). Semi-structured interviews include both theoretically-based and open-ended questions designed to elicit non-numerical data driven by participants' perceptions of their experiences. A researcher employing semi-structured interviews must carefully construct an interview protocol based of questions for organizing an interview. The purpose of the protocol is to connect the research question to the phenomenon and to structure the questions strategically using a logical progression. Ordering the questions effectively is critical to the process.
- *Snowball Sampling* – A process where researchers attempt to garner more participants for a research study. The process is purposefully built on repetition. Participants in a study refer the researcher to other possible participants who then refer her or him to other potential participants. The main characteristic of this sampling procedure is the accumulation of participants like a snowball accumulates snow as it moves down a hill. Snowball sampling is widely used in qualitative research.

## **Chapter 2 Overview: Lesson Study as Professional Development**

This chapter contains a review of the literature regarding lesson study. The first section in this chapter discusses the genesis of lesson study. Dr. Sheldon's Oswego Movement served as the foundational concept for modern-day lesson study. Overall, I found a shortage of information regarding Dr. Sheldon's role in disseminating the Oswego Movement in America. Dr. Sheldon also worked with education officials from other parts of the world—including Japan—during the 19th century. I believe historically-based events are of critical interest to our discussion of lesson

study, which is why I included it in this chapter. I wanted to unpack these historical facts further to add to the discussion about the cultural implications of importing lesson study in America.

As you will read later in the data chapters, participants were concerned about the cultural differences between Japan and America; this was a common theme in both the literature review and the data in this study. Lesson study researchers such as Fernandez, C. Lewis, Murata, Watanabe, and Yoshida (all cited in this dissertation) have focused on the Japanese model. I found the participants' reporting of lesson study's incompatibility with the educational culture of America ironic because the undergirding foundational concepts of lesson study were exported to Japan by one of Dr. Sheldon's graduate students, Hideo Takamine. In other words, the idea for lesson study began in America. The notion that lesson study is a culturally foreign construct is incongruous with its historical origins. Still, American and Japanese educators have taken different paths concerning the Oswego Movement, so much so that this American idea, paradoxically, became foreign.

The second chapter shifts a discussion of the lesson study process. I describe in detail the eight-step process involved in this intuitively simple, yet conceptually complex, method for teacher professional development. After the detailed discussion of the process, I discuss the cultural differences between American and Japanese teachers' belief systems, and how these beliefs influence teachers' orientations to pedagogical methods used to teach a lesson—the focal point of the education profession. To accomplish this, I referenced the work of Stigler and Hiebert (1999) and created two tables (Table 2 and Table 3) to illustrate the variance.

The literature review turns to the ways lesson study inculcates new norms that emphasize the use of collaboration. Moreover, I share the literature on how lesson study's norms and logistical structures serve to nurture collaboration in professional learning communities, not only



with teachers on lesson study teams but also with outside experts. Lesson study is viewed as a model for collaboration in professional learning communities because it encompasses the core principles of professional learning communities, as discussed by DuFour (2004).

To conclude Chapter 2, I discuss the obstacles facing lesson study facilitators and practitioners. The data in this study corroborate previous research on lesson study's benefits and culturally-based obstacles. This section on lesson study obstacles is critical to this study because it highlights what researchers uncovered about lesson study's cultural barriers. Further, I discuss what researchers know about lesson study and interpersonal relationships or issues related to school climate. This study's central theme and unique contribution to the lesson study literature pertains to how lesson study teams fared regarding school climate. One of the benefits of lesson study is how it has the potential to foster positive interactions within learning communities. This study validated this benefit. Similarly, this study illustrated how lesson study either caused teachers to react negatively as the process was employed, or how lesson study exacerbated current interpersonal issues within the community.

### **Chapter 3 Overview: Research Approach**

In this chapter, I discuss my theoretical stance and my approach to methodology, design, methods, instruments, and the type of analysis I employed to gather the non-numerical data for this study. My ontological belief about the nature of reality served as my guiding theoretical stance for this study. When people experience the same event, they perceive or interpret that event differently. In this way, there are multiple realities. My related epistemological stance is that people construct meaning through their experiences in the world and they mediate these experiences through their perceptions of culture. I chose to conduct a qualitative study employing a hermeneutic-phenomenological research design. My primary goal for collecting

data was looking for meaningful themes. My method, or technique, for collecting data was snowball sampling; I was able to recruit 15 educators to serve as participants. To produce data, I interviewed these participants by conducting semi-structured phone interviews while consistently employing an interview protocol. All participants were asked to respond to the questions from this protocol. I recorded the data using a variety of technologies detailed in Chapter 3.

I transcribed the first interview, and the remaining recordings were transcribed using Rev.com transcribers. After receiving the transcripts of each interview, and to ensure recordings matched the transcripts, I listened to each of the audio recordings as I simultaneously read the transcripts to check for inconsistencies.

I aligned my analysis of the data with hermeneutic-phenomenological protocols. To assist me in this analytical endeavor, I used NVIVO qualitative research software, notes, charts, tables, and matrixes. The data was extensive and at times challenging to analyze due to the wide variance of experiences, especially on the topic of the participants' experiences of professional development before their lesson study experiences.

#### **Chapter 4 Overview: Professional Development Prior to Lesson Study**

This chapter results from the analysis of answers to the semi-structured interview questions which provided me with an avenue to compare their lesson study experiences with their experiences with professional development before lesson study. I created this chapter based on a warm-up question designed to set the tone for the interview to foster a friendly, collegial, conversational tone. My goal in this research was to study teachers' lesson study experiences; yet, due to my hermeneutic-phenomenological orientation—providing space for the data to drive the research—the participants' responses to the question about professional development before lesson study were extensive and deserved a separate chapter. Participants' reports of prior

professional development also allowed me to analyze their lesson study experiences informed by their perceptions of their professional development system. In America, professional developers view lesson study as a professional development option, i.e., a choice out of many possibilities. Within this context, the participants experienced lesson study; this reality played a significant role in their perceptions of their experiences of lesson study. The flexible American professional system, with all of its options, enabled the participants to both “find” lesson study as an option, and gave the space to practice it—albeit without the supports offered to their Japanese colleagues.

In this chapter, I share examples of their perceptions of their experiences with professional development. The data demonstrated a wide range of experiences concerning the topics participants studied, types of professional development, the effectiveness of collaborative professional development, and the variance in the usefulness of experts who facilitated their professional development events. Participants reported experiencing effective professional development; however, participants more often reported professional development that was inapplicable, random, and not sustained. Participants argued that the system squandered their precious, limited professional development time.

### **Chapter 5 Overview: The Effect of Lesson Study Protocols on Group-Based Professional Development**

In this chapter, I share the data regarding the participants’ experiences of the benefits of lesson study. Regarding organizing the data, this chapter tends towards the positive in its discussion about lesson study; the obstacles to lesson study or the reported negatives are in the next chapter.

All 15 participants reported their lesson study experiences were productive, meaningful, and applicable to their classrooms. This chapter delves into the details of how lesson study had a beneficial effect on the participants' professional growth regarding knowledge about content, standards, and problem-solving pedagogy aligned with the standards. Many stated lesson study's unique methods of structuring their learning community through a predictable, systematic process were critical to their professional growth; they had never experienced professional development in this way. Additionally, the process nurtured positive collaboration which was a further crucial component of their experience. In short, lesson study motivated the participants to learn about teaching. Some stated they experienced an increase in feelings of professionalism and some contended lesson study altered their views on professional development. The data in this chapter validate past research about lesson study. Most of the research on lesson study has been case studies. This research used a broader sample of lesson study practitioners from a variety of regions in America and three different countries. Also, the data was collected 17 years after lesson study was reintroduced into this country. The data provided a small-scale measure of lesson study's current trajectory in America. Moreover, gathering data in this way provided further evidence of lesson study's positive effect on educators as illuminated by previous research. However, when I asked the participants about the obstacles to lesson study, they provided a lot of data which I discuss in the next chapter.

### **Chapter 6 Overview: Obstacles Confronting Lesson Study Practitioners**

Previously, when I discussed Chapter 2 and the literature regarding lesson study obstacles, I mentioned its significance for this study. The data in this chapter validate previous lesson study research on both culture and climate. In the literature about lesson study obstacles, most of the findings on these barriers relate to cultural obstacles. Participants reported numerous

problems impeding lesson study including logistics, time, misconceptions, fear of being observed, and competing initiatives. These obstacles frustrated the participants. A further barrier to lesson study discussed in this chapter was principal turnover.

The number of research articles based on issues of lesson study and school climate is few. This study goes further in providing evidence about issues with lesson study and school climate. The norms and roles designed to improve interpersonal relationships during lesson study cycles and to supplement the signature lesson study process, inconsistently affected the collective process. This chapter shares the participants' reports of conflict between teachers within lesson study teams, between teachers and administrators, between teachers on lesson study teams and their colleagues in their learning community not engaged with lesson study, and between administrators about the implementation of lesson study. This chapter is critical because it illustrates areas of concern in some American schools, with implications for schools employing lesson study and schools attempting to use group-based endeavors. The data show learning communities that are ill-prepared to support cognitive conflict or reform-minded intellectual discourse. Further, the data in this chapter highlight the influence of negative egos on learning communities attempting to leverage the collective genius to improve teaching. Some elements which are critical to mitigating the numerous obstacles to lesson study research cycles are: interpersonal capacities to deal with conflict (both within lesson study teams and in the wider education community), and administrative supports for the logistical requirements of lesson study.

### **Chapter 7 Overview: Summary, Implications, Future Research, and Limitations**

This final chapter provides a summary of three data chapters to reorient the reader to the data. Context is a critical theme in this research and fuels my discussion about implications for

this research. In short, context involves both culture and climate. Participants mostly spoke of culture, yet their reports also implicated issues of climate. In this chapter, I briefly attempt to clarify the differences between the two constructs.

With this in mind, I discuss the idea of informal teacher leaders, or leaders who lead from the middle. Leaders from the middle must negotiate the vicissitudes inherent to the local culture and climate. The participants served as informal teacher leaders. I cited the literature that describes the importance of the principal's role in the efficacy of informal teacher leaders. Lesson study in American schools is fragile. Therefore, this situation implies that participants need to reassess their political stance as lesson study facilitators. I contend that in order to spread lesson study in American schools, lesson study facilitators will need to increase their leadership capacities. Interpersonal complications mitigated the benefits of collaboration on lesson study teams. Expanding leadership capacities may include eliciting the support of experts in the disciplines of psychology to assist with the interpersonal obstacles. Expanding leadership capacities also requires lesson study facilitators to pay more explicit attention to the politics of lesson study implementation regarding both their colleagues and administrators. Administrators will not have the capacity to support lesson study if they are unclear of the foundational ideas underpinning lesson study. Superintendents and principals will require extensive professional development about lesson study.

The participants frequently spoke about their frustration with the cultural and climate-based obstacles they experienced as informal teacher leaders and as lesson study participants. A further implication of this study is that those who wish to spread lesson study must employ an optimistic orientation to their teacher-driven attempts to implement lesson study. I explain in some detail how facilitators may apply optimism, and I offer three different options for

implementing lesson study in American schools. As the chapter concludes, I explain the limitations of this study, and provide a few ideas for research based on ideas that emerged from this study.

## Chapter 2

### Lesson Study as Professional Development

The idea of lesson study originated in Oswego, New York. Dr. Edward Austin Sheldon (1823-1897), the first president of the State University of New York at Oswego, and the principal of Normal School in Oswego created a method of professional development for pre-service teachers and in-service teachers, called the Oswego Movement. This movement produced reform in education on a broad scale. Sheldon coupled the object lesson designed by Pestalozzi in the early 1800s, with his creation, the criticism lesson (Makinae, 2010).

The object lesson was an approach based on the work of Johann Heinrich Pestalozzi (1746-1827). Before he became an educator, Pestalozzi attempted politics and farming. He failed at both, and fell into poverty. His experience of impoverishment enabled him to empathize with others in need. Eventually, Pestalozzi found his niche as an educator. His literary skills empowered him to write about his theories of education (Biber, 1833). He wrote the book called, *How Gertrude Teaches her Children*, (Pestalozzi, 1898) and this had a profound influence on educational thought in his era. Sheldon was intrigued, and energized by Pestalozzi's work, especially regarding object lessons. He believed the pedagogical technique was a vast improvement over rote memorization (Rillero, 1993).

Pestalozzi believed the teacher's role in the educational process was not to impede the children's natural processes of development. He emphasized educators should move slowly, and cumulatively. Instruction needed to include objects familiar (models, blocks) to the students. Instead of rote memorization, students required teachers to provide them with opportunities to manipulate the targeted objects pertinent to the content taught. Eventually, students would be led to the abstract by leveraging the concrete (Rillero, 1993). He proposed it was necessary for



teachers to nurture curiosity without imposing their adult knowledge. He advocated for the use of hands-on activities in the context of moral lessons. Moral lessons provided the students with a sense of direction, a sense of right and wrong. Pestalozzi's head, hands, heart approach to education linked academics with character building (Bruhlmeier, 2010). Sheldon was not satisfied with his own teaching methods. He was a learner himself (Hollis, 1898). The object lesson fascinated Edward Sheldon (Rillero, 1993). Sheldon studied the theory and praxis of this approach. In 1862, Sheldon published a book in which he argued the benefits of the object lesson. He titled the book, *A Manual of Elementary Instruction, for the use of Public and Private Schools and Normal Classes; Containing a Graduated Course of Object Lessons for Training the Sense and Developing the Faculties of Children* (Ahagon, 1995; Makinae, 2010). Sheldon summarized the theory undergirding object lessons using nine principles:

1. Activity is a law of childhood. Accustom the child to do—educate the hand.
2. Cultivate the faculties in their natural order—first the mind, then furnish it.
3. Begin with the senses, and never tell a child what he can discover for himself.
4. Reduce every subject to its elements—one difficulty at a time is enough for a child.
5. Proceed step by step. Be thorough. The measure of information is not what the teacher can give, but what the child can receive.
6. Let every lesson have a point. (Except in junior schools, when more than one lesson is required before the point is reached, each successively tending toward it.)
7. Develop the idea—then give the term—cultivate language.
8. Proceed from the known to the unknown—from the particular to the general—from the concrete to the abstract—from the simple to the more difficult.

9. First synthesis, then analysis—not the order of the subject, but the order of nature.

(Sheldon, 1862, pp. 14-15)

In May of 1861, in the modest environs of a cloakroom at the Normal School in Oswego, Sheldon taught a class of nine teachers the theory behind object lessons, and its associated strategies (Rillero, 1993). As a teacher educator, he endeavored to teach his students about object lessons in the most efficient way possible. In this regard, he devised a method called the criticism lesson.

Sheldon used the criticism lesson in the context of a peer teaching approach. In a criticism lesson, each pre-service teacher taught a lesson to their assigned group. The whole class observed the lesson. After the lesson was taught, class members expressed their thoughts on the successes or failures of the lesson they just observed. To facilitate a productive conversation, Sheldon constructed a detailed set of criteria or specific points of criticism to guide their post-lesson discussions. The criteria to evaluate the lesson included a focus on the teacher's content matter expertise, the method of instruction, the teacher's demeanor, and the student reactions. Sheldon argued to conduct the criticism lesson properly, a presiding expert was necessary to help develop a summary opinion, and to conclude the discussion (Sheldon, 1862). The following is the criteria, or Points of Criticism Sheldon created for observing lessons.

#### Points of Criticism

##### I. Matter

1. Whether suitable for children; whether exercising observation, conception, reason, or all of these

2. Lesson—whether bearing on one point; into what heads divided.

3. Whether in Scripture of moral lesson, an application be made; whether the right one. In a lesson on an animal, whether the children are being led to see the wisdom and goodness of God in the adaptation of parts to mode of life, and whether humane feelings are cultivated.

## II. Method

1. Whether the teacher clearly apprehends the distinction between what must be told and what must be given.
2. Whether she distinguishes the various mental faculties one from another; knows which should be, and how exercised.
3. Whether good illustrations are used; the specimens large enough and sufficient for distribution; whether the diagrams were drawn when required.
4. Whether appropriate questions were used when general answers are wanted. Leading questions only to obtain an admission, on which another question is based.
5. Whether the board was sufficiently used—new terms written on it; also titles and heads of lessons; also, with elder children, definitions and statements.
6. Summary, of what kind; Whether of the kind most appropriate to the children and the lesson.
7. Whether proper use was made of “hands out”

## III. Teacher

1. Whether capable of swaying the class according to her will and of awakening sympathy.
2. Whether attending to all or carrying on the lesson with a few children; whether taking the right standing position.

3. Manner—whether appropriate—bustling and excited—slow and languid—cheerful and energetic; whether if a Scriptural [*sic*] lesson, reverential tone of voice.

4. Language—whether appropriate; syntax and correct pronunciation.

#### IV. Children

1. Whether respectful, attentive, whether interested; if so, to what interest is owing.

2. Whether likely to carry the lesson away as a whole; if a Scriptural [*sic*] or oral lesson, whether hearts were touched. (Sheldon, 1862, pp. 24-25)

The Oswego Movement gained significant national and international notoriety.

Educators in the United States, Brazil, the Philippines, and Japan studied and then implemented his methods. Japanese educators were undergoing a significant political shift, and summoned a new era in Japanese society called the Meiji Era. This period began in 1868, and ended in 1912. The Japanese intentionally moved away from isolation and feudalism to a more modern or Western society. Internal politics, foreign relations, economic policy, social structures, and educational policy drastically changed. In this shift away from isolation, the government created a system that funded and mandated educators in Japan to study and implement Western educational techniques. During the Meiji Era, Normal School teachers, or pre-service teachers were not only expected to learn Western methods and technology, but they were also required to spread Western approaches to the veteran teachers and schools where they were employed (Kiuchi, 2007). Normal school teachers were also required to reference texts developed in the United States.

To further address the shortage of knowledge on western approaches, Japanese officials sent a delegation of educators to the United States. Having been made aware of Sheldon's Oswego Movement, a small delegation of Japanese educators was sent to the State University of

New York at Oswego to work closely with Dr. Sheldon. One of Sheldon's students was Hideo Takamine. He graduated from Sheldon's program Oswego in 1878. Upon returning to Japan, Takamine became an influential administrator who influenced policy. The other Japanese delegates returned home from Oswego and helped disseminate what they learned from Sheldon. Some of the delegates became administrators and some were classroom teachers at Normal School (Ahagon, 1995; Kaigo, 1952). In a book about object lessons, Japanese teachers learned how to conduct classroom observations and how to debrief the lessons using critique sessions (Isoda, 2007). The Ministry of Education worked to distribute these methods throughout Japan. The original lesson study cycles of open classes were held to spread teaching methods and curricula. Thus, the first interactive lesson study groups were instigated by the government in 1872 (Isoda, 2007). In this way, the government encouraged teachers to engage in lesson study. For the most part, teachers facilitated their lesson study endeavors. By the middle of the 1970s, the Japanese government renewed their interest in lesson study. On a limited basis, they offered funding and incentives for teachers to leverage lesson study for professional development. Despite the support afforded to teachers by the government, lesson study has always been, and still is, a voluntary enterprise. Nevertheless, most elementary and middle school teachers in Japan participate in lesson study research cycles to this day (Fernandez & Yoshida, 2004).

Japanese educators increase their pedagogical skills by engaging in a sophisticated approach to professional development called *jogyokenkyu*, or lesson study. Lesson study was first practiced in numerous Japanese schools through the hard work of motivated teachers. In the 1960s, lesson study gained more administrative support when it was combined with "in- service education within the school," or *konaikenshu* (Fernandez & Yoshida, 2004). Lesson study is not merely a model for professional development; it is a shared professional culture (Watanabe,

2002). Teachers develop this culture through their drive to improve instruction, their creation of norms that focus on inquiry, their feelings of mutual accountability to produce sophisticated, high-quality instruction and their long-term goals for their students. Teachers in Japan have developed a shared language for evaluating their collectively created instructional practices along with structural supports to maintain the lesson study culture (Lewis, Perry, & Hurd, 2009). The Japanese have essentially created a system that honors teacher learning in conjunction with student achievement.

Although lesson study is not a mandated form of professional development, many Japanese teachers value professional growth. Lesson study provides the systematic and flexible mechanisms of research that enable teachers to evaluate their work in the classroom using authentic evidence to support their findings (Takahashi & McDougal, 2016). Through the lesson study process, participants form connections with their colleagues through their goal-oriented, collaborative work (Puchner & Taylor, 2006). They are accountable to each other; they rely on their team members' expertise and support to individually and collectively increase pedagogical content knowledge (Lewis et al., 2009). Through discipline and diligence, teachers engage in inquiry-based processes for generating data. Their unyielding focus on student work, student thinking, and student achievement is the heart of their professional lives (Isoda, 2010; Stigler & Hiebert, 1999). Teachers learn effective strategies to capture student thinking through the creation of data collection tools that focus their observations during live lessons. Their research aims to account for the long-term goals they have for their students in relation to how these goals pertain to their daily lessons, or their overall teaching skills (Lewis et al., 2009).

In Japan, teachers enter the field of education knowing they will take part in professional development using lesson study throughout their careers (Stigler & Hiebert, 1999).

Approximately 99% of elementary schools and 98% of middle schools implement one or more research lessons each year. In 1 year, 83% of elementary schools and 54% percent of middle schools conduct research lessons five times or more. Per year, 21% percent of elementary schools and 9% of middle schools in Japan hold research lessons 15 or more times (Chichibu & Kihara, 2013). Typically, elementary teachers practice a more rigorous form of lesson study compared to middle school teachers. Japanese high school teachers are not as active in lesson study. Further, when high school teachers practice lesson study, the research tends to benefit the individual teacher who initiates the study (Chichibu & Kihara, 2013).

Lesson study is a bottom-up approach and at the same time top-down in its implementation. Administrators in Japan are in complete support of the process of lesson study. They ensure teachers have adequate structural supports, and even collaborate as participants in lesson study research cycles. The educational stakeholders in Japan trust teachers to evaluate curriculum based on classroom realities. In Japan, it is believed that teachers add to the knowledge base of the profession incrementally (Lewis et al., 2009; Stigler & Hiebert, 1999). Small tasks are studied using methods designed to illuminate salient details that can easily become lost in the complexity of life in the classroom. The classroom context is the laboratory where the teachers carry out their roles as researchers. In their work as researchers, Japanese teachers produce revisions to the national curriculum through the construction of new theories of learning and new technical terms created for the benefit of all educators (Isoda, 2010).

### **The Lesson Study Process**

Lesson study allows teachers to learn about their strengths and weaknesses. It offers them an opportunity to learn critical pedagogical information that can be harnessed to improve their teaching. Lesson study is a serious professional development system that requires a significant

amount of time (Fernandez & Yoshida, 2004). Generally, lesson study practitioners engage in this approach using eight steps described by Stigler and Hiebert (1999) in their seminal book titled, *The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom*.

**Step 1: Define a research theme.** In the first step in the process of lesson study, teachers define a problem that will inspire and focus their lesson study work. In their initial meetings and through consensus procedures, members of the study team identify an instructional issue that has surfaced in their classrooms. Specificity is required of educators in these teams as they define their learning goals. This explicit attention to the details of the goal is necessary in order to collect relevant data for the analysis in regard to the targeted problem (Hiebert, Morris, Berk, & Jansen, 2007).

At times, administrators or other educational officials request that the teachers study a specific educational issue for a research cycle. The top-down, bottom-up combination of lesson study operates to link the National Ministry of Education to teachers working in the daily realities of the classroom (Takahashi & McDougal, 2016). Japanese universities are also critical players in the lesson study process. Scholars are respected as leaders and relied upon to assist teacher researchers in the task of moving the teaching profession forward (Watanabe, 2002). Furthermore, educational experts or university researchers, who may be working on the research team along with the teachers, can present a problem to be studied. Lesson study research teams are suited for partnerships with universities, or other educational entities that are interested in participating in the growth of the profession. For an example, the University of Fukui has a department dedicated to growing the profession.



**Step 2: Plan a research lesson.** The second step in the cycle is the planning of the research lesson. This step requires several months to complete because it is not merely a lesson plan. As the study teams engage in discourse in this second step, they employ three lenses that serve to guide their thinking: (a) researcher lens, (b) curriculum developer lens, (c) student lens (Fernandez, Cannon, & Chokshi, 2003).

The overarching lens taken by Japanese teachers is that of the researcher lens. Japanese teachers view themselves as researchers. Their work on the study teams is designed to reform their practices and gain further content knowledge for the collective benefit of the profession. They must methodically study their actions in the classroom and then share their results. To be effective in this highly intellectual endeavor, it is necessary for team members to access relevant research literature, national standards, curriculum resources and previous lessons on the topic in question to inform their thinking about the research lesson.

In alignment with relevant research procedures, the educators on the team form a hypothesis to focus their learning. The teachers' research intention centers on observable behaviors of the students as they interact with the materials within the research lesson. Using the student lens, teachers take the perspective of their students in the attempt to understand their thinking and to anticipate their behaviors during their lesson.

Through the third lens, the lens of curriculum developer, Japanese teachers choose lessons on essential topics pertinent to the centralized national curriculum of Japan. They are cognizant that curricula inherently have overlapping conceptual intricacies that include sequential patterns. These patterns need to be accounted for in terms of curriculum development as well as in terms of student content knowledge. Discussions regarding lesson goals situate the research lesson content being studied within the unit. Teachers in research teams discuss the

concepts taught in previous grades and what competencies the students require for their future academic success. Employing a broader perspective, teachers become empowered and more equipped to examine the essential curriculum elements of the lesson (Fernandez et al., 2003; Watanabe, 2002).

This second step in the lesson study process demonstrates a number of observable features necessary for effective professional development. First, the participants engage in thoughtful and deliberate consideration of long-term goals for student learning. Second, educators seek to connect their daily practices in the classroom to overarching, long-term goals. Third, the teachers study current standards and curriculum surrounding the concepts involved in their research, thereby increasing their understandings of the standards. Fourth, as the team focuses on content and standards, they further increase their knowledge of content. Fifth, they construct a research lesson that attempts to uncover student thinking, in a way that is observable and documentable. As the teachers engage in collaborative discourse surrounding the research lesson, they are cognizant of the fact that the results and conclusions of their study will be added to the existing knowledge base to reform existing practices. That is, Japanese educators are aware of the importance of their work and act accordingly. Members of the team think carefully about their collegial learning—collaborative skills matter. Japanese teachers, supported by administrative leaders, employ interpersonal strategies to undergird their collective work to ensure optimal learning for all involved (Lewis et al., 2009).

**Step 3: Teach the research lesson.** The third step in the research cycle is the teaching of the lesson that has been planned by the team in the previous step. One teacher is chosen to teach a lesson to a group of students; other members of the team prepare the materials and assist with dress rehearsals. As the teacher enacts the lesson, those taking on the role of observer circulate

throughout the classroom taking careful notes and collecting data on student actions as well as their thinking in the form of artifacts or utterances during the lesson. Team members' observe and focus on the students as opposed to on the actions of the teacher facilitating the specific preplanned activities. Ideally, the observers' task is to focus on one small group of students or even on one student. Often, the lessons are videotaped (Lewis et al., 2009).

**Step 4: Debrief the research lesson directly after the lesson was taught.** The fourth step involves team members collectively analyzing the data gathered during the lesson using a debriefing protocol. Teachers analyze the data using individual and joint reflection. The participants' reflections revolve around the students—not how the teacher performed. In this step, the teachers' abilities to reflect and analyze play a significant role in shedding light on critical features of the lesson. Japanese lesson study debriefing protocols offer the teacher who taught the lesson the first opportunity to communicate his or her reflections of the lesson. In turn, the observers offer their analyses. If the lesson failed to produce the desired effects, team members jointly assume responsibility to seek ways improve future iterations of the lesson.

**Step 5: Revise the research lesson based on the data collected from the first teaching.** The fifth step of the lesson study process is the revision of the lesson. Team members revise the lesson based on their reflections and analysis of student work and the data collected. Mistakes about the lesson are viewed as treasures or portals into the thinking of the students. Teachers take the time to discuss ways to improve the lesson by altering instructional tools, materials, strategies, or ways to pose questions differently.

**Step 6: Teach the revised lesson (optional).** The sixth step is the teaching of the revised lesson to another group of students. Usually, the second teaching of the lesson becomes a public lesson and is taught by a different member of the team. This iteration of the research lesson is not

a performance or a showcasing of a lesson; it is a forum to involve more educators in the process of data collection and analysis (Watanabe, 2002). Teachers from the same school who are not on the team, teachers from other schools, teachers from outside the immediate district can be invited to the public lesson. Furthermore, the team can extend an invitation to administrators, education officials, politicians and community members to observe and reflect on student learning with the team. The public lesson also offers the wider community a chance to participate in the discourse surrounding classroom instruction; however, if the research team chooses, the second teaching of the lesson does not always include an invitation to the wider community.

**Step 7: Debrief the revised lesson directly after, if revised lesson was taught.** The seventh step involves debriefing and reflecting on the revised public lesson. Once again, following the debriefing protocol, the teacher who taught the lesson speaks first and then the other members of the team provide feedback. Team members offer attendees the opportunity to share their input on the effectiveness of the lesson as well. Ideally, the discussion surrounds student thinking and how the activities in the lesson addressed the targeted standards and stated goals. The debriefing creates a forum for discussion regarding the initial hypothesis of the research. In addition, participants examine how the lesson outcomes and reflections extend the professional knowledge about teaching and student learning in general.

**Step 8: Report on the findings of the research lesson.** The final step in the process is reporting the results of the study. Japanese teachers function in a system that has a national curriculum, complete with standards and guidelines. Teachers reporting on lessons relating to a particular topic can inform other teachers who teach the same topic at other grade levels; however, the data generated will have the greatest relevance to those teachers teaching at the same grade level as the one targeted in the study. Japanese teachers add to a growing network by

reporting their analyses in written reports, or through published articles submitted by university scholars (Isoda, 2010). Lesson study teams add artifacts and products to a functioning database of meticulously examined lessons for all educational stakeholders in Japan to access for future research lessons. Reporting the findings of the research cycle is critical to teacher professional development in Japan (Hiebert, Gallimore, & Stigler, 2002; Watanabe, 2002).

Participants engaging in this approach to professional development in Japan understand that the detailed steps and meticulous planning of a research lesson is not feasible for daily lesson planning. Lesson study is viewed as research. The mind-set, or the “lesson study mentality,” remains with the teachers in their daily practice (Byrum, Jarrell, & Munoz, 2002; Chichibu & Kihara, 2013). Lesson study’s historically validated systematic procedures have produced innovative results in Japan, especially in mathematics.

### **Cultural Implications of Lesson Study**

Culture refers to beliefs, values and customs (Maxwell & Thomas, 1991). Sergiovanni and Starratt (1988) explain that the foundation of a culture is its belief system—all components of a culture stem from the belief system. Beliefs influence the value system, or what is honored. Values, then, underpin the norms that guide behaviors. Then, standards are created from the norms and serve as the basis of rewards for the patterns of idiosyncratic, shared behaviors demonstrated by members of the culture. Schein (1996) believes that researchers should learn about the power of culture within an organization from crossing real cultural boundaries:

I feel that we are not seeing what is there and this is particularly dangerous when one is dealing with a social force that is invisible yet very powerful. We are in grave danger of not seeing our own culture, our assumptions about methods, about theory, about what is important to study or not study. (p. 239)

Schein's thinking relates to Stigler and Hiebert's 1999 study that compared how teachers in Germany, Japan, and the United States engage in mathematics instruction. The team of researchers observed how teachers interacted with their students while teaching mathematics lessons. This study cogently illuminated the idea that teaching is a culturally driven endeavor. Lessons taught within the schools of the country share predictable patterns and sequential features that are specific to a culture. Hiebert and Stigler labeled these patterns of behavior "cultural scripts."

The genesis and maintenance of educational systems depend on beliefs. Beliefs are acted out in the cultural scripts of teachers and students. Educators work within systems that expect historically and tacitly understood patterns of behavior to be enacted in the classroom during a lesson. The inculcated scripts become a kind of unconscious orientation to the preparation and enactment of the lesson. Teachers and students share scripts. Most United States citizens experience the script during the 12 years they are students in the system. Individuals studying to become teachers have also lived the script as students in the system; direct experiences of living the script prove to be a powerful subconscious device that serves to solidify behaviors of the status quo.

See Table 2 and Table 3 to view a detailed and concrete comparison of the cultural scripts of Japanese and American teachers in regard to mathematics instruction. Both tables have been adapted directly from *The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom* (Stigler & Hiebert, 1999). The tables compare the cultural scripts of the countries of Japan and the United States based on the underlying belief structures of the nature of mathematics, the nature of learning, the role of teachers, the notions of individual

differences and the sanctity of the lesson. Clearly, the culturally based behaviors exhibited by teachers in Japan are different from their American counterparts.

Table 2

*Japanese Cultural Scripts for Mathematics Instruction*

Lesson Steps	Japanese Cultural Script	Method/Focus of Each Step	Mathematical Belief Systems of Japanese Teachers
1.	Review previous lesson	<ul style="list-style-type: none"> <li>• Brief lecture</li> <li>• Teacher facilitates discussion</li> <li>• Students' reciting main points</li> <li>• Frequently the lesson builds directly on previous days' lesson</li> </ul>	<ul style="list-style-type: none"> <li>• Mathematics is a set of relationships between concepts, facts, and procedures.</li> <li>• Developing solution methods to problems, studying solution methods, working towards more increasingly efficient methods, and talking explicitly about the relationships of interest reveal relationships.</li> <li>• Mathematics is inherently interesting and students will be interested in it by exploring and working on new methods for solving problems.</li> </ul>
2.	Presenting the problem for the day	<ul style="list-style-type: none"> <li>• Usually one key problem sets the stage for most of the work in the lesson</li> <li>• (Steps 2-5 can be cycled several times throughout the lesson).</li> </ul>	<p style="text-align: center;"><u>Nature of Learning</u></p> <ul style="list-style-type: none"> <li>• Students learn best by first struggling to solve how to solve problems.</li> <li>• Students gain knowledge by hearing about the pros and cons of different methods and the relationships between them.</li> <li>• Frustration and confusion are a natural part of the learning process; each student must struggle with a situation first to make sense of the forthcoming knowledge.</li> <li>• Making connections between methods requires time to explore, invent, make mistakes, to reflect and to receive the information at the appropriate time.</li> </ul>
3.	Students working individually or in groups	<ul style="list-style-type: none"> <li>• Almost always follows the presentation of the problem. Students</li> </ul>	<p style="text-align: center;"><u>Role of the Teacher</u></p> <ul style="list-style-type: none"> <li>• Choose a challenging problem to begin the lesson.</li> </ul> <p style="text-align: right;">(continued)</p>



Lesson Steps	Japanese Cultural Script	Method/Focus of Each Step	Mathematical Belief Systems of Japanese Teachers
		rarely work in small groups to solve problems until they have first worked by themselves.	<ul style="list-style-type: none"> <li>• They help students understand and represent the problem so that they can begin work on a solution.</li> <li>• While students are working, the teacher monitors their methods to potentially be used to organize the follow-up discussion when students share their solutions.</li> <li>• Encourage their students to keep struggling in the face of difficulty sometimes offering hints.</li> <li>• Lead class discussions asking questions about solution methods and presenting methods themselves.</li> <li>• Create a visual record of the different methods and means of constructing relationships between facts, procedures and ideas.</li> </ul>
4.	Discussing solution methods	<ul style="list-style-type: none"> <li>• After students have worked the problems one or more solution methods are discussed.</li> <li>• Often, teacher selects one or more students (not volunteers) to share what they have found based on what the teacher observed as he or she circulated around the room.</li> <li>• Sometimes the teacher presents methods they have seen students use or new methods they want students to learn.</li> <li>• When students present methods, the teacher summarizes and elaborates.</li> </ul>	<p style="text-align: center;"><u>Individual Differences</u></p> <ul style="list-style-type: none"> <li>• Differences are natural characteristics of a group.</li> <li>• Differences are a resource and produce a range of ideas and solution methods providing material for students' discussion and reflection.</li> <li>• Students can compare a variety of solutions and make connections among them.</li> <li>• All students benefit from the variety of ideas generated by their peers.</li> <li>• Tailoring instruction to specific students is seen as unfairly limiting and prejudging what students are capable of learning.</li> </ul>

(continued)

Lesson Steps	Japanese Cultural Script	Method/Focus of Each Step	Mathematical Belief Systems of Japanese Teachers
5.	Highlighting or summarizing major points	<ul style="list-style-type: none"> <li>Usually at the end of the lesson, and sometimes during the lesson, the teacher presents a brief lecture on the main point(s) of the lesson.</li> </ul>	<ul style="list-style-type: none"> <li>Lessons hold privileged place and treated like lectures in university or church.</li> <li>A great deal of attention is given to their development and planned with a beginning, middle and end.</li> <li>Pieces of the lesson fit together and are coherent and clear.</li> <li>Lessons must flow free of interruptions and unrelated activities.</li> </ul>

*Note.* The information included in this table is from Stigler and Hiebert (1999, pp.79-96).

Table 3

*American Cultural Scripts for Mathematics Instruction*

Lesson Steps	American Cultural Script	Method/Focus of Each Step	Mathematical Belief Systems of American Teachers
1.	Reviewing previous material	<ul style="list-style-type: none"> <li>The lesson begins by checking homework, or engaging in warm-up activity.</li> </ul>	<p style="text-align: center;"><u>Nature of Mathematics</u></p> <ul style="list-style-type: none"> <li>Set of procedures to solve problems</li> <li>Learning terms, facts and skills is not enjoyable. It is the teacher's responsibility to make math engaging through nonmathematical ways such as interrupting the lesson with a story, or setting up the problem in a real-life or intriguing context.</li> <li>Critical skill involved in mathematics is to perform procedures and solve particular kind of problems.</li> </ul>
2.	Demonstrating how to solve problems from the day	<ul style="list-style-type: none"> <li>Teacher introduces new material or reviews pervious material by presenting a few sample problems and demonstrating how to solve them.</li> <li>Often the teacher engages the students in a step-by-step demonstration of the solution method by asking short questions along the way.</li> <li>(Versions of steps 2-4 can be cycled through several times.)</li> </ul>	<p style="text-align: center;"><u>Nature of Learning</u></p> <ul style="list-style-type: none"> <li>Students learn best by mastering the material incrementally, piece by piece.</li> <li>Students gain knowledge by practicing the prescribed methods many times with later exercises being slightly more difficult than earlier ones.</li> <li>Practice should be error free with high levels of success at each point.</li> <li>Frustration and confusion should be minimized because they are signs earlier material was not mastered.</li> <li>The more exercises the more smoothly learning will proceed.</li> </ul>
3.	Practicing	<ul style="list-style-type: none"> <li>Seatwork is assigned and students are required to complete</li> </ul>	<p style="text-align: center;"><u>Role of the Teacher</u></p> <p style="text-align: center;">Feel responsible for shaping the task into pieces that are (continued)</p>

Lesson Steps	American Cultural Script	Method/Focus of Each Step	Mathematical Belief Systems of American Teachers
		<p>problems similar to those for which the solution method was demonstrated.</p> <ul style="list-style-type: none"> <li>• Seatwork is usually done individually, or in small groups to compare answers and help one another.</li> </ul>	<p>manageable.</p> <ul style="list-style-type: none"> <li>• Provide all of the information needed to complete the task.</li> <li>• Assign and correct plenty of practice.</li> <li>• Demonstrate how to complete the task just like those assigned in practice.</li> <li>• If students are confused or frustrated, it is a sign that the teacher did not do his or her job.</li> <li>• When confusion is observed, teacher must quickly assist the student by providing the necessary information to get the student to understand.</li> <li>• Responsible to motivate students to be interested and attending to the lesson by increasing the pace, praising students for their work and behavior, using humor, power of persuasion and being “cool.”</li> </ul>
			<hr/> Individual Differences <hr/>
4.	Correcting seatwork and assigning homework	<ul style="list-style-type: none"> <li>• Near end of the lesson, some of the seatwork problems are checked.</li> <li>• Occasionally, some additional problems are worked out together.</li> <li>• Usually, homework is assigned with more practice problems.</li> <li>• Some time is allotted to begin work on homework problems.</li> </ul>	<ul style="list-style-type: none"> <li>• Obstacle to effective teaching</li> <li>• Meeting each student’s need means to diagnose each student’s level of performance and provide different instruction for different levels.</li> <li>• As range of differences increases, the levels of difficulties of teaching increase accordingly (tracking).</li> <li>• Reform efforts to reduce class size.</li> </ul>

*Note.* The information in this table is from Stigler and Hiebert (1999, pp.79-96).

Stigler and Hiebert argue that educators facilitating reform undermine their efforts if pedagogical actions run counter to the entrenched belief systems. Cultural scripts serve as blinders that foster a narrow pedagogical focus and set of behaviors; the scripts solidify the beliefs and subsequent norms of the status quo. For instance, if American teachers choose to reform mathematics pedagogy by moving towards a more conceptual approach to instruction, they must address their current cultural mindset emphasizing procedural methods. American cultural norms and values favor procedural methods. Japanese cultural norms provide supports for conceptually-based pedagogy. Conceptual versus procedural pedagogic methods are not necessarily the central point. Shedding light on cultural scripts is critical to reform. Stigler and Hiebert (1999) argue that if educators endeavor to improve their teaching practices, it is imperative for them to address the cultural foundations of their system. If stakeholders neglect to examine cultural norms, their efforts may be complicated by the mismatch between scripts and pedagogical actions; thus, reform efforts are rendered unrealized or ineffective.

### **Practicing Lesson Study Inculcates New Norms**

Lesson study could enable teachers to redevelop their identities to change existing norms; it has the potential to instill an alternative mind-set within teachers of continual improvement and reform (Byrum, Jarrell, & Munoz, 2002; Liebermann, 2009). Through sustained use, lesson study is a vehicle to implement the high goals of reform initiatives that are coherent with district programs and policies (Perry & Lewis, 2009). Lesson study has the potential to generate new norms based on an alternative system of beliefs about data collection and teaching. Potentially, lesson study can be a method to create new beliefs regarding teacher accountability, a belief that respects teachers and their highly intellectual and complicated work with students.

Educators who apply lesson study principles to professional development are not guaranteed successful outcomes in regards to student achievement. Those who merely read about lesson study and then apply what they have learned in the reading will not be equipped to reap the full benefits. Engaging in lesson study is a complex endeavor; it requires continual practice and reflection of its components to comprehend (Ermeling & Graff-Ermeling, 2014; Lewis & Takahashi, 2013; Perry & Lewis, 2009). Individual and collective reflections are critical elements of lesson study and are built-in to the process—consistently—during each step.

Furthermore, the pedagogical knowledge obtained from research lessons should be documented in a fashion that informs future research lessons. Educators generating knowledge that builds on itself—through the process of lesson study research—will strengthen their understandings of the complex theoretical foundations that buttress lesson study as an approach to a comprehensive, coherent model for professional development (Perry & Lewis, 2009). American teachers who are interested in applying lesson study will need time to acclimate themselves to the new norms (Ermeling & Graff-Ermeling, 2014). Lesson study should be practiced in a manner that respects the integrity of the process in order to minimize the potential to be labeled another American fad (Chokshi & Fernandez, 2004; Lewis, Perry, & Murata, 2006; Takahashi & McDougal, 2016).

### **Collaboration in Professional Learning Communities**

The literature on professional learning communities highlights components of professional development that are congruent with the literature on lesson study in regard to the benefits of collaboration. Lesson study processes are uniquely equipped to support a sophisticated professional learning community. Given appropriate support structures, lesson

study could have powerful and beneficial effects for professional learning communities (Lieberman, 2009; Norwich & Ylonen, 2013).

DuFour (2004) explains the three core principles in a professional learning community as: a focus on results, a mind-set that ensures students learn, and reliance on a collaborative ethos. Louis and Marks (1998) identified characteristics of effective professional learning communities. They created a professional learning community index intended to guide educators implementing this approach to professional development. They contend that effective learning communities work in a collaborative setting. Team members implement authentic pedagogy in a culture that nurtures openness, de-privatization, honest reflection, a shared sense of purpose, shared norms and values, as well as a focus on student learning. In both descriptions of professional learning communities, collaboration is the lynch pin of the process and student learning is the targeted outcome.

Professional learning communities create teams of teachers who assess, study, borrow, and adjust instruction based on the needs of their students (Hord, 1997). Through a collaborative process, professional learning communities implement inquiry methods to improve instruction (Joyce, 2004). The cultures of professional learning communities are enhanced when teachers gather to discuss student learning in relation to their own continued accumulation of pedagogical content knowledge (Fulton, Yoon, & Lee, 2005; Morrissey, 2000). Theoretically, the essential goal of any professional learning community is to increase student achievement and to instill an efficacious orientation within educators in this regard. Collaboration then becomes a process that supports an unrelenting focus on student data and achievement; yet, collaboration is not the goal. The beneficial consequences of collaborative activities become impeded by a lack of focus on student achievement (Vescio, Ross, & Adams, 2008). Collaboration builds shared

understandings of content and students. Effective learning communities result in higher student achievement (Andrews & Lewis, 2002; Stoll, Bolam, McMahon, Wallace, & Thomas, 2006; Vescio et al., 2008).

Some configurations of professional learning communities have been ineffective in producing higher student achievement. Assembling a group of well-intentioned educators does not ensure that effective professional development occurs to improve instruction. It is not surprising that there are a variety of frameworks in use in American schools regarding professional learning communities. A wide range of approaches to professional development, teacher education and reform are indicative of the education profession in the United States in general (Ball & Cohen, 1999; Cohen & Spillane, 1992; Feiman-Nemser, 2010; Shulman, 2005b; Wilson, Rozelle, & Mikeska, 2011).

### **Lesson Study as a Model for Collaborative Professional Learning Communities**

Lesson study protocols bring teachers together for a common purpose and a common mission that serves to reduce isolation; teachers begin to feel connected to each other and to a body of knowledge. Teachers share experiences and expertise to solve common problems relating to issues around the improvement of instruction. Lesson study protocols guide educators to systematically hone in on long-term and short-term academic goals for students. Those who have engaged in lesson study report that through observation, reflection and the co-creation of a lesson, significant improvements can be achieved in regard to the lesson (Chokshi & Fernandez, 2004; Fernandez & Yoshida, 2004; Lewis, Friedkin, Baker, & Perry, 2011; Lewis & Hurd, 2011; Lewis & Takahashi, 2013; Lieberman, 2009; Puchner & Taylor, 2006).

Professional learning communities support the collective work of educators that improve the quality of lesson planning through thought-provoking, rich discourse (Puchner & Taylor,



2006). In lesson study work, teachers are led to engage in discussions that highlight the intricacies involved in teaching (Lewis & Perry, 2017). Teachers who have engaged in lesson study report that through the deep discussions, they share, reveal, question, and argue their ideas about classroom practice and educational jargon (Lewis & Hurd, 2011). Lesson study procedures that honor norms of honest communication provide the participants with a safe environment to admit their ignorance of pedagogical issues that surface in the classroom. Teachers discuss lessons from a realistic, grounded orientation, which empowers them to move beyond rhetoric to test their thinking and ideas in the laboratory of the classroom with students (Puchner & Taylor, 2006).

### **Collaboration and Content Knowledge**

Content knowledge is essential to effective instruction. Educators require intricate knowledge of the disciplines and respective content they are required to teach. Constructive debates on lesson study teams emphasize content knowledge and student thinking about the content (Fernandez & Yoshida, 2004; Hiebert & Stigler, 2000). As teachers endeavor to facilitate learning experiences for their students, presumably, they strive to master the content they are teaching. The process of mastering content is not automatic (Chokshi & Fernandez, 2004). Educators who participate in the collaborative structures of lesson study experience a refinement in their understandings of the content. Team members connect to the body of knowledge and assist one another with gaps in their content knowledge through their discussions (Chokshi & Fernandez, 2004).

In planning a lesson, lesson study participants explore the lesson's materials before they are presented to the students. Exploration of lesson materials provides another layer of sophistication to deepen understandings about the content, about strategies to learn the content

and about anticipating student responses in relation to the concepts taught in the lesson (Fernandez & Yoshida, 2004; Perry & Lewis, 2009). Additionally, in conjunction with the discourse around content, lesson study participants observe their colleagues teach the content. In this way, teachers enhance their understandings by observing how features of a lesson interact with the subject matter. Through the study of content in this manner, participants obtain knowledge and skills that empower them to produce lessons capable of illuminating their students' thinking in regards to content knowledge, their misconceptions, and their learning preferences (Hiebert & Stigler, 2000; Ylonen & Norwich, 2012).

Teachers who engage in the cooperative process of studying content in preparation for the research lesson could increase their overall content knowledge of the discipline being studied. A broad understanding of content has empowering efficacious consequences (Fernandez & Yoshida, 2004; Lewis, Perry, & Hurd, 2004). Lesson study procedures have proven to increase pedagogical content knowledge in teachers and have changed instruction. Lesson study has redeveloped teachers' beliefs, skills, philosophies, and knowledge through their collective interactions that affect their students (Lieberman, 2009).

### **Lesson Study and Collaborative Discourse**

In a case study, Suzuki (2012) found that through lesson study, participants improved their capacity to make pragmatic choices and judgments in regard to student learning. Through discourse analysis, Suzuki systematically studied language patterns of teachers as they engaged in post-lesson discussions. In Suzuki's analysis of the discussions among teachers during lesson study debriefings, he found that the nature of the discourse provided opportunities for teachers to improve their analysis skills to inform pedagogical choices based on student thinking. Suzuki

categorized the language used in their discussions into two discursive modes called problem solving and problem setting.

Problem-solving language included simple questions and answers along with questions such as: Is the alternative teaching approach better? What is the best way of teaching X? Did the children learn what the teacher intended them to? In problem-solving discourse, teachers' language centered on a pertinent educational problem to examine and then they attempted to generate answers.

Teachers using problem-setting discourse demonstrated a concerted effort to gain professional knowledge from their experiences. Teachers engaging in problem-setting dialogue used language that attended to the overarching questions of: Did the teacher teach what the children learned? What did the teacher learn from watching the children learn?

This study demonstrated the effectiveness of lesson study as a professional development model to empower educators potentially to engage in discussions on a variety of levels (Lewis et al., 2004; Puchner & Taylor, 2006; Ylonen & Norwich, 2012). Sophisticated, intimate discourse such as problem-setting discourse requires a forum that nurtures engagement of the productive use of the participants' interpersonal and intrapersonal intelligences (Gardner, 1983; Goleman, Boyatzis, & McKee, 2002).

Lesson study participants de-privatize their practice through honest intellectual dialogue and through public teaching. They voice their opinions, their doubts and their differences. Participants of lesson study address challenging issues; they require a safe collaborative environment that provides a general feeling of group support. Teachers have reported a sense of anxiety when they teach in front of their peers (Byrum, Jarrell, & Munoz, 2002; Chokshi & Fernandez, 2004; Puchner & Taylor, 2006). Current norms do not fully support collaboration.

This aspect of collective work, in my opinion, is a powerful obstacle to effectively implementing the lesson study model.

Due to the cultural and socio-emotional complexities found within schools of the United States, effective lesson study research teams take time to develop and gradually emerge when teams engage in the process for an extended length of time (Perry & Lewis, 2009; Ylonen & Norwich, 2012). In fact, lesson study leaders should expect collaboration to be a challenge to the formation of lesson teams. As lesson study teams form—at least initially—socio-emotional concerns may emerge as more important than pedagogical knowledge. Even when lesson study leaders emphasized content, interpersonal matters might take precedence. Patience and persistence may be necessary for all involved to realize the full potential of lesson study and the value of collaboration (Perry & Lewis, 2009; Puchner & Taylor, 2006).

An effective environment for productive professional learning communities requires administrative support. Principals are expected to assist their teachers with the building of supportive cultures in schools. Principals support the teams by assisting with schedules and necessary structural resources such as allocating funds to allow teachers to meet on a regular basis. Principals can serve to coach teachers, offer shared leadership responsibilities to empower teachers, or when professional community is strong, take on a supportive role. A principal who collaborates in this manner becomes a decisive factor in the development of professional learning communities (DuFour, 2004; Louis et al., 2010; Printy, 2008).

Debriefing sessions during a research cycle can nurture an orientation of continual learning by honoring constructive criticism in a manner that mitigates the possibility that one will take feedback personally (Lieberman, 2009; Ylonen & Norwich, 2012). Disagreements regarding beliefs about learning can lead to conflict. Some individuals have an aversion to

conflict; they avoid it through yielding to dominant personalities or remaining quiet in discussions (Perry & Lewis, 2009). Others can personalize the conflict and use defensive posturing to lessen uncomfortable feelings generated by debate and interpersonal interactions. If personalization can be minimized, deep discussions with constructive feedback could produce a new mind-set of continued improvement and growth (Chokshi & Fernandez, 2004; Lewis, Perry, Friedkin, & Roth, 2012; Ylonen & Norwich, 2012).

### **Collaboration with Outside Experts**

Outside experts serve an important role in thriving lesson study teams. Teams choose to seek the services of experts; it is not a required strategy of lesson study. Experts can be accessed in universities, outside interested entities, or district level curriculum leaders. Those groups who do make the choice to engage outside experts enhance their group work by including those who can provide numerous intellectual benefits (Fernandez et al., 2003). Experts answer questions directly related to the team's specific needs. Outside experts provide a variety of sources of knowledge regarding content, lesson study procedures and relevant research. Most importantly, experts have the knowledge about developmentally appropriate curriculum materials that provide a foundational resource for the planning of a lesson (Lewis & Hurd, 2011; Perry & Lewis, 2009).

A further benefit of outside experts centers on the concept of teacher as researcher. In the United States, teachers have become accustomed to implementing curricula using the mind-set that they are curriculum technicians who deliver the content in the manual. In lesson study, the orientation to the research lesson is the notion that teachers are researchers; they seek to find solutions to intricate problems that naturally arise in classrooms with content in relation to student thinking (Lewis & Perry, 2017). Outside experts, especially those recruited from the university, are experienced researchers. Not only do they serve as content experts, they serve as

models and guides to assist teachers with the skills necessary for collecting data and then analyzing the data. Fernandez (2002) found that American teachers struggled to take a researcher's orientation to their work in lesson study. Japanese teachers are inculcated early in their careers to take on the role of the researcher during lesson study cycles. Experts pose questions or problems to solve for lesson study teams. Experts can support the teams' efforts to publish their research results in academic journals as well (Watanabe, 2002).

Lesson study is a collaborative, inquiry-based process; experts must be cognizant of their role within the collaborative ethos and honor equal partnership with the teacher/researchers. In other words, experts should not assert their authority, simply because they are the experts. Outside experts need to be aware and respectful of the group norms and act accordingly. Participants may feel threatened by criticism levied by outside experts. On the other hand, outside experts, who are knowledgeable and enthusiastic about lesson study, greatly enhance the process (Lewis & Takahashi, 2013; Puchner & Taylor, 2006).

### **Meeting Logistics to Enable Collaboration**

Successful lesson study teams structure their meeting schedules to allow enough time for planning, solving problems, and reflection. Timetables, along with time management, have derailed or mitigated against the effectiveness of some lesson study groups. Facilitation of lesson study groups require particular attention to timetables in relation to the steps and procedures inherent to lesson study (Byrum, Jarrell, & Munoz, 2002; Puchner & Taylor, 2006).

Lewis (2002) contends that weekly meetings over a period of 10 to 14 weeks with two to three research lesson cycles per school year are optimal. Meetings should last between 45 to 90 minutes. Each research lesson should be taught, revised, and taught again at least once. This is not a universally agreed upon idea. An alternative schedule that includes meeting every 2 to 4

weeks could be an option if team members compile and distribute materials efficiently. If too much time elapses between meetings, momentum and motivation may suffer.

Japanese educators have a culture that fosters lesson study. American teachers, on the other hand, have reported that the time needed for lesson study—in addition to their teaching responsibilities—inhibits some teachers from engaging in lesson study. Ideally, lesson study should be integrated into existing work such as the study of standards and curriculum; it is a framework to evaluate, tweak, or strengthen local initiatives and overall current teaching practices (Puchner & Taylor, 2006). Lesson study leaders need to maximize resources (e.g. substitutes, helping teachers, and teaching assistants) in creative ways to allow release time for participants to collaborate. Lesson study meetings should not be viewed as one more demand added on to existing responsibilities. It can be scheduled during staff development days, regular planning times, or offered with release time per contract specifications. Of course, lesson study could be practiced before or after school, or a combination of the two. Additionally, stipends can be allocated to compensate members for their time through grants or professional development funds. Nevertheless, through creative use of resources, facilitators need to minimize the notion that lesson study is one more item piled onto the overflowing plates of already hectic and harried teachers. Facilitators of lesson study have a unique role to play.

### **Informal Teacher Leaders**

Jennifer M. Lewis (2016) distinguishes the cultural disparities between professional development using the systematic research process of lesson study, and professional development currently employed in America emphasizing information transfer. These cultural disparities cause extraordinary challenges for lesson study facilitators to apply lesson study's unique processes. Based on Jennifer Lewis' case study of two lesson study facilitators, she

describes a list of attributes required of the lesson study facilitators in their roles as informal teacher leaders working as catalysts of the counterculture movement. She states, “To be able to conduct this kind of professional development requires a kind of agility that is rare” (Lewis, J. M., 2016, p. 539). The following is a list of attributes as described by Jennifer Lewis (2016):

1. Be familiar with the curriculum.
2. Understand the demands and affordances of classroom teaching.
3. Interact with teachers in ways that lead to growth.
4. Work with administrators and content specialists who are instrumental in scheduling and supporting the work of lesson study.
5. Have wide-ranging pedagogical knowledge to:
  - i) teach teachers how to teach their students, and
  - ii) teach students.
6. Come prepared on a number of levels by providing resources to stimulate and extend teacher thinking (e.g. readings, math problems, and videos).
7. Respond to expressed interests in previous sessions.
8. Follow “emergent curriculum” where curriculum planning grows from students’ interests or concerns.

### **Constructing Collaborative Norms**

Particular types of collaboration have been reported to increase teacher efficacy. Teachers’ observations of each other teaching, along with collegial interactions, have the power to alter teacher identities (Lieberman, 2009). When teachers open their doors to colleagues, plan together and analyze videos, they open themselves up to criticism, which has the potential to cause feelings of vulnerability. If lesson study teams lack a collaborative orientation, or lack



collaborative skills, obstacles to their collective professional goals could arise. Lesson study leaders and participants need be aware of and make every attempt to minimize the interpersonal fragilities of their professional community through proactive measures.

Lewis and Hurd (2011) suggest building community can be accomplished by establishing norms that nurture honesty, respect, confidence in regard to risk-taking, a mind-set to learn from errors, and full engagement of all participants. First and foremost, educators need to be accountable to the group by being present for the meetings. All team members must be engaged throughout the cycle to help generate ideas for the group. To set the tone for collaborative work, initially members need to decide—collectively—what norms will guide their psychosocial behaviors. After community members establish norms, these norms should be monitored consistently throughout the steps involved in lesson study. Team members can choose one norm to guide the interpersonal focus for each meeting (Perry & Lewis, 2009).

Feedback is a necessary component of lesson study and is particularly critical in this realm of interpersonal relations. Opportunities for reflection and feedback about the process will enable leaders with ideas to inform and guide the group process in positive directions (Perry & Lewis, 2009). In addition, consensus building is another group skill necessary for teams to run efficiently. Teams can stall if debate on a topic lasts too long. Learning how to reach consensus enables the group to validate different ideas, manage time, and achieve a sense of accomplishment by honoring multiple viewpoints.

A further strategy that has proven to be effective in the facilitation of the lesson study process involves power sharing (Puchner & Taylor, 2006). Assigning roles such as facilitator, recorder, timekeeper, note taker, typist, and liaison/convener, empowers participants with roles that enhance engagement (Lewis & Hurd, 2011). It can also serve to minimize the feeling of

member burnout through the sharing of the logistical responsibilities of creating productive meetings. Teams should consider the role of facilitator as the most challenging of all the roles; facilitating meetings can be shared by rotating the person who functions in this capacity (Lewis & Hurd, 2011). However, some teams choose to keep the same facilitator throughout the cycle to maximize efficient use of time. Creating norms and sustaining them, offering a consistent means of feedback, and assigning roles are ways lesson study teams can respect the psychosocial underpinnings of the group process.

## **Lesson Study Obstacles**

### **Culturally-Driven Obstacles**

Educators working to import lesson study in America, as well as other countries outside of Japan, have experienced an array of obstructions. Researchers have shed light on the obstacles to lesson study through empirical methods and their descriptions of their experiences of facilitating lesson study as a professional development model. Stigler and Hiebert's (2016) article entitled "Lesson Study, Improvement, and the Importing of Cultural Routines" commented on the current state of lesson study importation into foreign countries as compared to Japan and China. Stigler and Hiebert contend:

It is harder than we think to import a routine developed in one culture and in one educational system into countries with different cultures and different systems. Indeed, in the late 1990s, we saw many examples, especially in the United States, of schools adopting the superficial characteristics of lesson study but somehow missing the point. (2016, p. 581)

In 2016, Groves, Doig, Vale, and Widjaja conducted a small-scale study in Australia. They found a cultural incompatibility between lesson study's whole-class orientation to

instruction and Australia's cultural preference to address student needs through small group instruction. In addition, the teachers in this study were hard-pressed to locate curriculum materials within their system to accommodate lesson study's student-centered, problem-solving orientation to pedagogy, particularly in mathematics. Verhoef, Coenders, van Smaalen, and Tall's (2013) research in a Dutch context found similar challenges implementing lesson study regarding curriculum materials and teachers' habitual adherence to old ways of approaching mathematics instruction. In addition to this concern, Dutch teachers felt the pressure to focus on preparing their students for testing. The long-term process inherent to lesson study of incrementally improving instruction by studying small tasks was not congruent with the testing culture within this country.

In a study of two African countries and their efforts to import lesson study into their existing culture, Fujii (2014) illuminates how teachers omitted critical components of the Japanese lesson study model. The teachers in this study deviated from lesson study protocols by: (a) not framing the research question in a way to address both short and long-term goals for students; (b) viewing the lesson plan as a fixed script as opposed to a flexible schedule offering space for the natural flow of the lesson to illuminate student understanding; (c) employing problem-solving approaches superficially; and (d) debriefing discourse focused on the teacher, not the teaching.

In a 2004 article in *Phi Delta Kappan* called, "Challenges to Importing Japanese Lesson Study: Concerns, Misconceptions, and Nuances," Chokshi and Fernandez discussed various misconceptions about lesson study that have emerged as teachers employ this approach. Chokshi and Fernandez used their 2004 article to shed light on the following misconceptions:

- Lesson study cannot be done in America because it is a foreign idea.

- American teachers do not have the time to employ lesson study research cycles.
- There is no proof lesson study improves student achievement. We cannot justify the purpose of lesson study.
- Because teachers in America lack content knowledge, lesson study is an inappropriate approach to their professional development.
- American teachers will not be open to allowing their colleagues to observe the teaching because they are too self-conscious and nervous.
- Teaching is inherently a personal endeavor; we all teach differently.
- Lesson study is designed to produce never-seen-before lessons fueled by creativity.
- Focusing so much effort on one lesson is inefficient. Each lesson is a discrete event and cannot be generalized to inform overall teaching practices.
- Lesson study is about perfecting a lesson.
- Lesson study is about building a library of perfected lessons.

Makato Yoshida (2012), a lesson study researcher, educator, and facilitator for 2 decades summarizes the research of numerous scholars documenting obstacles to lesson study. Yoshida argued, “There are still many obstacles for [*sic*] conducting high-quality and effective lesson study in the USA” (2012, p. 142).

In their experiences facilitating lesson study in America, the researchers Watanabe, Takahashi, and Yoshida (2008) found “They [teachers] do not often attend well to an important step in the process called *Kyozaikenkyu*” (p. 132). *Kyozaikenkyu* is a component in the lesson study process where teachers study the instructional materials such as textbooks and curriculum materials associated with the targeted research question. Teachers omitting this critical

component will employ lesson study superficially. In this way, teachers will not realize the full benefits lesson study protocols provide.

In 2003, Fernandez, Cannon, and Chokshi reported their research findings on 16 teachers and administrators conducting research cycles who were coached by 12 experienced Japanese lesson study practitioners from the Greenwich Japanese School in Connecticut. As researchers empirically observed research lessons and meetings, gathering extensive field notes, conducting formal and informal interviews of all participants, a general theme emerged: “The American teachers had much difficulty adopting and maintaining this researcher lens while conducting lesson study” (Fernandez, Cannon, & Chokshi, 2003, p. 173). Specifically, the American teachers needed to develop an orientation to their professional development as a forum to learn about teaching through their practice of teaching; more importantly, American teachers needed to develop a vision that the teachers themselves are the drivers of their learning. Additionally, American teachers needed to learn and experience how to skillfully construct research lessons that answer teacher-constructed, research-based questions complete with hypotheses. American teachers needed to learn strategies and construct tools to successfully gather concrete evidence during a “live” lesson to address their research question. For these sophisticated skills to become a reality, it is necessary for American teachers to become more reflective in the following areas: (a) leveraging student-centered pedagogy, (b) creating student learning trajectories, and (c) articulating teaching principles based on evidence to address their research question.

Merely explaining to American teachers that lesson study is a research process and asking them to engage in this research process does not guarantee they will be able to apply the researcher lens skillfully. Fernandez et al. (2003) contend that consultation with coaches and knowledgeable others, along with time and experience, are imperative for American teachers to

realize the benefits of the researcher lens in the context of lesson study research cycles. In this regard, Perry and Lewis (2009) completed a case study of 70 teachers and 20 lesson study teams to document the employment of lesson study in a medium-sized district while providing the teachers with comprehensive theoretical and logistical support structures. The researchers collected extensive data across multiple years and sites, and found the schools overcame a variety of lesson study obstacles by effectively establishing professional learning communities. Lesson study teams increased their use of reflection and feedback loops, refined tools and protocols, leveraged the knowledge of outside sources, and expanded their focus on student thinking. This study highlighted how novice lesson study practitioners require assistance and knowledgeable others to overcome obstacles associated with the importation of lesson study. “Other US sites may have to go through similar steps to build successful lesson study efforts” (Perry & Lewis, 2009, p. 387).

Despite the successes of minimizing the cultural obstacles facing lesson study facilitators and practitioners as described in the 2009 Perry and Lewis study, the obstacles practitioners experience importing lesson study into American schools persist. Takahashi and McDougal (2016) explained how Takahashi practiced lesson study in Japan; however, in America, he has attended numerous educational activities labeled “lesson study” that do not resemble his lesson study experiences in Japan. For example, he observed a team of teachers fitting an entire lesson study research cycle—including all steps in the research process—into one day (in Japan, the cycle lasts over 5 weeks). In the morning, teachers planned the research lesson in 30 minutes. They taught the lesson, debriefed, and revised the lesson. In the afternoon, they taught the revised lesson. In this truncated version of lesson study, this team included all of the steps in the lesson study process but demonstrated a gross misunderstanding of the big-picture rationale

undergirding lesson study. In another example, Takahashi and McDougal report they frequently witnessed lesson study teams focused on perfecting a lesson, a common misconception about research lessons. Takahashi and McDougal wondered if critical understandings of lesson study were becoming “‘Lost in translation’ and can be fixed, or whether the problem is due to cultural differences that cannot be fixed” (Takahashi & McDougal, 2016, p. 514).

Takahashi and McDougal further describe that the reality of lesson study as currently implemented in America may be unsustainable without comprehensive support from administrators, outside experts, and the wider community. In the experiences of these authors, despite their best efforts and the efforts of teachers in their region, lesson study endeavors fade and eventually dissolve:

Benefits of these efforts have often dissipated as teachers moved away, schools changed administrations, or teachers just grew tired of trying to practice lesson study without adequate time or support from administrators and colleagues. Despite the fact that public research lessons have been going on in the city for 12 years, all the schools that piloted lesson study in the early years discontinued after a few years. (Takahashi & McDougal, 2016, p. 516)

### **Climate-Driven Obstacles**

Laurel Puchner and Ann Taylor (2006) performed a study about the shift taking place in American schools from isolationism to collaboration using the context of lesson study research teams; they endeavored to examine the leveraging of collaboration and its potential to improve the teaching of math and increase teachers’ efficacy with this topic. Their research included two case studies of 17 teachers in two different schools, working in teams of four, and had little experience with lesson study. These two cases illuminated the critical nature of collaboration and

its importance to lesson study. The interplay between the cognitive and socio-emotional may be more important—at least at the beginning—than the content of the lessons. “These cases suggest that teachers may initially attend to elements other than subject matter knowledge even when subject knowledge is discussed and emphasized by others (advisors, administrators, etc.)” (Puchner & Taylor, 2006, p. 931). The teachers in this study underestimated the challenges they experienced with collective discourse in the lesson study setting; some of these challenges included defensiveness, difficulty being vulnerable to criticism, trusting colleagues, fear of being observed, fear of being judged based on student behaviors, and concerns about autonomy based on power differentials among participants regarding content knowledge.

Saito and Atencio (2015) contend lesson study challenges teachers’ identities and working relationships. These challenges become heightened in countries with punitive accountability measures with entrenched cultural norms that foster teacher evaluation as a method to improve instruction. This is one example of the interplay between cultural norms and their influence on the climate in a school. A teacher evaluation ethos has potential to disrupt teachers’ learning communities. Fear of peer criticism leads to conditions of disrespect and mistrust. The authors witnessed an interaction in a Vietnamese school between a perceived expert senior teacher and a less senior teacher who taught a public lesson.

The comments visibly impacted upon [*sic*] the female teacher who was observed and she displayed a very sad facial expression throughout the discussion. The first author and another consultant attempted to be more encouraging by offering more constructive comments, yet the teacher remained discouraged and disappointed. After the peer reflection, the teacher cried and complained that she was intensely hurt by the comments provided by the more senior teachers. (Saito & Atencio, 2015, p. 93)



Saito and Atencio (2015) contend that even though lesson study encourages teachers to co-develop a research lesson, there is a tendency for less senior teachers to defer to the senior teachers on the team. Further, for teachers to feel more at ease in lesson study contexts, administrators could explicitly communicate to the teams that their role in the process is not to evaluate, but to support the research process. Teacher evaluation is antithetical to the lesson study process. Saito and Atencio (2015) suggest lesson study stakeholders should closely examine the practical experiences of lesson study participants. Complex issues of power, identity, and discourse are intrinsically related to lesson study and how its process affects collaboration.

### **Conclusion**

Lesson study can build an overall culture of collegiality, cooperation, and friendliness. It can radically change a cultural ethos of a school for the benefit of both teachers and students (Lewis & Hurd, 2011; Puchner & Taylor, 2006; Vescio et al., 2008). Lesson study provides a productive and fulfilling professional life for those who participate in its professional development mechanisms (Lewis & Hurd, 2011; Lewis & Perry, 2017).

Potentially, lesson study and its structures can provide a forum for this important intellectual work in American schools. Using lesson study in the United States may not provide all of the benefits that it has in Japan; however, lesson study—at least—could raise the levels of awareness concerning the entrenched values and norms specific to American educational cultures (Ermeling & Graff-Ermeling, 2014; Lieberman, 2009). When educators build teams of learners and leaders, they reach the highest form of collaboration. This highest level of collaborative work improves school culture (Fullan & Hargreaves, 1996).

Lewis, Perry, and Murata (2006) claim in their second conjecture that lesson study strengthens the three pathways to instructional improvement including: teachers' knowledge, teachers' commitment and community, and teachers' learning resources. Teachers' knowledge refers to learning subject content, knowledge of instruction, improved ability to observe students, and situating daily teaching practices to long term goals. Lesson study improves teachers' capacity to construct lesson plans designed to reveal student thinking, and pedagogical tools to undergird group-based learning. More specific to my study, they argue that lesson study will foster a professional mentality that creates in the participant the desire to become a more effective teacher, provide a connection to colleagues who can offer them assistance, and foment a general ethos of accountability to their learning community. Within this conjecture, there is an implication that those who feel the commitment and a sense of community will embrace lesson study as their preferred method of professional development. My research question addresses how the participants experience lesson study, and how they make sense of those experiences. My study has the potential to explain in more detail how the essential components of lesson study manifest in the thinking of the participants. I would like to explicate how the general features of lesson study play out in the individual thought processes of those who have enacted lesson study research cycles.

As Lewis et al. (2006) contend, lesson study is not like taking an aspirin. When a patient ingests aspirin, the remedy functions to relieve pain. Normal human bodies, for the most part, (internally speaking of course) are identical. However, any variations are relatively small. Conversely, lesson study is a systematic model of professional development that educators use in a variety of professional learning communities. Unlike the internal structures of the human body, the components of lesson study communities are idiosyncratic; within these communities, there

live a plethora of different personalities that create unique group dynamics that affect collective action. The effectiveness of lesson study, similar to all forms of collective group work, depends upon the participants' capacities to work productively both intellectually and interpersonally.

It is my hope that this study illuminates ideas about lesson study that can inform future participants. I want to understand in more detail if, and, or how the unique process of lesson study induces participants to persist in using lesson study as their method of professional development. I would like this study to explicate whether or not participants perceive lesson study as the reason or the impetus that builds commitment to the profession as well as builds a stronger community of learners.

## Chapter 3

### Research Approach

#### Philosophical Underpinnings and Alignment

As the researcher in this study about teachers' experiences of lesson study, it is necessary for me to explicitly communicate how my theoretical stance aligns with the research question, the design of the research, and the methods used to collect and analyze the data (Rolfe, 2006; Starks & Brown-Trinidad, 2007; Twining, Heller, Nussbaum, & Tsai, 2017). In an article about method slurring, Baker, Wuest, and Stern (1992) stated: "To ensure rigor, they believe that qualitative data collection procedures should be explicit and consistent with the underlying assumptions of the specific approach selected" (p. 1355). This chapter is meant to describe the research approach and to address the above-mentioned research alignment issues.

I leveraged an interpretivist research paradigm to structure this study of teachers' experiences of lesson study. The multiple components of this research project, including the methodology (qualitative), design (hermeneutic phenomenology), methods (snowball sampling and semi-structured interviews), instruments to collect data, the analysis process (thematic analysis), and most importantly, the ontological and epistemological orientations, all align with an interpretivist orientation. Interpretivists argue that humans' perceptions of experiences or observed phenomenon are filtered through subconscious processes and influenced by social interaction. Interpretivist researchers attempt to understand complex social worlds through holistic research procedures; they endeavor to interact with participants in their environments to interpret their perceptions to gain further understandings and insights (Hudson & Ozanne, 1988; Leitch, Hill, & Harrison, 2010).

This study's ontological and epistemological focus centered on the philosophical traditions of hermeneutic phenomenology, which are based on the writings of Heidegger, as explained by Kockelmans (1989). Other philosophers in this branch of phenomenology are Gadamer (1989), Thompson (1981), and Van Manen (1990) among others. These philosophers "Focused on the existential nature of human experience," (Spence, 2017, p. 836). The ontological orientation of the researcher is the foundation of a research project. Lichtman (2013) stated, "Ontology is concerned with what is real or the nature of reality" (p. 25). The nature of reality means different things to researchers using different research paradigms. "Heidegger called ontology the phenomenology of being," (Van Manen, 1990, p. 183). Heidegger's hermeneutics was described as interpretive phenomenology. He dealt with questions of reality regarding how individuals experienced various phenomena, and their conceptions of what it means to be human (Harris, 2016; Kockelmans, 1989; Van Manen, 1990). Heidegger also introduced the concept of *lifeworlds* or the notion of modes of being in the world (Lavery, 2003; Van Manen, 1990). Humans experience phenomenon uniquely. The ontological foundation of this study is: there are multiple realities and these realities are influenced by other systems; multiple interpretations can emerge from a shared event (Greatrex-White, 2008; Lincoln & Guba, 1986; Neuman, 2000). Kafle (2011) explained, "While applied to hermeneutical [*sic*] phenomenological research [*sic*] reality is perceived as an individual construct dependent to [*sic*] different situations. Hereafter, it is rested on the belief that realities are multiple" (p. 195).

Epistemology is a branch of philosophy addressing the theory and nature of knowledge and how we know what we know (Lichtman, 2013). Its focuses on the means for acquiring knowledge and how we discern what is truth. "What can we know?" and "How can we know?" are important questions in this regard. Therefore, my research goals were to understand and

interpret the meanings in the participants' experiences rather than to generalize and predict causes and effects (Hudson & Ozanne, 1988; Neuman, 2000).

I was cognizant that the participants' experiences were influenced by their individual perceptions. Language played a significant role in my interpretations. Through the hermeneutic phenomenological study of the data, provided by the participants' recorded interview transcripts (human science texts), I attempted to understand, then interpret the language the participants used when they described their stories concretely (Van Manen, 1990). Ricoeur (1981) adopted the following working definition of hermeneutics:

The theory of the operations of understanding in their relation to the interpretation of texts. So, the key idea will be the realization of discourse as a text; and the elaboration of the categories of the text will be the concern of a subsequent study. (p. 43)

The language participants used to describe their experiences reflects deeper meanings relating to, for example, their professional identities or feelings of agency. Gadamer (1989) discussed the intricate link between understanding the participants' perceptions of their local contexts, and their use of language as it relates to experience. In his writings, Gadamer stated, "Every experience is taken out of the continuity of life and at the same time related to the whole of one's life. Because it is itself within the whole of life, the whole of life is present in it too" (1989, p. 69). I endeavored to understand the participants' subjective experiences regarding their intentions, motivations, and meanings embedded in time and in their social interactions during professional development events. In this research project, in alignment with the ontological orientation discussed above, my epistemological stance addressed how the participants' constructed meaning through experiences in the world; their experiences were mediated by culture.

## Methodology

**Qualitative research.** Qualitative research is an umbrella term used to categorize a variety of research strategies associated with a particular set of characteristics. It is the systematic examination of social phenomenon related to specific topics involving human beings and their environments (Donalek & Soldwisch, 2004; Lichtman, 2013). Bogdan and Biklen (2003) conclude there are five common features associated with qualitative research. The five features are: (a) qualitative research is naturalistic; (b) uses descriptive data and is non-numerical; (c) concerned with the process; (d) leverages inductive reasoning; and (e) the essential concern in this type of research is meaning, or how people make sense of their lives.

Qualitative research is naturalistic because the research occurs in the actual settings, not in settings involving experimental tests. Qualitative researchers believe human behavior is significantly influenced by context and they collect data accordingly, through participant observation and interviews. Qualitative data is descriptive, non-numerical, and leverages words and images (Lichtman, 2013). Qualitative researchers use field notes, videotapes, personal artifacts, official records, memos, and interviews to richly describe the data. Nothing is trivial, nothing is taken for granted; all is data (Bogdan & Biklen, 2003; Glaser & Strauss, 1966). To substantiate the data, the results are written using quotations from the participants in the study. Their words are presented in a narrative form rather than reduced to numbers to analyze. The complexity of social phenomenon cannot always be reported by numerical data alone. Qualitative researchers are not concerned with the statistical interpretation of data; with curiosity, they seek to discover ideas, concepts, and patterns that naturally emerge in the data (Donalek & Soldwisch, 2004). Qualitative researchers rely on the written word to both record the data and present their findings.

Qualitative research is process oriented. The ways humans define themselves, their interactions with each other, and their experiences are essential to qualitative studies. Bogdan and Biklen (2003) state:

Qualitative researchers are concerned with process rather than simply with outcomes or products. How do people negotiate meaning? How do certain terms and labels come to be applied? How do certain notions come to be taken as part of what we know as common sense? What is the natural history of the activity or events under study? (p. 6)

Qualitative research is inductive. Unlike quantitative studies, qualitative research is a bottom-up approach rather than top-down. Analysis of the data is not driven by hypotheses, which are constructed prior to the study to either validate or disprove. The extensive context-based data emerges as seemingly disconnected ideas. The role of the researcher is to organize information into coherent, interconnected conceptual patterns. Theory building occurs by examining the patterns driven by the specific and then moving to the more general. In contrast, the deductive approach moves from the general to the specific.

Qualitative research is meaning-based. Researchers choose participants who are experiencing the topic of study. They are concerned with understanding the participants' own frame of reference; external causes inform the study, yet, become secondary in importance (Bogdan & Biklen, 2003). Qualitative researchers engage the participants in ways that go beyond survey or experimental observation (Hurt & McLaughlin, 2012). Of critical importance to the qualitative researcher is the assumptions the participants have about themselves, about their interactions, or about the contexts where they live. Capturing participants' perspectives accurately is the ultimate goal. Qualitative researchers are exceedingly cognizant of their biases and admit them when reporting their findings (Donalek & Soldwisch, 2004). The primary goal of



the qualitative researcher is to add knowledge, not render superficial judgments or opinions. Qualitative researchers believe social phenomenon is complex; they endeavor to illustrate the complexities fueled by their extensive, time-consuming analysis and review of extensive amounts of data (Bogdan & Biklen, 2003). In short, qualitative research is suitably applicable to the complex, intricate situations associated with the human condition.

## **Design**

**Hermeneutic phenomenology.** Hermeneutics is the theory and practice of interpretation. Phenomenology is the science of phenomena. Hermeneutic (interpretation) phenomenology (description) is both descriptive and interpretive. Hermeneutic phenomenological research procedures were used in this study as described by Max Van Manen in his book *Researching Lived Experience: Human Science for an Action Sensitive Pedagogy* (1990). In this seminal book about hermeneutic phenomenology, Van Manen introduces, and then explains, the philosophical underpinnings and the methods of this branch of phenomenology. Van Manen explains hermeneutic phenomenology tends to avoid creating “A predetermined set of fixed procedures, techniques, and concepts that would rule-govern the research project. And yet, it is not entirely wrong to say that phenomenology and hermeneutics as described here have a certain *methodos*—a way” (1990, p. 29). He considers the philosophical traditions of phenomenology to serve as an intrinsic set of guidelines for researchers to use as they endeavor to engage in scientific research. However, the hermeneutic phenomenological research design is not meant to reject traditions or adhere to them dogmatically. The researcher applies the techniques and procedures of hermeneutic phenomenology with flexibility based on the particular topic of study or how the investigation unfolds. The basic structures of hermeneutic phenomenological research include the interaction between the following six research activities:

1. turning to a phenomenon which seriously interests us and commits us to the world,
2. investigating experience as we live it rather than as we conceptualize it,
3. reflecting on essential themes which characterize the phenomenon,
4. describing the phenomenon through the art of writing and rewriting,
5. maintaining a strong and oriented pedagogical relation to the phenomenon,
6. balancing the research context by considering parts and whole. (Van Manen, 1990, p. 30)

The phenomenological facts of a person's lived experience are already meaningfully or hermeneutically experienced. Hermeneutic phenomenologists acquire the data and record them in human science texts. The facts of a lived experience are acquired and recorded in human science texts. Hermeneutic phenomenologists use interpretation to comprehend the essences of humans engaged in their social environments (Sloan & Bowe, 2014; Van Manen, 1990). Researchers using this approach attend to the hidden, subjective meanings found in the contexts of human experience to gain more profound insights (Kafle, 2011). Researchers leverage their own experiences, existing knowledge, and biases about the phenomenon during data collection and analysis to assist them with the interpretation of the human science texts; they openly share and remain conscious of their subjectivities through reflexive writing throughout the research process. In hermeneutic phenomenology, writing is critical. Rich descriptions of the phenomenon, based on participants' stories, not only guide the analysis, but are intended to palpably move the reader to feel connected to the participants' experiences (Van Manen, 1997). The final product is not to create theories about a phenomenon, but to develop plausible insights about human experience (Bynum & Varpio, 2018; Kafle, 2011).

**Snowball sampling.** Snowball sampling is a multistage process relying on a series of referrals driven by a shared desired characteristic within a social network. Researchers leverage network linkages—preferably with strong ties—beginning with a small number of initial contacts or “seeds.” The initial “seeds” provide the researcher with a first wave of participants to study who then guide the researcher to the second wave of potential participants. The snowball analogy refers to an ideal outcome where momentum builds as the vertically-based referral chain becomes as a snowball propelled down a hill gathering size and speed (Biernacki & Waldorf, 1981; Geddes, Parker, & Scott, 2018; Heckathorn, 2011; Sadler, Lee, Lim, & Fullerton, 2010). Saturation occurs when researchers reach their target samples, and no new data or themes emerge (Geddes et al., 2018; Heckathorn, 2011). Snowball sampling is not completely self-propelled because the researcher controls who helps them initiate the study—the people with the known characteristic of interest,—how the investigation progresses, and when to conclude the sampling (Biernacki & Waldorf, 1981).

***Strengths of snowball sampling.*** Snowball sampling provides the researcher with numerous benefits. Snowball sampling is useful when a study requires the sampling of hidden populations and when topics are sensitive or private. In these situations, when attempting to locate closed populations or those populations outside the boundaries of what is considered normal, researchers require the assistance and guidance of an insider (seed) to determine individuals to study (Geddes et al., 2018). Snowball sampling offers a researcher the ability to access a community’s subgroup whose members can potentially guide the researcher to other subsets within the same community. Further, snowball sampling procedures require a few entry points to reach targeted populations (Heckathorn, 2011). The process is also reasonably efficient regarding time, effort, and cost (Biernacki & Waldorf, 1981; Sadler et al., 2010). Moreover,

snowball sampling can produce maximum theoretical understandings of social processes (Faugier & Sargeant, 1997).

***Limitations of snowball sampling.*** The central limitation of this approach relates to representability. Snowball sampling is a type of nonprobability sampling that may or may not represent the ideas of a wider population, making broad conclusions and issues of validity problematic (Heckathorn, 2011). Also, with snowball sampling, there is no statistical method to decide saturation (Cohen & Arieli, 2011). Additionally, snowball sampling may lead researchers to participants with a homogenized mindset; conclusions may be biased. First-wave contacts may direct the researcher to individuals within a particular social circle providing access to individuals who are willing participants, which would exclude individuals that could provide critical data (Heckathorn, 2011). Moreover, professionals may not be aware of individuals in their communities who exhibit the full spectrum of characteristics of interest for a study (Faugier & Sargeant, 1997). Researchers attempt to reach an array of participants; yet with snowball sampling, the process is dependent on complex social networks.

Snowball sampling has also been called chain sampling, chain-referral sampling, or respondent-driven sampling (Heckathorn & Jeffri, 2001; Noy, 2008; Patton, 1990). Historically, despite the widespread use as a sampling procedure, many researchers perceive snowball sampling as an informal method to be used as a last resort. By not having a distinct and agreed-upon name for snowball sampling, it demonstrates, at worst, a subtle disrespect, and at best, a type of confusion regarding this approach (Noy, 2008).

***Phenomenology and snowball sampling.*** Snowball sampling aligns with the methodology of phenomenology. A phenomenologist strives to understand the meaning of events and interactions in the contexts of people's daily lives. Humans construct meanings about reality

based on their perspectives of their experiences filtered through the influence of social interactions. Phenomenologists contend there are multiple ways humans interpret their experiences; human perception is subjective (Bogdan & Biklen, 2003). Phenomenologists must gain access to these subjective spaces through the portal of social networks. When a researcher's interest involves hidden populations, in these cases, the only option available to a researcher may be snowball sampling (Faugier & Sargeant, 1997).

There are multiple complications in accessing potential participants in social networks using snowball sampling. Some topics are private and difficult to even mention (Waters, 2015). The strength of the connection, whether they be weak ties or strong ties influence how snowball sampling proceeds. Some individuals in a social network may fear the consequences of indirectly exposing themselves through providing the names of colleagues. These individuals perceive a risk to their anonymity if their colleagues discuss private conversations or interactions about them (Faugier & Sargeant, 1997; Geddes et al., 2018). Therefore, snowball sampling is dependent on the trust, respect, and friendship of those in the social network who could potentially supply possible participants (Geddes et al., 2018). If individuals within a social network experience an ethos of conflict, researchers' abilities to leverage a full array of variations within that network will be compromised (Cohen & Arieli, 2011). Thus, even though hidden populations provide intriguing opportunities for research, they can present less than optimal conditions for research. Cohen and Arieli (2011) argued, "There are many cases in social research in which one cannot fully uphold these rigid principles of scientific research. Should we give up the attempts to improve our understanding of those cases due to lack of optimal conditions?" (p. 423). Noy (2008) contended that snowball sampling is a highly effective method

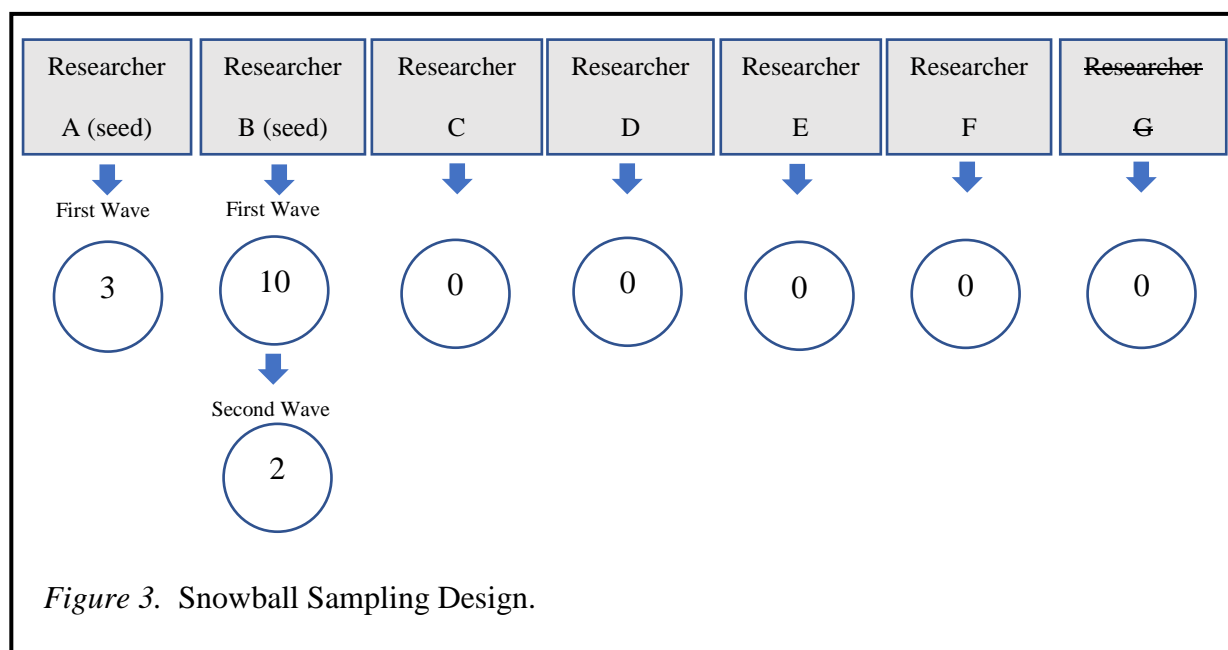
to obtain data in the complex world of social networks and its inherent less-than-optimal conditions.

*What happened.* The first step for me was to contact established lesson study groups that are affiliated with universities and work within school districts. I targeted groups near key researchers in America. I will not disclose the names of these researchers because I may compromise my ethically-driven promise to the participants that I would keep their names confidential. When I contacted these researchers, I hoped that these individuals would offer me contacts to access lesson study research teams in local area schools. I attempted to obtain contacts and ask them to participate in my study as informants.

Before I sent out the recruitment letters, one of the researchers who served in the role as an initial contact, suggested that I include some information about my teaching career. This researcher's insight proved invaluable because my short story positioned me as an insider and helped to propel the snowball process forward. Waters (2015) contended positionality as an insider has a positive effect on the snowball process.

I sent out an email to six researchers explaining my research and provided them with a survey link to recruit teachers. Qualtrics, a platform associated with Syracuse University, was the platform I used to house the recruitment letter and survey. The recruitment letter explained the research; the survey requested interested educators to provide contact information. Lesson study Researchers A, B, and D sent out an email to the teachers they collaborated with on lesson study research cycles. Researcher C expressed sincere interest in asking lesson study collaborators to participate; yet, the collaborators were already engaged in many research projects with Researcher C. Therefore, due to possible research fatigue on the part of the collaborators, Researcher C reluctantly declined to send out the recruitment letter. Researchers E and F did not

respond to my initial email. Finally, Researcher G was a potential recruiter; I decided not to send the email to this researcher because our proximity in the same geographical region would raise issues of trustworthiness in the study. To Researcher B, I sent out my recruitment letter and a link to a lesson study network, which went out to all lesson study participants in the United States and also areas around the world. I received responses from 13 out of 15 participants in the study; they responded directly to my recruitment letter that was offered to them by the researchers (seeds) through the link to the Qualtrics platform. I obtained two other participants through second-wave snowball procedures originating with Researcher B. Figure 3 illustrates how the snowball sampling process procured research participants for this study.



One of my goals in this study was to interview current lesson study practitioners. I was fortunate that that occurred. Another goal was to locate participants who had diverse ideas and experiences of lesson study research groups. I specifically targeted educators who have chosen to disengage with their participation in lesson study research teams (i.e. negative samples). Further, I asked all of the participants if they were aware of lesson study groups that have disbanded, or

of individuals that no longer participate in their lesson study groups. Unfortunately, I was unable to access participants in this study in this category of negative samples. Snowball sampling offers an informal process to reach a population of interest, and it can also be a formal way of constructing conjectures about a social network (Faugier & Sargent, 1997). My previous discussion about certain constraints of snowball sampling may apply in this study.

***My conjectures about snowball sampling.*** My first conjecture concerning why I was unable to access negative cases in this study relates to the configurations of the networks I was able to study. Participants discussed how their lesson study experiences were varied both within lesson study teams and how it affected their broader learning communities. For numerous cultural and climate-based reasons, the participants' experiences of lesson study were both positive and negative. As I discuss later in Chapter 6, participants reported they experienced situations involving issues of conflict, trust, friendship, power struggles, ego, and vulnerability. It is possible the strength of interpersonal connections in terms of friendships, trust, and rapport affected the snowball sampling procedures (Geddes et al., 2018).

My second conjecture centers on snowball sampling and phone interviews. In Water's (2015) discussion about the use of face-to-face interviews, and phone or skype interviews, Waters (2015) states, "For snowball sampling, face-to-face interviews help to generate the trust that scholars claim is required in order to gain referrals" (p. 4). Although I found phone interviews to be effective in providing rich data, possibly I may not have fostered enough trust with the participants for them to feel comfortable to offer me contacts who could report negative experiences with lesson study.

My third conjecture involves how the lack of systematic information about lesson study networks in America hindered my ability to access more negative lesson study cases. There was



no lesson study database from which I could acquire information about educators who have or are employing lesson study. In America, lesson study is considered an alternative approach to professional development; it is not the standard method of professional development.

Participants also discussed the culturally-driven disparity between how American educators implement lesson study and how educators in Japan practice the approach. Cohen and Arieli (2011) stated that a lack of systemic information about populations, cultural differences, and cultures based in mistrust can cause complications for snowball sampling. Still, despite these complications reported by the participants in this study, snowball sampling allowed me to interview 15 educators who were eager to participate in this study. I attributed my success in this regard to the opportunity to gain access to two different social networks.

In this study, snowball sampling provided me access to contacts in various parts of America and three regions around the world. Although the vertically-based social networks did not provide me with negative cases, or many second-wave connections, the horizontal pathways offered more teachers willing to describe their experiences with lesson study (Geddes et al., 2018). The participants I was able to study were passionate lesson study practitioners and facilitators. Even using the phone to collect data, participants were forthcoming and honest about their experiences. Their stories about their positive and negative experiences were valuable to this study. Their negative stories of climate-based issues in their learning communities were insightful and added new information about lesson study's influence on various settings. Even though I explicitly sought negative samples, part of me wondered if I was able to obtain negative samples, would it have added any further information to what was offered by those who participated in the study? Nevertheless, in this study, snowball sampling was both effective and

limiting. Snowball sampling produced data for this phenomenological study that illuminated further understandings about how teachers experience lesson study.

## **Methods**

**Data gathering.** All interviews took place in my home office with the door closed to ensure confidentiality. I was the only one present in the room, as stipulated by the Institutional Review Board (IRB). I used an assortment of instruments to record the interviews. The primary resource I used to record the data was an app downloaded to my iPhone called TapeACall. TapeACall recorded the conversations and stored the audio file within the app. Another feature inherent to TapeACall is the capability to send the audio file to Rev.com for transcription directly. TapeACall and Rev.com have a symbiotic business arrangement which provided me with an efficient method to send the audio data for transcription. I believed it was necessary to employ a second method to record the interviews in the event the TapeACall method failed. To back-up the recordings, I enabled the speaker function on my iPhone and engaged the podcast feature of Garageband to record the conversation on my computer. Garageband podcast formats the audio file into an iTunes file. Therefore, I saved the audio files in Garageband, TapeACall, and within iTunes. With three formats to store the audio data, I felt confident I would not experience the devastation of losing the audio files.

The three interviews with participants outside of the United States required an alternative approach to recording the interviews. In these interviews, the TapeACall app was incapable of dialing the required international phone numbers. In these cases, I used the audio version of Skype using an iPad. I used the speaker function of the iPad to broadcast the interview loud enough to be recorded in GarageBand on my computer. GarageBand formatted the file to an iTunes audio file which I was able to send to Rev.com through email. I backed-up the recording

to a handheld recording device that was capable of modifying the audio data to a digital file to be uploaded onto my computer.

I transcribed the first interview with Isabelle. This process was extraordinarily difficult. It took me three hours to type just 15 minutes of Isabelle's interview, which lasted 1:02:09. However, despite this time-consuming process, transcribing Isabelle's interview was an effective way to begin the thematic analysis process.

Rev.com transcribed the audio files into Microsoft Word documents within a short period. To ensure the transcribers were accurately reproducing the words of the participants, I listened to each of the participants' audio files as I read their transcripts. I found the transcripts to be coherent with the audio versions with only a few minor issues. All transcripts included the entire conversation verbatim. Punctuation was applied appropriately. At times, and not often, when the transcribers experienced problems with understanding the participants, they would write in brackets "[inaudible 00:10:27]." By juxtaposing the audio to the transcription, I was able to rectify most of the inaudibility issues. On rare occasions there was cross-talk and the transcribers were unable to transcribe those parts of the conversations, which was understandable.

Further, infrequently I noted that the transcribers' inaudibility issues stemmed from the participants use of educational jargon (e.g., Common Core, Terc Mathematics, Madeline Hunter). I am a retired teacher of 30 years, and my position as an insider offered me the ability to understand the terms used by participants. Still, at this phase in the study, as I worked with the audio and the transcriptions, it was necessary for me to address my biases about lesson study. As I analyzed each of the transcripts, fully aware of my biases, I intended to honor the foundational

ideas of hermeneutic phenomenology as a means to ensure that the transcriptions reflected the intended messages of the participants.

**Interviews.** Van Manen (1990) discussed how hermeneutic phenomenological interviews have specific purposes and are different from other qualitative research interview methods. He explained:

“The interview has very specific purposes: (1) it may be used as a means for exploring and gathering experiential narrative material that may serve as a resource for developing a richer and deeper understanding of a human phenomenon, and (2) the interview may be used as a vehicle to develop a conversational relation with a partner (interviewee) about the meaning of an experience. (Van Manen, 1990, p. 66)

Van Manen (1990) compels hermeneutic phenomenologists to engage in data collection through interviews to learn about other people’s experiences “to become more experienced ourselves” (p. 62). Of greatest importance for the hermeneutic interviewer is to gather data by leveraging questions that illuminate the nature of the phenomenon as a human experience. Hermeneutic interviewers both gather and reflect. However, this reflection during an interview is different; it is a team effort. The participant and the interviewer engage in a conversation focused on their reflections of a particular human experience.

At the same time, hermeneutic phenomenology research employs similar methods to other studies leveraging conversational semi-structured or in-depth interviews. Semi-structured and in-depth interviews allow for deep exploration of a particular topic, or of a person who has had experiences pertinent to that topic (Lofland & Lofland, 2006). Intensive interviews attempt to offer respondents the opportunity to share their interpretations of their experiences (Fontana & Frey, 2000). The interview process enables participants to examine, reflect, and explore their

understandings of their experiences in a way that is not available to them in daily conversations. Kvale (1996) likens the researcher to a traveler who goes to a different place and returns to the academic community with stories she has learned.

Analysis began during the interview as I was looking for concepts to emerge about the participants' life stories. I was also open to the notion that I was not sure what ideas would surface (Stern & Porr, 2011). As a novice interviewer, my research question provided the big picture focus for the interviews. Similarly, the interview protocol provided the necessary structure for me to follow. Yet, hermeneutic phenomenological interviewing is flexible; it allows the researcher to adjust their questions or their focus according to flow of the interview. That is, during a hermeneutic phenomenological interview, the interviewer collects data and then modifies the foci of the subsequent interviews. In this way, the researcher can fill in the gaps by studying the data and resume the interviews informed by the participants' input. Researchers experience the tension between creating open-ended questions and adjusting the conversation based on critical statements of the respondents (Roulston, 2010). An effective interviewer needs to balance the requirement to ask significant questions but avoid asking questions that pressure participants into forced responses; it requires sensitivity to respondents' feelings and the application of positive interpersonal skills (Josselson, 2013). An interviewer's interpersonal skills are just as critical when collecting data. Humans tend to respond better to other persons who are sensitive, validating, and skilled in listening (Seidman, 2013). To conduct interviews, researchers need to explore with their respondents, not intimidate them (Charmaz, 1991). The researcher needs to make the comfort level of the participants the highest priority (Charmaz, 2006). The interviews should have the feeling of a conversation, a sense that the interaction is informal. It is critical for the researcher to have the mindset that their respondents are their

teachers. The researcher should respect the notion that respondents' perspectives are separate from their own (Sayer, 1992). Researchers honor their respondents as teachers and do not objectify them (Fine, 1994; Stern & Porr, 2011). Researchers should exude empathy (Manderson, Bennett, & Andajani-Sutjahjo, 2006). Most importantly, interviewers who respect their respondents foster in themselves a humble demeanor that is essential to the process.

My intention during the interviews was to make it feel like a conversation; yet, on the other hand, the interviews included a different set of rules that set them apart from ordinary interactions. I listened carefully to learn more about the details of the experience. Additionally, my emotional tone signified to the participant that I was actively listening to him or her (Stern & Porr, 2011). Seemingly insignificant information that is glossed over in everyday conversations became information that I treated as fascinating ideas to explore. I asked my respondents to share examples about their claims about collaboration (May, 1991). Further, I specifically keyed into the respondents' use of words that described feelings. Feelings provided me with further data; therefore, I attempted to clarify the respondents' answers regarding their feelings by asking probing questions while maintaining an empathic orientation and countenance (Josselson, 2013).

As the interview concluded, I moved the interview towards casual conversation and to a positive end. In this way, ending on a positive note provided space for the respondent to recover from feelings of vulnerability during the interview (Josselson, 2013). However, I did not necessarily use the list of questions in a linear format. Ideally, I wanted the initial open-ended questions to serve as the prompts to answer all of the remaining questions.

**Interview schedule.** I was able to collect the interview data for this research project within a short period. Ideally, I wanted to create a schedule that provided at least a week between the interviews to employ phase one and two of the thematic analytic process for each transcript.

August and September proved to be a challenging time for these educators; their teaching responsibilities at the beginning of a new academic year dictated when they could converse with me. Plus, the transcription turn-around time did not always allow me to complete the first two phases of the analysis before I was scheduled to facilitate another interview. Nonetheless, I felt fortunate to have the opportunity to interview these passionate teachers. I surrendered to the reality I had to accommodate the participants' schedules. I was fearful if I pushed my timetable I would lose participants. Table 4 displays the schedule I employed to collect the data for this study.

Table 4

*Interview Schedule*

<b>Participant</b>	<b>Date of Interview</b>
1. Isabelle	August 12, 2016
2. Stephanie	August 17, 2016
3. Sal	August 22, 2016
4. Odessa	August 23, 2016
5. Ilana	August 29, 2016
6. Naomi	August 30, 2016
7. Taylor	August 31, 2016
8. Yanni	August 31, 2016
9. York	September 2, 2016
10. Harold	September 12, 2016
11. Val	September 14, 2016
12. Nadine	September 15, 2016
13. Natalia	September 15, 2016
14. Natane	September 16, 2016
15. Xen	September 18, 2016

**Interview questions.** Below is the list of questions that guided my semi-structured interviews.

## Initial Open-ended Questions

1. How long have you been teaching?
2. How has your practice changed through your career?



3. Part of every district is professional development. Tell me about your experience with that. What was it like? How have you learned as a teacher?
4. You've been engaged in lesson study. Can you tell me about that?
5. Do you find lesson study to be an attractive approach to professional development?
6. What has been your experience of collaboration?
7. How would you describe how you viewed professional development before you engaged in lesson study?
8. Before you engaged in lesson study research groups, what did you know about lesson study?
9. When did you first experience lesson study?

#### Intermediate Questions

1. Tell me about your thoughts and feelings when you learned about lesson study.
2. How, if at all, have your thoughts and feelings about lesson study changed since your participation in lesson study research cycles? What positive changes have occurred in your professional life since lesson study? What negative changes, if any, have occurred? What contributed to your decision to participate in lesson study?
3. Why do you continue to engage in lesson study research teams? If applicable, why did you stop engaging in lesson study? Why? If applicable, why did you return?

#### Ending Questions

1. Have you grown as a teacher since your work in lesson study? What do you most value about yourself now? What do others value in you?
2. After having these experiences with lesson study, what advice would you give someone who is new to lesson study?

**Participants.** Most of the participants who agreed to engage in the study came from the United States. As you can see in Table 5, three of the participants came from other parts of the world, specifically, Thailand, the Netherlands, and Singapore. I was fortunate enough to converse with these educators and add to the sample size. I wondered, though, if it was appropriate to keep these three “outsiders” in the study. I eventually decided to include the three outsiders.

Educators in Japan have been practicing lesson study for decades and like the United States, the Netherlands, Singapore, and Thailand, all imported lesson study. I was curious to discover the three outsiders’ perspectives on lesson study implementation in their countries. I decided to use their experiences to serve as a limited comparison to the views of the participants from the United States. I wanted to discover if they were experiencing the same challenges, frustrations, and successes with lesson study experienced by their American counterparts.

Additionally, in this study, I have sample perspectives from all levels in education including elementary, middle school, high school, and college. I believed the participants’ experiences from outside the country would assist in providing some data about lesson study as potential signature pedagogy as discussed by Shulman (2005a). In other words, could the findings from research cycles in other countries inform the work of teachers in America? Could lesson study’s process be viewed and respected as an international process? I realized having only three educators from outside the United States sharing their ideas was a limitation of the study; still, I believed their perspectives were fascinating and applicable to the study. The table below provides more details about the participants in this study.

Table 5

*Participant Information*

#	Participant	Length of Interview	Role	Nationality	Sex	Content	K-20	Years Experience
1	Stephanie	46:07	<b>Facilitator</b> / Teacher	United States	F	Science	K-8	>25
2	Isabelle	1:02:09	Teacher/ <b>Facilitator</b>	United States Canada	F	Math	9-12/ 13-20	>25
3	Ilana	41:06	Teacher/ <b>Facilitator</b>	United States	F	Math	K-6	15-25
4	Nadine	55:07	Teacher	United States	F	General	K-8	15-20
5	Taylor	53:23	Teacher	United States	F	General	K-6	5-15
6	Odessa	1:05:16	Teacher	United States	F	Math	9-12	5-15
7	Natalia	46:03	Teacher	United States	F	Economics	13 & 14	15-25
8	Val	57:40	Teacher	United States	F	General	K-8	>25
9	Naomi	1:07:01	<b>Facilitator</b> / Teacher	United States	F	Math	K-6	15-25
10	Sal	59:16	<b>Facilitator</b>	Netherlands	M	Math	Non-Profit	>25
11	York	1:05:08	<b>Facilitator</b>	United States	M	Psychology	13-20	>25
12	Yanni	44:44	Teacher/ <b>Facilitator</b>	United States	F	General/ Science	K-6/ 13-20	5-15
13	Harold	32:08	Teacher	United States	M	Biology	13-20	15-25
14	Natane	1:12:55	<b>Facilitator</b> / Teacher	Thailand	M	Math	13-20	>25
15	Xeno	53:05	<b>Facilitator</b> / Teacher	Singapore	F	Lesson Study/ Cooperative Learning	13-20	>25
		<b>Average Interview Time: 54:46</b>	<b>Facilitators 9/15</b>		<b>11 Female 4 Male</b>		<b>(4) K-6 (3) K-8 (2) 9-12 (5) 13-20 (1) Nonprofit (4) Combination</b>	<b>(7) 25&gt; (4) 15-25 (1) 15-20 (3) 5-15</b>

## **Data Analysis**

I employed Van Manen's (1990) thematic analysis as a means to deeply explore the varied perceptions of the participants' lesson study experiences. My analysis procedures modeled other researchers' use of Van Manen's principles (Hammer, Mogenson, & Hall, 2009; Kierski, 2014; Sloan & Bowe, 2014). In this study, due to the volume of data to analyze interpretively, I applied Nvivo qualitative research software throughout the process. To isolate the thematic aspects of the phenomenon of lesson study, I used the following systematic method.

First, using a holistic approach, I iteratively read each transcript with openness to gain a generalized sense of how the participants experienced lesson study. The guiding focus in this phase was to mine for phrases that captured the fundamental meanings or significance of the text as a whole. Then, in my notes, I attempted to encapsulate those underlying meanings into phrases about each of the participants' overall perceptions of their experiences of lesson study.

The second phase is called the selective reading approach. I iteratively read each transcript and simultaneously listened to the digital audio version of the conversation. Juxtaposing the audio to the transcript enabled me to check for accuracy, and at the same time, tune into participants' voices. This second phase assisted me in revealing what statements or phrases appeared to provide essential ideas that described the participants' experience of lesson study. I highlighted these essential sentences and began the process of clustering meaning units in the Nvivo qualitative software.

In the third phase, I took a deep dive into the transcripts using a detailed, or line-by-line, approach to uncover recurring themes in the phrases or statements of the participants. My main focus in this phase of the thematic analysis was to read each sentence while asking the question, "What does this sentence or sentence cluster reveal about the participants' experiences of lesson

study?” Using Nvivo, I highlighted sentences or elements in the text that I believed were descriptive of or provided evidence that supported participants’ holistic ideas about lesson study. Nvivo assisted me in organizing these sentences into meaning units. I moved back and forth between the meaning units creating selective themes from each transcript. In the Appendix, Table A1 shows how I applied the definitions of each meaning unit to the text for organizational purposes.

In the fourth phase of analysis, I consolidated the meaning units and clusters into themes that helped describe the participants' experiences of lesson study. Van Manen’s (1990) essential themes called *Lifeworld Existentials* provided the inspiration and the structure to guide my construction of themes. Lifeworld Existentials include, (a) lived space-spatiality, (b) lived body-corporeality, (c) lived time-temporality, and (d) lived human relation-relationality (Van Manen, 1990). Additionally, these themes served to assist me in organizing the final written document. Table 6 provides a few examples of how I employed these existential themes.

Table 6

*Examples of Van Manen's Lifeworld Existentials in Data*

Lifeworld Theme	Van Manen's Definition of Lifeworld Themes	Examples of Lifeworld Themes Unearthed in Data
Lived space (spatiality)	"Lived space is felt space. An existential theme relating to the landscape in which human beings move and find themselves at home. Cultural and social conventions associated with a space that gives a space certain quality dimensions." <sup>a</sup>	<ul style="list-style-type: none"> <li>• Increased feelings of professionalism on lessons study teams</li> <li>• Feelings of efficacy and comfort engaging in lesson study process</li> <li>• Unfocused professional learning communities</li> </ul>
Lived body (corporeality)	"In our physical or bodily presence we both reveal something about ourselves and we conceal something at the same time. When the body is the object of someone else's gaze, it may lose its naturalness." <sup>b</sup>	<ul style="list-style-type: none"> <li>• Fear of being observed during public research lessons</li> <li>• Challenges inherent to the role of informal teacher leader</li> <li>• Conflict avoidance</li> </ul>
Lived time (temporality)	"Is subjective time as opposed to clock time. The temporal dimensions of past, present, and future constitute the horizons of a person's temporal landscape." <sup>c</sup>	<ul style="list-style-type: none"> <li>• Personal histories as a teacher and with lesson study</li> <li>• Frustration with perceived trajectory of lesson study in America</li> <li>• Time and the lesson study process; the angst of time out of the classroom</li> </ul>
Lived human relation (relationality)	"Is the lived relation we maintain with others in the interpersonal space that we share with them. As we meet the other we are able to develop a conversational relation which allows us to transcend ourselves." <sup>d</sup>	<ul style="list-style-type: none"> <li>• Characteristics of collaboration before lesson study, within lesson study teams, with colleagues in wider community</li> <li>• Toxic conflict</li> <li>• The structured lesson study process</li> </ul>

*Note.* The information in the first two columns of this table is from Van Manen (1990).

<sup>a</sup>From pp. 102-103. <sup>b</sup>From pp. 103-104. <sup>c</sup>From p.104. <sup>d</sup>From pp.104-105.

The following Table 7 shows the selective theme process I went through with all of the meaning units.

Table 7

*Example of How I Applied Van Manen’s Thematic Analysis Process*

Raw Data	Selective Meaning Unit	Selective Meaning Unit Defined	Lifeworld Theme	Lifeworld Theme Defined	Essential Themes of Lesson Study/ Administrators
<ul style="list-style-type: none"> <li>• “He supported it by giving the home school bus.”</li> <li>• “Our principal allowed us to go do a lesson study conference three years ago, which started the spark for us to continue the work.”</li> <li>• “The principal said, ‘We’re doing this for the next three years. We’re going to really put our effort into it and see what we can learn from this.’”</li> <li>• “I realize how much work there is in getting a school to really buy into this entirely. You need not just teachers, but you need the principal and some curriculum leadership in the district to buy in and to support it.”</li> <li>• “I’ve also assured him that once he sits on a lesson study meeting, watches some teaching through problem solving lessons, and research lesson, I said he won’t turn back. I said, ‘Based on your philosophy, I have no doubt that you’re going to be with us.’”</li> <li>• “We have to sell the administrators on it which is really the hardest group for me to crack.”</li> <li>• “The superintendent doesn’t understand what lesson study is and instead of educating himself, he’s putting roadblocks in our way.”</li> <li>• “It’s very difficult to see the impact on test scores in a short period of time; they’re not sure whether the amount of time and investment really pays off.”</li> <li>• “I think the other administrators that I’ve had any dealings with are typically, they’re supportive at an arm’s length. But when it came down to the actual nuts and bolts of any initiative, I don’t think they really do get involved.”</li> <li>• “The administration [is] not being able to stay focused... the superintendent, who does want to institutionalize lesson study, is working with her administrators right now to try to help them see that coherence.”</li> <li>• “I don’t know that they prioritize lesson study. They have too many other things competing for their time and I don’t think they have the time to really understand the full circle of it.”</li> <li>• “The first thing the principal said was ‘Oh, this is a terrific teacher, she gave a great lesson.’ It’s really hard to break ourselves of those habits. They have to be there to begin to shake loose that mantle and do something new with their observation.”</li> </ul>	<p>Administrators supportive of lesson study</p> <p>“Selling” lesson study to administrators</p> <p>Administrators’ non-support of lesson study</p> <p>Administrators’ misconceptions about lesson study</p>	<p>Participants talked about administrators supporting their lesson study work.</p> <p>Participants talked about their efforts to “sell” lesson study to their administrators</p> <p>Participants talked about administrators not supporting their lesson study work.</p> <p>Participants described administrators’ good-faith efforts to implement lesson study without fully understanding the complex rationales undergirding the process.</p>	<p>Lived human relation (relationally)</p> <p>Lived time (temporality)</p> <p>Importance of Administrators</p>	<p>Participants described their experiences with administrators in recognition of the reality that administrators are critical to the process and its growth in the community</p>	<p>Difficult to “sell” lesson study to administrators who do not fully understand lesson study.</p> <p>To support lesson study, administrators need deeper levels of understanding of lesson study’s constellation of features, its benefits and its coherence with the goals of American schools.</p> <p>Participants realized the inertia of the culturally-based status quo was a potent challenge to lesson study.</p> <p>Lesson study is perceived as another option in an already crowded professional development system. Administrators are overwhelmed by competing initiatives.</p>

Note. Based on Van Manen’s (1990) method of conducting thematic analysis as applied in this study.

In the fifth and final phase, I attempted to create a phenomenological text using intuition, reflection, and care to represent the experiences of the participants. I organized the text using essential themes that emerged through the thematic analysis process. My notes, memos, and drafts throughout this multi-year process all served as steps in this final phase of the analytic process and in construction of the final document. Moreover, this final document or dissertation was intended to inform educators interested in employing lesson study in the context of American schools.

### **Saturation**

I analyzed the data with the idea that I was seeking to discover emerging themes informed by Van Manen's (1990) Lifeworld concepts. I applied the interview protocol with each of the participants; yet, new themes emerged which led me to modify questions for further clarification of their experiences. My data collection proceeded in this manner until saturation. Although it was difficult for me to pinpoint a specific number of interviewees to achieve saturation a priori, my flexible goal was to interview at least 10 participants. Fortunately, I was able to interview 15 participants. Guest, Bunce, and Johnson (2006) contended that if research focuses on a shared belief, behavior, or perception involving a relatively homogenous group, then a sample of 12 will lead to saturation. In this study, all participants held lesson study in high regard. Although I actively sought negative cases where teachers rejected lesson study, snowball sampling only provided sample homogeneity. Thus, considering this idea of participant homogeneity, my sample size of 15 participants was adequate in reaching saturation. Morse (1995) agreed with Guest et al., (2006) that greater sample cohesiveness provides a faster rate of saturation, but also less generalizability. However, Morse (1995) also argued snowball sampling techniques will cause a slower rate of saturation.



Qualitative research scholars are engaged in a robust discussion regarding this concept of saturation. Some argue the use of sample size numbers as a means to decide when saturation occurs is questionable, as discussed by (Guest et al., 2006). Glaser and Strauss (1967) believed saturation occurs when researchers have identified, explored, and exhausted all conceptual categories that emerged in the study. If no further insights or issues arise, the theory is comprehensive and trustworthy. Similarly, Nelson (2017) suggested the term *conceptual depth* is more applicable to qualitative research than the term saturation which is used by quantitative researchers. Dukes (1984) contended that a phenomenologist focus and approach leads them to ask different questions than traditional empiricists. He stated:

Given the aims of phenomenological research, sample selection is governed by considerations other than those we are used to in empirical-statistical approaches. For example, the sample size need not be large. Strictly theoretically, a sample size of one would suffice. The aim of a phenomenological study is, finally, to uncover the necessary structural invariants of an experience, and those invariants are fully discoverable in any individual case. (Dukes, 1984, p. 200)

My ability to reach conceptual depth in this study was dependent on the variations in the themes that emerged in the data based on the participants' personal life stories, and in particular, points of cogency (Van Manen, 1990). Morse (1995) states researchers need to sample all variations that emerge within the data and give these variations equal attention until saturation occurs. In this study, the pattern variations consistently emerged. Even with sample homogeneity, I considered the participants' reports of positive experiences with lesson study just as important as the "negative cases" or negative stories. When I believed that each theme, concerning the significant variances, had been clearly understood in terms of both breadth and

depth, I then considered whether or not saturation occurred. The essence(s) of lesson study emerged as common patterns of experiences among the participants. I believe this study of 15 loquacious and honest lesson study practitioners is trustworthy regarding this critical idea of saturation.

### **Trustworthiness and Authenticity**

In this section, I address issues of trustworthiness and authenticity (Lincoln & Guba, 1986). In in this study, I used bracketing, debriefing with committee members, and clear articulation of my analytical process linked with established research procedures (Van Manen, 1990). I also used rich descriptions of the lesson study phenomenon using participants' quotes to illustrate their lived experience. Also in this section, I explain why I did not employ member checking.

**Bracketing.** As I worked to analyze the large quantity of data through the iterative process inherent to hermeneutic phenomenology, I needed to consistently address my biases throughout the lengthy research process. Hermeneutic phenomenology honors researchers' reflexivity of their biases as a critical and necessary facet of the interpretive process (Van Manen, 1990). Biased was used to an analytical advantage. Bracketing adds to the trustworthiness of the study (Armour, Rivaux, & Bell, 2009; Cohen & Crabtree, 2008).

“Recognizing and incorporating our personal perspectives into data collection and analysis contributes additional dimensions to the interpretive process” (Bynum & Varpio, 2018, p. 253). I accomplished this by writing notes and drafts, and as I wrote the final document; bracketing assisted me in admitting or owning my beliefs, perspectives, and perceptions of my lesson study experiences (see Coda). In this way, I was better able to recognize them as different from the participants' stories (Shenton, 2004; Williams & Morrow 2009).

My biases about lesson study were (a) lesson study was my favorite professional development approach, (b) I was frustrated by teachers' and administrators' misconceptions of lesson study, and (c) I was disconcerted by my perception—based on my experiences—about administrators and lesson study. I perceived administrators, who played critical roles as educational leaders, lacked the necessary intellectual curiosity to learn about lesson study as a research process. As a lesson study facilitator, I was unable to help administrators understand lesson study was an effective reform-based, sophisticated version of professional learning communities aligned with the goals of American education.

**Debriefing with committee members.** My discussions with committee members about my analysis enhanced the bracketing process. For example, even after bracketing, my committee noted my tendency to blame administrators for some of the obstacles experienced by the participants. One of my selective meaning units during thematic analysis was the title, “Hostile Administrators.” My debriefing sessions with committee members served to bring more profound awareness of my biases of administrators in my writing (Shenton, 2004). Due to the limitations of snowball sampling, I was unable to interview administrators about their lesson study experiences, which would have provided me with rich data to inform the study. As a result of bracketing and my debriefing sessions, I was able to step back and observe how these biases were influencing my analysis to provide the space for the participants' perspectives to take center stage.

**Clear articulation of analysis process.** Previously, in the data analysis section of this chapter, I clearly articulated my employment of the hermeneutic phenomenological thematic analysis process as explained by Van Manen (1990). Adopting this well-recognized research

process provided enough detail about my implementation of the process to work towards research integrity and trustworthiness (Shenton, 2004; Williams & Morrow 2009).

**Rich descriptions of participants' stories.** When discussing the concept of research validity, Cohen and Crabtree (2008) stated:

Hallmarks of high-quality qualitative research include producing a rich, substantive account with strong evidence for inferences and conclusions and then reporting the lived experiences of those observed and their perspectives on social reality, while recognizing that these could be multiple and complex and that the researcher is intertwined in the portrayal of this experience. The goal is understanding and providing a meaningful account of the complex perspectives and realities studied. (p. 334)

Rich descriptions of the phenomenon establish the context of the study and provide space to make comparisons to determine if the overall findings exemplify the actual situations experienced (Shenton, 2004). Useful research requires the researcher to adroitly use participants' quotes that provide evidence to support their interpretations and that appropriately answer the research question (Williams & Morrow 2009). In my descriptions and interpretations, I treated the participants' reports of lesson study obstacles equal to my descriptions of the benefits of lesson study. Despite my inability to access negative cases, participants provided honest descriptions of adverse situations within lesson study that informed the analysis.

**Member checking.** I did not use member checking in this study. Member checking involves giving the transcript or the completed analysis to the participant to correct or add further information (Armour, Rivaux, & Bell, 2009; Cohen & Crabtree, 2008; Morse, 2015). Member checking can create problematic challenges. The data in this hermeneutic phenomenological study was analyzed interpretively. If the participants disagreed with my interpretations, should I

make changes accordingly? Member checking about the analysis is not practical (Morse, 2015). Would the participants remember what they said, or what they did; what if they introduced discrepancies (Cohen & Crabtree, 2008)? Participants did not have access to the other transcripts; due to confidentiality concerns, I would not have provided them either. However, during the interviews, I referred to comments made by other participants in previous interviews to explore a meaning unit further. For example, I said, “During the interviews, you mentioned the ego. That has come up in other interviews, too. Can you expand on that idea about ego and collaboration or anything else that you want to talk about ego?” or “Some of the participants in this study have mentioned on lesson study teams there are some pretty heated arguments. How do you handle the disagreements about certain strategies or methods to use in a lesson?” This type of question is not member checking. As a questioning strategy, it introduces a prompt based on other interviews from the same study; this strategy also attempts to uncover meaningful patterns among the multiple samples.

## **Conclusion**

In the light of these rich, varied experiences with lesson study, I believe I have a unique perspective to bring to a research project. My experiences in lesson study serve as a point of reference, as a tool to observe and analyze the data. My experiences enable me to empathize with the participants and their perceptions of lesson study whether they be positive, negative, or in the gray areas. In terms of my bias, which we all have, I questioned and reflected on my judgments by the persistent application of reflexive thematic analysis (Van Manen, 1990). In this way, my experiences with lesson study served to inform and enhance my exploration of teacher relationships in the context of lesson study research cycles. The data I collected relates

specifically to the respondents' perspectives of his or her relationships with colleagues within the context of the enactment of lesson study research cycles.

## Chapter 4

### Professional Development Prior to Lesson Study

This chapter reports on participants' answers to the questions about their professional development before they engaged in lesson study research cycles. These questions were intentionally designed to approximate a baseline for comparative purposes, and to foster a conversational atmosphere before moving on to the main focus of my research—their lesson study experiences. The statements and questions I used to address professional development prior to lesson study were the following: “Part of every district is professional development. Tell me about your experience with that. What was it like? How have you learned as a teacher?” I was surprised by the extent of the data I collected on this related, yet peripheral issue. The data are complex because participants shared some professional development experiences, but did not share the same set of experiences. The variance in the type and scope of their prior experience made pattern-finding difficult.

The data are messy and complicated; I will attempt to unpack the details, and describe the variations using text supplemented with diagrams. Participants reported various professional development experiences, which I sorted into three professional development types during analysis: (a) self-directed, (b) lecture-based, and (c) group-based. Each type included certain characteristics depending on the distinctive experiences of each participant. The characteristics were not universal to each of the three professional development types. In this chapter about participants' professional development experiences prior to lesson study, I organized the characteristics into two sides. These two sides did not manifest as opposites; the characteristics manifested in varying degrees depending on the type of professional development or how the facilitators of the professional development organized the experience. These pairs of

characteristics included: sustained-not sustained, applicable-inapplicable, passive-active, live expert-absentee expert, informal-formal, and productive dissent discourse-destructive conflict. The nuances of the two-sides of the characteristics will be discussed in more detail later in the chapter as reported by the participants.

Participants did not experience the professional development and the characteristics in the same way. Some appreciated certain professional development opportunities, and others found the same professional development opportunities to be ineffective. Or, due to variance in the professional development, participants reported benefiting from professional development during one experience but felt frustrated attending the same type of professional development at another time. Further complicating the situation, participants reported that they learned in different ways despite attending similar professional development sessions. Moreover, I was unable to ask questions of the participants' colleagues who attended the same professional development events. It is possible their colleagues perceived the experience differently. This interplay between their personal experiences, their learning needs, their years of experience engaging in professional development, the multiple professional development opportunities, and the characteristics of those professional development opportunities demonstrated that the landscape of in-service teacher education is complex with multiple components and moving parts.

Before I begin to discuss the three professional development types, an additional data pattern surfaced that deserved attention. This pattern included how the participants used terms to label their professional development opportunities interchangeably. Not only was there variance within the system in relation to professional development opportunities, and the characteristics of



opportunities, there was variance in the ways the participants labeled their professional development.

### **Overlapping Terms**

When describing their experiences, participants used the words conferences, workshops, *initiatives*, *training*, *in-service*, *seminars*, and *projects* interchangeably to describe the formats of their professional learning opportunities. Each term had a set of attributes. Some of these attributes are unique to the term, but many attributes are shared with other terms. However, the participants tacitly indicated that the distinctions between the different types of professional development were inconsequential; the descriptors they applied merely pointed to their professional development events. I did not ask the participants to tell me the official titles of their professional development. It is possible the participants officially engaged in a workshop, but they described the workshop as a conference, in-service session, or training.

The Oxford Dictionaries defines the terms used by the participants in the interviews to describe professional gatherings designed for teacher learning in the following ways:

- Workshop – “A meeting at which a group of people engage in intensive discussion and activity on a specific subject or project” (“Workshop,” n.d.).
- Conference – “A formal meeting of people with a shared interest, typically one that takes place over several days” (“Conference,” n.d.).
- Initiative – “An act or strategy intended to resolve a difficulty, improve a situation or use a fresh approach to something” (“Initiative,” n.d.).
- Institute – “An organization having a particular purpose, especially one that is involved with science, education, or a specific profession” (“Institute,” n.d.).

- Project(s) – “Individual or collaborative enterprises that are carefully planned and designed to achieve a particular aim” (“Project,” n.d.).
- Seminar – “A conference or other meeting for discussion or training” (“Seminar,” n.d.).
- Training – “Action of teaching a person or animal a skill or type of behavior” (“Training,” n.d.).
- In-service - “A type of training intended for those actively engaged in a profession or activity” (“In-service,” n.d.).
- Foundation- “An institution established with an endowment for example a research body or charity” (“Foundation,” n.d.).

Conference, workshop, in-service, training, and seminar are terms referring to teachers gathering to meet about an educational issue or idea. These five terms could be subcategorized further. Conferences and workshops share terms within their respective definitions. They can be classified differently than in-service, seminar, or training.

These professional development events provide space for educators to address deeper theoretical and pedagogical ideas. A conference is a formal meeting of people with shared interests, and typically requires multiple days to complete. Workshops are also meetings of people engaging in intensive discussions on a shared interest, subject, or project. These two terms (conference and workshop) are similar because they are both meetings of people who have shared interests on a particular topic. The subtle difference between the two terms has to do with duration. Conferences require several days (more than two) to complete. Workshops could be concluded in a day or 2 days. It is understandable how these two terms were used interchangeably.

The definitions from the Oxford Dictionary above describing in-service, training, and seminars all include the word training. Training as a strategy for professional development is more specific in scope as compared to conferences and workshops. However, the definitions of workshop and conference do not include this word. Training is defined as “the action of teaching a person or animal a skill or type of behavior” (“Training,” n.d.); this distinction carries with it a Pavlovian-type quality. Therefore, I categorized training, in-service, and seminars as gatherings designed specifically for educators to learn a predetermined skill. In trainings, according to my classification, deeper discussions about theoretical issues are given minimal attention. Trainings are also shorter in duration; the topic in question is addressed within a short time-frame due to its singular focus.

Participants used the terms projects and initiatives. Projects and initiatives are ideas that serve as the focus of the teachers’ discussions during their professional development. Sometimes the participants used the term project interchangeably with a workshop. In the definition for a workshop, the term project was used to describe an idea discussed in the workshop. The two terms, projects and initiatives, appear related, yet there is a subtle distinction. An initiative refers to a specific act or strategy that leverages a new approach to solve a specific problem. Projects are either individual or collaborative enterprises that are carefully planned and constructed to achieve a particular aim. Both projects and initiatives may include research. A project could include implementing a new strategy as well. In this way, they are linked. Nevertheless, projects do not have to include alternative approaches to solving a problem; they could include integrating multiple approaches, or traditional ones. The definitions differ because projects are broader, while initiatives are more focused, and designed to research or engage in alternative methods.

Other terms some of the participants used were *foundation* or *institute*. Similar to the terms initiative and projects, foundations and institutes are not terms that describe professional development events, but entities that support teachers or other groups requiring funding. Foundations fund research using endowments on a variety of topics including charities. An institute is an organization having a particular purpose, especially one that is involved with science, education, or a specific profession.

The following quote provides an example of how the participants overlapped the terms they used to describe their professional development experiences. Here is what “Val” said:

I was fortunate in early 90's, mid 90's, to get involved with a math project, which is a statewide project that has maybe 11, 12 regions and you go to a summer institute for a month long and then you have follow-ups during the year and that pulled me into the other big statewide initiatives.

As with the other participants, Val was not offered the opportunity to define her terms because I did not probe her response any further. Val’s quote includes the terms project, *follow-ups*, initiatives, and *month-long institute*. After reading Val’s transcript, I wondered if she was using the terms project and initiative in place of conference or workshop. Or, was Val overlapping the terms project and initiative? Val may have known the difference, but either way, her response was not fully clear. Val said by attending the institute (the forum supporting the initiative) she became cognizant of other large-scale initiatives. I assume the follow-ups Val spoke of were constructed to sustain the mathematical practices emphasized during her summer work. Val used the term initiative to describe this professional development event; however, her description of the event better aligned with the definition of a conference. In the following quote, “Nadine” also used the term institute along with foundation, and workshop.

I've had professional development working with organization [sic], an area called The Math Plan, which used to be part of a foundation but it's specifically around the mathematical experience. Those different workshops and things [sic] are based on, some are institutes and such.

Nadine discussed her participation with an organization, which in the past was formally linked to a foundation that supported teachers' professional development around math. However, her comments about workshops, institutes "and such" were not clear. Her words "and such" implied she was not sure of the terms, or she did not recall the specific, official term for professional development she described. On the other hand, it was possible Nadine used the terms workshops and institute interchangeably. Again, I did not ask further probing questions. Nadine applied the term foundation true to the definition.

"Harold" spoke about his attendance at a variety of professional development events. As with Val and Nadine, he was not offered the opportunity to clarify his terms with follow-up questions. His interview had to be cut short due to his intense schedule at his university. Harold said:

Jake Peterson, at the Center for Innovative Teaching, he runs a lot of different workshops. I've gone to our faculty college a couple times, which is basically a week of in-depth training. I also did our faculty scholars program, which is another week. You actually focus on a solo project.

In this quote, Harold used the terms workshops, *program*, and *solo projects*. He said his faculty scholars program lasted about a week. According to the definition, he experienced a conference because it lasted several days. He also said he attended *in-depth training*. Those two words, in-depth and training, as he used them, did not match the definition for training. In-depth

seems to correlate to either a conference or workshop where attendees have opportunities to engage in deeper theoretical and pedagogical discussions about methods, rationales, and research of a topic. Plus, Harold said his training lasted a week. According to a number of other participants, trainings were short-lived events.

### **Training as Professional Development**

Not only was the term training overlapped with workshops or conferences, participants reported the term training was used by educators in their local contexts interchangeably with the umbrella term professional development. “Taylor” and “Naomi” questioned this overlap. Taylor shared her ideas about the distinction between professional development and training, and in her experience, these two terms meant two distinct types of professional development. In the following quote, Taylor said “they.” I am not sure if “they” referred to the facilitators of the training or her administrators who labeled her training as professional development. Taylor believed “they” used the two terms incorrectly, because in her view, professional development is dissimilar to training:

I think training and professional development are very different. They would do training, but they would call it professional development, about different programs. We would learn about a test creation, what sites we had bought into. We would learn about how to use unit planning, what sites we had bought into. The professional developments were more trainings about how to use some sort of website that the district had paid money for.

Naomi compared training to her experience of lesson study. She said, “At training you go outside of your school, it's like learning in a vacuum, and you come back and you're supposed to apply that somehow? Whereas lesson study is applicable naturally because it's happening live in

the environment.” Naomi briefly referenced lesson study in this quote. Lesson study, the topic of this study, will be discussed in detail in the next chapter.

Notwithstanding the overlapping, or interchanging, of the terms training and professional development, training, in general, was perceived negatively by several participants as a mechanism for professional development. Participants reported attending ineffective training focused on both their district’s adoption of a new textbook and how to best leverage their district’s website. Another example of training reported was data-driven training, which endeavored to make sense of test scores to improve instruction.

**New textbook or web page training.** Val received training in implementing a new textbook bought by her district. “That was in-service you got, it wasn’t pedagogical, I guess is what I am trying to say.” “Ilana” stated, “The professional development was 2 horrendous days of people hired by a textbook company to come in and show us how to use the book to go page by page, and how to go online to print off more pages.” Taylor described a similar experience:

We also got a new math curriculum. They had us trained in how to use the different elements to the math curriculum, which is just a very traditional textbook curriculum. We spent like 2 years, all of our professional development days were spent learning how to make vocabulary cards out of the traditional textbook and odd things like that. I would say we haven't had any true professional development provided from the district. We've had a lot of trainings on specific resources, if that's what you want to call them, that they have bought for us.

Similar to Taylor, Val was also frustrated. She said her professional development time—2 years—was taken up with training her to create vocabulary cards to enhance a traditional

textbook. Val also described another instance of questionable use of her professional development time in regards to training focused on data from test scores.

**Data-driven training.** Val talked about a data-focused in-service that she found unappealing. In the in-service, the facilitator showed Val how her students' test scores compared to other students in her district. However, the facilitators of the in-service did not offer strategies but infused a subtle blame at this professional development event. Val explained the overall message she received at the training: "Your data ...it's really bad. Do something about it kind of thing." Val's training about data did not offer her guidance. The impetus was on Val to construct methods to leverage the data to improve instruction.

Another teacher, "Isabelle," believed that meetings or trainings focused on using data squandered the limited time available for professional development:

Oh, my goodness. Teachers are spending hours reading results of tests that are not well connected to their curriculum from kids that they had a year ago. And trying to figure out how to approach the kids they've got now. They're studying all this data, which theoretically is supposed to help improve instruction. We don't get any research that it does [improve instruction]. They're not really focusing on their practice. Which is, from my very beginning, what I was worried about, was a lot of the kids in that classroom every hour. There's a limit to what you can gain from looking just at items, especially when they are so removed from your students and now.

Participants reported, for the most part, professional development training sessions were technically oriented, one-size-fits-all, authoritatively-based, short-lived events that instructed the participants in school or district expectations. Basically, participants explained that training was limiting, inapplicable, tedious, and used to apply knowledge for teachers to implement district



materials, or to apparently motivate teachers to improve test scores. Training and professional development were perceived to be two distinct mechanisms for teacher learning, but the terms were used in overlapping ways by some of the participants and other educators in their local contexts.

This idea of overlapping terms may seem trivial. Participants had a shared vocabulary; however, this common language, a seemingly innocuous, insignificant component of professional development was ambiguous. The ambiguous language was common; it is how the participants talked. The terms used in this common language had varied meanings for the participants. Not only did this phenomenon further complicate an already complex situation for me to analyze in this study, more importantly, it signaled confusion within the system surrounding professional development.

I will now turn to the three types of professional development to describe the participants' learning experiences before they engaged in lesson study. To begin, I will examine self-directed professional development, followed by lecture-based professional development, and finally I will discuss the most tangled, confusing and multifaceted type, group-based professional development.

### **Self-Directed Professional Development**

The self-directed professional development was the least reported in this study. Those who did report being involved in this type of professional development communicated they were satisfied with the experience. Participants who were intrigued by an idea, pedagogical problem, or perceived weak area in their content knowledge or instructional capacities chose a topic to study. With self-directed professional development, participants had the opportunity to apply their passion for learning, their propensity to engage in self-reflection (using their own students

to inform those reflections), and their desire to seek out professional knowledge beyond what was offered by their districts. Those teachers/professors who chose the self-directed format felt supported by their university to engage in this endeavor. Self-directed professional development is intuitively logical for educators at the university level; generally, they are familiar with research. Self-directed professional development has similar characteristics to research; yet, it can be more informal in nature, making it more accessible for in-service teachers working in school districts.

Taylor stated, “I learn by doing research and trying it out on my own.” “Natalia” reported, “I would say that I gather the ideas from these different sources and I implement them in my classroom, and then I collect my own data to see if those things are effective.”

“York” became intrigued by a new method called problem-based learning. He proceeded to access the literature on problem-based learning to further inform his thinking and then gave it a go in his own classroom. York enhanced his knowledge of the approach by observing his students’ reactions to the new course structure. He spent several years studying how to implement problem-based learning in the most effective way possible. York believed his extensive study of this method was an effective form of professional development. York explained:

At one point in the past, I read a little bit about problem-based learning, and got completely obsessed. I got so interested in it that I redesigned a class into a problem-based learning format, and spent several years really trying to more effectively implement that sort of approach. That came about simply by reading about it, hearing about it, and then learning enough about it to think, yeah, I think I can do this ... And then taking a stab at it.

“Stephanie” described herself as a self-seeker of professional knowledge. Her motivation to increase her content knowledge fueled her desire to achieve National Board Certification, a rigorous form of professional development that leveraged inquiry and research-based methods approved by New York State education officials. In later years, Stephanie redoubled her efforts to renew this rigorous formal accreditation. She found the certification process nurtured her reflective skills. It also gave her a different perspective about her students that she hadn't thought about before she engrossed herself in this intensive form of professional development. Stephanie said:

I am kind of a self-seeker, there was something that I was interested in I researched it myself, then, you know you get influenced by other people of course and I am a national board-certified teacher and a renewed national board-certified teacher so I went through that process, and that changed my teaching. It made me more reflective and gave me some perspective on student learning that I hadn't really thought about prior to that.

Harold explained how he used a self-directed professional development opportunity called *Backwards Design*. During the professional development sessions, he was asked to choose a topic from one of his courses as a focus of the backwards design strategy. Harold was intrigued by this backwards design because it was directly applicable to the work he was already doing in his classroom. Harold was required to integrate the backwards design process using a step-by-step tactic sustained throughout the semester. He believed this method significantly altered the nature of the course, and had a positive influence on his students' learning. Harold said:

They're probably a little bit more traditional, like backwards course design or something like that where you pick a project you want to have the students work on, and then figure

out how to integrate it step-wise throughout the whole semester. That changes the whole nature of the course more, which is, I think, important.

Ilana described a writers' workshop with a facilitator who led the workshop using a basic plan that was tailored to fit each of the participants in attendance. In this way, Ilana was involved in self-directed professional development, and was offered valuable advice from an expert at the workshop. Ilana was required to apply the structured concepts described in the workshop to the assignments she required of her students. Ilana believed she benefited from this interactive, applicable form of professional development:

I did a writing professional development that was teaching writer's workshop and that was more interactive, the guy led with a plan and no book. They had us teach the kids and do our own assignments. I actually bought out a whole unit, so that one was good, but that was 5 years ago.

All participants who chose this self-directed approach believed their experience was positive. Participants reported self-directed professional development was effective because it was sustainable, they chose their topic of study, and it was naturally applicable to their classrooms. Their ability to choose a topic of study nurtured in the participants a sense of empowerment, and leveraged their educational passions. The self-directed format was the only forum that garnered unanimous support from those who reported using this approach for professional development.

The two university professors had the skill-set, the mind-set, and the support to communicate their learnings from self-directed professional development through journal articles. In this way, their learning was shared with the wider profession and was offered to those who were able to access it. On the other hand, teachers within districts, who engaged in the self-

directed format in this study, did not report sharing their new knowledge from their self-directed studies. Learning about teaching in this manner, for the most part, kept the knowledge contained to the one teacher at worst and at best the knowledge was shared with a small educational community. Educators within the wider profession won't have access to the knowledge. Moreover, learning about the results of self-directed professional development through sharing or by reading does not guarantee deep learning unless the reader uses the findings to replicate the study and apply it to their classroom.

### **Lecture-Based Professional Development**

The participants provided much data about lecture-based professional development. They reported significant variance regarding the quality of lecturers' messages and its effect on their learning. In lecture-based professional development, educators were offered the knowledge of live experts at conferences, workshops, and in-services. I would argue that lecture-based professional development could include access to experts in absentia in the form of books and research articles. However, this discussion of the data focused on lecture-based professional development is centered on participants' professional development opportunities where live experts were addressing a group of in-service educators. The participants either chose to engage in professional development with live experts or their districts mandated that they attend.

The following evidence demonstrates that participants perceived the lecture format ambiguously. Some reported benefiting from the knowledge provided by the experts. Conversely, some participants were frustrated by the disparities or degrees of knowledge between the experts who facilitated their professional development. Some were more knowledgeable and more helpful than others. Many stated the knowledge offered by the experts was inapplicable to their local contexts. A few reported district officials positioned the

participants, themselves, or their peers as the experts to facilitate professional development, bringing to question the criteria for expertise. To more clearly discuss all these facets, I will first discuss effective styles of lecture-based professional development. Then, I will discuss ineffective styles of lecture-based professional development.

**Effective lecture-based professional development.** Odessa, a teacher who worked in an urban school, described her impatience with an outside expert who facilitated a workshop she attended. In advance of the workshop, she discovered the expert had minimal experience teaching in an urban setting; Odessa was skeptical about what he could offer her as advice. Nevertheless, Odessa was pleasantly surprised by the facilitator and the other teachers she met at this forum:

This guy was excellent and what you found is maybe they don't have as many of the same issues that we have, but they surely have them. I was talking with all these teachers I think I might have been the only one from the inner-city. It was really interesting to find that they do have a lot of the same problems that we have in our district.

Natalia described annual conferences with experts as useful. They provided ideas, and activities she could directly apply in her classroom. “They host an annual conference and I've attended that several times and found that to be very useful in terms of providing me with ideas and things that I can do in my classroom.”

“Natane” volunteered to attend workshops at the university, even if it meant that he would need to attend the workshops alone. Natane’s goal was to learn new techniques to improve his mathematics instruction:

I, myself, after the end of this semester at school I volunteered to go to some workshop at the university by myself to know a new technique how to teach geometry, algebra and

some difficult [*sic*] through committee. This was professional development, that I know of.

Stephanie used conferences with experts to learn new strategies to enhance her science content knowledge, and learn effective instructional methods. She also was able to access resources constructed by absentee experts at these professional development events. Stephanie explained:

Well I think... that I needed to explore more I would seek it out, we used to be able to attend conferences and we, we can't anymore but we used to be able to. You know I would get brochures I guess you could call them that would come through my mail. If it was something that interested me or something that I knew I wanted to know more about I would put it in a request to attend and they would in general be accepted and you could, you could go. There I would seek out books and things like that. As I learned new teaching strategies that made sense to me, I implemented them. I would give you an example, I worked a lot in the beginning of my career on writing and science both because I hadn't been... a science major and I didn't have, I had just the bare prerequisites for science. To, to get my degree so I didn't have a lot of science background so when I got teaching I realized I didn't know a lot so I had to dig up science content and I had to dig up you know ways ideas and ways to teach it. I did the same thing I sort of sought out books and attended conferences I really kind of did that on my own I didn't... If there were disparities that I felt I needed the extra boost.

**Ineffective lecture-based professional development.** In this section, ineffective lecture styles will be discussed.

*The frustration of “sit and get”.* Participants reported that their districts hired experts to facilitate professional learning activities. However, participants did not always appreciate the lecture format. Ilana expressed her thoughts on this strategy: “The district has spent so much money bringing in people to talk to us, to talk at us really. It was 2 days, you sit there and you listen to people blab at you, and that was it.” Ilana recalled her principal hired an expert to provide professional development to her school specifically. She found his jokes about numbers, and modeling how to be flexible with numbers were “fabulous.” Still, it was hard for Ilana to apply his teachings in her classroom. She stated, “I felt lost with it. It still felt nebulous, so that didn't really have a road map to know what I was doing.”

The “sit and get” professional development model frustrated Nadine, “Unless you go in with the drive and make it work for you somehow, there's not a whole lot that I gleaned out of those.” With exasperation, Isabelle stated, “Either they bring in these guest speakers, these 1 day wonders... it wasn't really central to the teaching. Again, there was this big disconnect between what I thought my kids and I needed, and what I found available.”

Some of the participants felt disconcerted by the ideas presented by the experts. Odessa believed math coaches had gradations of expertise or knowledge; her confidence levels with different math coaches varied. “They just don't have the background that my other math coaches do. That's not how we were trained in assessments.”

*Home-grown professional development.* Isabelle explained her district administrators made the decision to forgo the approach of hiring outside experts to supply professional development: “At one point, they decided that everybody had to come from the district. And you didn't get any fresh blood or fresh ideas. Either way, it wasn't central to the teaching.” As Isabelle explained, the administrators in her district turned within district to provide professional



development for their educators. Offering teachers outside experts, with a hit-or-miss outcome was too costly, less efficient, and undependable.

“Yanni” was invited to facilitate workshops after teaching for 2 years. Yanni felt honored that as a second-year teacher she was elevated as a professional developer by her district:

When I first started there, I was kind of surprised because...I think I was teaching 2 years and the professional development director said, “Oh well, why don't you run a workshop,” or “You could run a book club,” they kind of elevated the people to actual professional developers, in our district.

Yanni was surprised she was asked to lead an in-service with only 2 years of classroom experience. This seemingly haphazard approach to choosing a lecturer and topic demonstrated Yanni’s professional development director was either attempting to fill positions for a professional development event, or positioning Yanni—a second-year teacher—as a blossoming expert.

The lecture forum provided effective professional development when the experts were approachable, their ideas were applicable, and they had credibility. The efficacy of involving experts depended on the expert, and her message. Unfortunately, cloning effective, expert professional development facilitators was not an option. Using the lecture format, professional development became a crapshoot. Participants received what was available. All teachers do not receive the same quality of professional development when the lecture forum was used to foster teacher learning. The discretion of district officials or professional development facilitators in individual districts to make decisions about experts or who is considered an expert points to a profession lacking clear guidelines about professional development facilitators.

## **Group-Based Professional Development**

Collaboration had a critical influence on participants' experiences of professional development; it was a unique behemoth to unpack. Similar to the phenomenon of overlapping terms previously discussed, the participants' discussions about collaboration included unclear language as they referred to the wide-array of options used by professional development facilitators to leverage collaborative activities. It was not clear if the participants were fully cognizant of the various configurations of collaboration; my conjecture is they had a tacit understanding. Either way, collaboration as a nuanced concept was not explicitly discussed. The leveraging of collaboration required me to consider the variations of its use within the system. Moreover, collaboration was not mutually exclusive to the other two professional development types; therefore, to account for the complexities unique to collective group work in all its manifestations, I applied the term group-based professional development on par with lecture-based and self-directed as distinct types of professional development.

In this study, participants reported group-based professional development ranging from informal group work on a smaller scale to comprehensive, intense, formal group work. Informal group work included examples of one-on-one discourse about instruction, sharing of materials, consulting with an outside expert, and watching fellow colleagues teach.

Formal group-based professional development was described as groups of teachers who worked together on a common objective using various configurations. Reported examples of formal groups of educators working together included a book study on new instructional techniques, small groups to address an activity assigned by a lecturer, collaborating with an outside expert on a new technique then applying the technique using the participant's classroom with coaching from the expert, engaging in professional learning communities, and experiencing

a learning opportunity incorporating characteristics found in all three professional development types.

First, I will discuss group-based professional development that the participants believed to be effective. Then, I will turn to ineffective group-based professional development where negative group dynamics clearly affected teacher learning.

**Effective group-based professional development.** In this section, effective group-based professional development will be discussed.

*Informal.* Yanni benefited from working alongside teachers who she thought were positive, sought learning opportunities that fostered improved instruction, and were willing to collaborate. Yanni embraced the mindset of learning from others continually. “I really liked working alongside people that I thought were good teachers, I would try to stay close to the people who I think were very positive.” Taylor echoed Yanni’s view of collaboration. Taylor said, “I think I learn by collaborating. Also, [I learn] from watching colleagues.”

Collaboration could be sharing information with a colleague while walking in the hallway together, or “stealing” ideas found at the copier. In Isabelle’s experience as a novice high school teacher, she recalled feeling isolated in her classroom; yet, she found a subtle way to work with her colleagues: “That was the extent of collaboration, with looking at the extra handouts that got left behind in the teachers’ workrooms, that seemed that people were doing with their kids.”

*Formal.* Natalia explained how she engaged in professional development before she experienced lesson study. “We would read books on teaching and learning and just get together and just that's our teaching and learning. That would probably be the type of collaboration I did

prior to getting involved in lesson study.” Natalia’s lesson study participation will be discussed in more detail in the next chapter.

Odessa described a professional development activity that leveraged group-based work uniquely. In conjunction with lecture-based professional development, the facilitator in Odessa’s workshop required the teachers to organize themselves into intimate circles to practice cognitive empathy. Cognitive empathy, a term conceived by William Cerbin (2013), described the reflective practice of taking the perspective of a student. In this exercise, teachers attempted to predict or anticipate what could be difficult, easy or confusing to their students as they struggled to interpret the content, or engage in educational activity used in the lesson. Odessa believed this kind of reflective practice was meaningful:

Right, where you're actually experiencing what the students see. It has more meaning. I like that for our practice he put us in these situations. He put us in circles and we had to do things. Things that students would do. It's professional development in a sense.

“Sal” attended a workshop with other educators facilitated by a live expert. The expert offered advice with subsequent coaching to assist Sal in applying a novel technique in his classroom. Sal recalled, “Then we did some trying out during the lessons, and we get some support from in-service trainers, where they came into our classrooms and helped us with the executing of the method.” Sal experienced an eclectically-designed professional development that included differentiation, coherent instruction applicable to the needs of his current students, and mentoring in the actual context where he taught. In this case, a group of teachers attended a workshop that evolved into a collaborative venture between an educator and a knowledgeable other. This workshop could have been categorized in the self-directed professional development

forum; yet, it also illustrated a type of group-based work—a partnership between a teacher and an expert.

Isabelle reported she participated in a professional learning community, another form of formal, sophisticated, group-based opportunity. This professional learning community was designed to support teachers' construction of a collective goal. The goal creation, coupled with a relentless commitment to each other through sharing the workload that was necessary to realize the goal, was the intended outcome of this community of teachers. Isabelle was teaching in a high school where administrators offered a school-wide, intricately designed, collaborative professional development venture which exemplified a successful application of a professional learning community. Isabelle explained:

I was at a high school a couple years ago where they working on reasoning across the curriculum. Every discipline has different ways of reasoning. In literature, when you analyze literature, in books or, the scenes. And the characterization of people and the setting and language and how the form is used to create good literature. If you're in history, you look at original documents and you see how those people's ideas influenced what they did and what other people did and said. With mathematics, we have logic and deduction. I feel like that was one of the few examples of really good interdisciplinary PD [professional development] for teachers.

At least one participant described a professional development experience that wedded the positive characteristics of each type of professional development. Val described her attendance at a statewide professional development initiative called Math Revival. At this event, she learned about mathematical content as she collaborated with a group of teachers. Part of the experience required her to apply what she learned with her students in her classroom, and then reconvene

with her colleagues from the conference to share how her students reacted to new mathematical pedagogy. She believed the experience was, "Excellent professional development, just the best of the best." In this case, Val experienced receiving advice from a live expert, engaged in self-directed professional development, and collaborated with a network of colleagues within her local context as well as colleagues from around various regions of her state.

Participants reported these aforementioned group-based professional development activities as positive experiences. However, not all group-based work was perceived as effective. Group-based professional development was dependent on the interpersonal skills of the individuals who worked together, the skill of the facilitator, and the intrapersonal capacities of the people in the groups. Intrapersonal skills vary in general, but they can also change day-to-day, or by the minute, depending on the interactions within the group. This reality affected the manifestations of group-based work, which eventually influenced each group's effectiveness.

**Ineffective group-based professional development.** When participants were afforded the time to collaborate in groups, they reported numerous times how group dynamics created obstacles. The obstacles included interpersonal complications, disagreements, conflict avoidance, egos, ruptured relationships, historically-based isolation, narcissistic personality types, and the lack of time to work with colleagues.

***Disagreements and the personalization of feedback.*** Participants reported their group work faltered when individuals on their teams personalized the feedback or when there were disagreements during their professional discussions. Natalia believed teachers were interested in group work, yet there became "tension in the collaborative process where people's views or egos get in the way." Harold argued because teachers have been working in isolation, they are personally attached to their ideas and approaches to instruction. Harold stated:

I think is just that people, a lot of times, had been working in a vacuum. They think their ideas are really good. Teaching can be very personal. I think this is a really cool activity, I use it, I really get excited about it. If someone else comes and says “Nah, it's okay, but I like this one better.” Some people can take that personally.

Taylor discussed how challenging it was for her group to negotiate making decisions or coming to a consensus about the disparate ideas presented at the meetings. She contended, “It can get messy. Everyone is ‘Maybe. Maybe not that.’ And somebody else says something and people are really excited about it. I think that person's like, ‘I don't really want to say anything.’” Taylor’s comments about disengagement based on “perception of rejection” relates to another complication within collaborative ventures: conflict avoidance.

***Conflict avoidance.*** Odessa described how she learned to edit her opinions based on her colleagues’ reactions to her ideas in past conversations:

A couple of times I said something and I knew it triggered something. So I only did it one meeting and I just thought, oh I got to watch what I say, these people are, you know, sensitive to certain things.

Participants reported they would stop sharing when individual group members hijacked the group process with their dominant personalities, or their colleagues did not consider their ideas. Stephanie spoke about how people on her team with strong personalities “had a hard time letting go of their ideas, and accepting others’ ideas.” Ilana described her strategy in dealing with alpha personalities:

I tend to step down. I've worked with about three coworkers. One was very aggressive and tended to dominate the conversation. So it's quite crass. Then there's someone else on the team who was a know-it-all in my mind, who's like, “I do everything right.” I would

just step down and not talk. The other one would tend to say things like, “We're here to discuss our planning. We're not here to discuss our personal life or what's going on with the kids,” and then she would talk for 45 minutes about her frustrations with her kids and her personal life. Again, I just see things shut down. If I have problems every once in a while I'll say, “Can we get back to the agenda?” I'm not one of those people to make waves usually. For me, I just shut down, because I don't like what's happening.

**Toxic conflict.** Collaboration became untenable when interpersonal relationships became dysfunctional, or worse when abject disrespect reared its toxic head. Val stated some teachers challenged her ideas, but employed their disagreement using ad hominem tactics, a logical fallacy. “There's still people that don't agree ... challenge ... think you're crazy.” Odessa witnessed her colleague enduring a venomous challenge as well:

I think the collaboration at this school, my friend is not the same person she used to be. She is so stressed out. She was locked out. There's like a group of three or four teachers, and they're like a little clique. Every time you try to say something they blow you off. They don't get it. I don't think they see how intertwined all our classes are and how dependent we are on one another.

Sal left teaching to become an educational consultant and a professional development facilitator. Based on his experiences in this role, he learned how essential effective group dynamics are to teacher professional development. Sal decided on the types of forums for professional development that he would employ at a school only after he interviewed the principal, and spoke with teachers to understand the cultural climate and the interpersonal capacities of the teachers. Sal explained:



I'm getting more critical to the direction, I mean, the principals, the administrators, of the school, when they are saying, okay, we want to do professional development and we want something there to establish a learning community. I'm always a little bit critical that moment. Okay? What is your goal? What is the situation of the context at the school? Can you mention it? Can you make it concrete to me? When I think, I'm speaking also about colleagues, I got a feeling that at the moment, then I don't start with the Lesson Study project at such a school. I'm a little bit critical about the input of the principal, the school board, and administration, about the atmosphere and the learning community ideas at the school.

Sal understood the importance of leadership, and its importance for group-based endeavors. He believed it was critical for administrators to lead with visionary rhetoric aligned with integrity to the foundational concepts undergirding professional learning communities. Sal was cognizant of the importance of trust as a component of effective group-based activities as well. Nonetheless, even when trust is present, it will not benefit a school culture if the teachers are not afforded time to engage in group-based activities.

**Limited time.** Some of the participants described how districts did not structure adequate time for teachers to work together. When Isabelle began teaching, her district didn't have group time for teachers. Nonetheless, Isabelle found creative ways to collaborate, but it was not optimal:

The way we collaborated was by looking over each other's shoulder at the handouts people had created for their students. That was the extent of it. Oh, that looks like an interesting worksheet. Oh, I see you're thinking about how the kids know the 30, 60, 90 triangle. Well, if they look at an equilateral triangle and they see that they have half of it,

then they can divide each relationship. I had never seen that before. That wasn't in the textbooks. I remember this colleague of mine, giving this lecture. That was an eye--opener! Even earlier than that, when I taught in a middle school, which was called junior high then. I struggled a lot as a very young teacher.

Yanni contended that her district offered their teachers time to work together, however, “It wasn’t very often.” Stephanie talked about situations where her administrators neglected to provide opportunities for her and her colleagues to work together on “topics teachers wanted to collaborate on.” Stephanie continued:

I think it's hard to collaborate within a grade level. For example you sort of do it, [but] you don't do it [for] any kind of extended period of time you do it between classes in the morning and in the hallway and things like that which isn't terribly attractive.

*Unfocused professional learning communities.* Some of the participants reported engaging in professional learning communities. Researchers have described in detail the purpose of professional development communities and the required interpersonal norms that educators should follow to realize the benefits of the approach. The participants’ administrators sincerely believed in professional learning communities as an avenue to engage teachers in discourse about instruction, increase student achievement, and at the same time improve their schools’ cultural atmosphere. For the participants, the reality of professional learning communities did not match those intentions.

Yanni gave her administrators credit for providing teachers with relief-time to collaborate. Nonetheless, the time provided was “...so undirected and unfocused that a lot of times it could turn into people complaining, or not focused on what the time was set aside for.” Yanni was frustrated by the meetings; they lacked unifying principles, goals or consensus

regarding what should be accomplished, causing her team to use the limited time unwisely. “It got in the way.” Isabelle and Taylor described their experiences of professional learning communities in similar ways. Here is what Isabelle said:

It's great to have half a day a week that the kids don't have classes and the teachers have their own professional time. Most people don't know what to do with it. They haven't manned these PLCs, these Professional Learning Communities. Without leadership or guidance, usually that time doesn't get used and people just want to grade papers.

Here is what Taylor said:

When I first came to the district, they talked a lot about PLCs and I don't know if we actually ever really did anything with that. I think people kind of throw that term around. I know that there's a lot more to it than just saying "Oh yeah, we do PLCs." I would say they're supportive of collaboration. I think that the administration is supportive of the collaboration time. So far they haven't really told us what we needed to do during the time, they've let us have the freedom to work on what we want to. I don't think they've provided any support as to what good collaboration looks like. I think, in collaborations, it's very easy to get distracted by all the other things that you have to get done and maybe a little bit of the minutia, things that don't matter. I think really trying to stay focused on something specific in student work and specific goals that you have about learning more about a topic, is what's going to give you the most bang for your buck.

The idiosyncratic cultures where the participants' experienced group-based professional development drove their feelings of efficacy about their professional development opportunities. When participants were collectively engaged, effectively organized, and focused on ideas related to instruction, collaboration fueled their professional evolution. Conversely, when interpersonal

relationships on their teams devolved into distrust, disengagement, or worse, disrespect, the collaborative process became another obstacle to their education, another reason to pine for isolationism, as the process was just more debilitating psychic noise to endure.

### **General Perceptions of Professional Development**

Participants expressed their big-picture opinions of their professional development prior to lesson study. Notwithstanding the reports of effective professional development reported earlier in this chapter, in general the participants perceived their professional development before lesson study as a waste of time; they believed it was inapplicable to their local contexts, and it was neither coherently focused nor sustained.

**Squandered time.** Stephanie described her attendance at a plethora of professional development opportunities throughout her career. Her general feeling about these professional development opportunities was a sense of disappointment. “The majority of it was, at least, well I’d say the majority was pretty useless.” With exasperation, Ilana proclaimed her professional development was the “biggest waste of time.” Isabelle recently retired after 47 years as an educator; she witnessed the evolution of professional development in the United States. She observed over the years that professional development was garnering more attention and funding; yet, Isabelle felt uneasy, concerned: “I looked at the problem in the United States, is getting the professional development time that is available but usually squandered.”

**Inapplicable professional development.** The ideas presented at many professional development events were unusable; participants did not act on, implement or use what they learned from professional development opportunities. Natalia reported facilitators provided neatly organized folders of information as a record of the new knowledge offered, and as a passive strategy to encourage the participants to apply the pedagogical ideas in their local setting.

However, despite the best intentions, and diligent work of the facilitators to construct the folders Natalia said, “You get a bunch of papers, whatever and then they sit in a file for the next umpteen years.” Nadine and Naomi described a similar phenomenon. Here is what Nadine said:

For example, when you go to different workshops or seminars, you take notes, you bring ideas back, but you don't always act on them. That stack of notes just gets added to the pile of stuff sitting on your desk.

Here is what Naomi said:

Then you come back with all sorts of great stuff, happens to me all the time, happened to me even last year with somebody who came in to train us on formative assessments. Then you come back to your desk, and you put the stuff down, and you go, "Oh this is great, this is great." Then you go back to teaching, a month or two goes by, and you look at that stuff on your desk, "I've got to implement that. I've got to try that." Somehow it just doesn't happen.

In Odessa's experience, many professional development opportunities were superfluous. “I'm trying to think of which ones were good. I don't know. Some of them seemed redundant a lot. They give you all of these tools, but they don't let you experience them.” Ilana stated many of her professional development events were ineffective because, “It just seemed not applicable to my daily career and teaching.” Isabelle recalled her experiences of conferences as a neophyte educator teaching in an urban setting. She remembered learning intriguing ideas about what other educators found essential to their teaching, but realized, “this doesn't fit what I'm doing. It's not central; it's not core. It's all peripheral. It's great extra stuff.”

**No mechanism to sustain learning.** Professional development activities did not afford the participants with a mechanism to sustain what they learned. Ilana believed professional

development facilitators were not addressing her learning needs. Ilana contended to grow as a teacher; she required the ability to “check in with a group” to receive feedback, clarification, and alternative perspectives to comprehend the new ideas introduced during professional development. “I need something that also isn’t a one-time thing.” Yanni stated it was difficult to fully understand new instructional ideas because there was no follow-through or extended support to continue pursuing the various initiatives. Yanni explained, “There wasn't any sustained mechanism for continuing along that path I thought it [workshops] were [sic] great when I was first teaching, but then, especially now reflecting on it, it was very one shot kinds of deals, nothing sustained, really.”

**Random professional development.** Ilana and Taylor agreed their overall professional development was random, unfocused, and frustrating. Ilana said, “The professional development I was seeing wasn’t helping me grow as a teacher. There was just a lot of focus on ‘let’s do this, let’s do that.’” Taylor explained how in her previous district there was a lack of focus to coordinate teachers’ professional development. She stated: “We’ve been all over the place.”

York summarized his overall beliefs about professional development in the United States. He argued the professional development system in the United States was highly ineffective. York stated:

But it's like every year, there's a new initiative. It's one after another. There's a fatigue that sets in for some teachers but also a kind of information overload, in terms of, you can do this, you can do this, and you can do this. Here's a way to do this. Here's a brand new shiny thing to pay attention to. Use technology, use this, use this ... It's almost like there's too much noise to really sit back and contemplate. If I can do one thing, what would it be that would be really effective?

The following Table 8 highlights the multiple and varied professional development experiences. This is not a comprehensive list. It only includes what the participants reported after being asked about their experiences with professional development before lesson study. If I specifically asked the participants what professional development events they had attended throughout their career, this list would be much longer. The point here is this table reflects what the participants were saying about professional development being “all over the place” or “lacking in focus.” There is a type of information overload in regard to topics for professional development. As York said, the participants reported there was so much cacophony in the professional development system in America and it’s hard to fully digest what is being offered.

Table 8

*Reported Professional Development Experiences*

Professional Development Types	Topics of Professional Development	Participant
1. In-service Workshops/Seminars/Conferences/	Backwards Design Curriculum Integration Mathematics History Scheduling Test-score Analysis Cognitive Empathy Open for everyone Language Standards Project-based Learning Practical Life Skills Unreported Topic of Study	Harold, York Isabelle Val, Yanni, Sal, Odessa, Natane Sal Odessa Odessa, Isabelle, Val Odessa Odessa Sal Stephanie Odessa Isabelle Natalia, Stephanie, Odessa, Yanni, Sal, Ilana, Taylor, Nadine, Naomi, Isabelle, York
2. Self-Directed Inquiry (Used classroom as a lab to collect data/ learn from own students)	Unreported Topics of Study Problem-based Learning Writer's Workshop	Odessa, Taylor, Natalia, Harold, Nadine, Sal York, Harold Harold
3. Self-Directed Independent Study (Applied ideas from literature in own classroom)	Unreported Topics of Study	Val, Xeno, Sal, Nadine, Natane, York, Harold, Val, Stephanie
4. Team Teaching	Unreported Topics of Study	Val, Ilana, Yanni, Taylor, Isabelle
5. Published Articles	Unreported Topics	Harold, York
6. Training	Technology Textbook Use Unreported Topics of Study	Taylor, Odessa Val, Ilana Naomi
7. Committees (turnkey)	Science	Stephanie
8. On-the-Job Training (trial and error)	Teaching Assistant & Experience in the Classroom	Harold
9. Book Club	Unreported Topics of Study	Natalia, Stephanie
10. Board Certification	Unreported Topic of Study	Stephanie
11. Facilitated Workshop	Unreported Topic of Study Cooperative Learning	Yanni Xeno
12. Summer Institute	Mathematics	Val
13. Test Score Analysis	Mathematics Unreported Topics of Study	Val Stephanie, Yanni, Isabelle, Val
14. District Committee	Turnkey Science	Stephanie
15. Mentoring	Unreported Topic of Study	Sal



## Conclusion

Those participants who reported leveraging the self-directed professional development were the most satisfied with their learning. Participants who reported engaging in lecture-based and group-based professional development found these two types to be problematic. There were reports of positive experiences of the lecture-based and group-based professional development types. However, for the most part, participants reported these two types were a cacophony of random, unusable, perplexing professional development events devoid of mechanisms to sustain their new knowledge. They were frustrated by their experiences; their frustrations were inflamed by the perception that their professional development time was misused, squandered. York's quote (see above) pointed to a systemic problem. He believed the United States' ineffective professional development system was driven by the inescapable flow of innovative pedagogical ideas peddled in a noisy marketplace ethos. The sheer volume of ideas, their introduction during professional development, their implementation, and their eventual replacement by the next idea (or fad), left the participants unfulfilled in regards to their professional growth. Their discordant feelings created a kind of psychic noise, and only added to the din. Additionally, the way participants overlapped their terms to label their professional development signaled discord.

These data offered a small window into how teachers perceived professional development. Unfortunately, in general, in their eyes this window was clouded by a highly entrenched system in need of evolution. Fortunately, despite the general cacophony, participants shared features in their professional learning experiences that they found beneficial. Certain segments of the window were unclouded, and could serve as a silver lining to build upon for professional development facilitators. In other words, it wasn't all bad. The efforts of professional development facilitators to improve despite the discordant system were

fruitful. These beneficial features included: access to experts; a focus on content relative to student achievement; sustained overtime; applicability to their classrooms; and the critical but challenging feature, productive collaboration. When the participants experienced productive collaboration, their learning was significantly enhanced.

In describing what they found effective in their professional development prior to lesson study, the participants unintentionally described some of the features inherent to lesson study research cycles. In this way, the participants were predisposed to key features of lesson study; this may have been a contributing factor in their predilection for lesson study as an approach to professional development. I now turn to the next chapter. In it I will discuss the main theme of this research: how the participants made sense of their lesson study experiences.

## Chapter 5

### **The Effect of Lesson Study Protocols on Group-Based Professional Development**

This chapter addresses the participants' responses to questions I asked them related to their experiences of lesson study, and how they made sense of those experiences. Participants in this study described group-based professional development using lesson study as different than their experiences they had using other manifestations of group-based professional development. In the interviews, participants discussed how the eight-step process of lesson study affected their professional development. To serve as a reference point, it would be prudent to review the eight-step process of lesson study research cycles I previously discussed in Chapter 2. The following are the steps involved in lesson study research cycles:

1. Define a research theme
2. Plan a research lesson
3. Teach the research lesson
4. Debrief the research lesson directly after the lesson was taught
5. Revise the research lesson based on the data collected from the first teaching
6. Teach the revised lesson (optional)
7. Debrief the revised lesson directly after, if revised lesson was taught
8. Report on the findings of the research lesson

Each of the 15 participants I interviewed reported their lesson study experiences were meaningful, applicable, and productive. A unique feature of the process centers on the third and sixth steps of lesson study—teaching the research lesson in live classroom settings. Preparing for these lessons was the function of the other steps in the process except for the last step—the sharing of findings. The lessons required group-based teams to study, plan, implement, reflect,

tweak, reteach, debrief once again, and then reflect on what occurred during the lesson. Participants reported feeling an intrinsic sense of accountability to prepare the research lesson. The data in this chapter focuses on the participants' reports of their experiences of these activities within any one of the eight steps in the process.

However, there is a caveat; participants said their lesson study groups were most productive when the necessary support structures were in place, and the team's interpersonal capacities provided the intellectual and emotional space for the group to function effectively. When those essential components were lacking, lesson study participants reported a variety of situations that proved to be obstacles to their implementation of lesson study. I will unpack these obstacles in the next chapter. In this chapter, I will provide evidence to support the participants' claims that lesson study offered them a productive professional development experience.

The process of lesson study was dependent upon a team of teachers working closely together within the context of an atypical professional learning community. Participants explained lesson study accommodated the varied, unique landscapes of local contexts including interpersonal relationships within teams of teachers. Many reported the interpersonal process was enriched by the step-by-step process linked to norms and roles. Norms were leveraged to increase the likelihood for positive group dynamics while the roles provided each person with logistical responsibilities to help the group run smoothly.

I will now further unpack the data that supported the participants' claims that lesson study was effective professional development because of the inherent protocols that conjoined a unique structured process with intrapersonal parameters. When implemented as designed, this combination created a sophisticated approach that leveraged the power of collaboration to structure the participants' discourses in beneficial ways.

## The Structured Discourse of Lesson Study

**Confidence in the process.** Odessa contended lesson study's protocols allowed her colleagues to engage in group-based professional development deeply. The studying of standards and curriculum, testing their pedagogical decisions in classrooms with students, and the debriefings fostered a kind of group-based work that, for Odessa, nurtured the perception that she could trust the process. Odessa believed the step-by-step process in lesson study helped her team hone in on lesson features most needed for student growth and achieve their goals successfully. Lesson study assisted her and her team in assessing problematic teaching challenges, or situations in a lesson that needed to be addressed. Odessa explained:

I think it's good. You can get into the meetings. There's a step-by-step process that you follow, it helps to get the lesson to where it needs to be. Also, when you go through the lesson study you go back and discuss it and it's really strictly talking about the lesson versus the teacher [actions]. What were the successes of the lesson? How did the students react to it? Where were their struggles? Where could we improve the lesson? The whole process really just takes you towards being successful. It helps you get to what you're trying to accomplish. It was really good.

Harold found that the formalized structure provided opportunities for him and his colleagues to share their knowledge and orientations on the same educational issue. When he participated in discourse facilitated by the lesson study process, he knew the meetings would be fruitful. Harold explained:

Yeah, I found it useful. What it really did was, it provided a structure for it. We're always collaborating obviously sharing ideas, but this gave it a more formalized structure to what types of conversations are you going to be having. That type of thing.

**Sharing knowledge and common experiences.** Nadine stated the lesson study process required teachers to work together on similar ideas; it enabled her team to have novel, common experiences that leveled the playing field. The collective motivation to produce educational activities that effectively moved students towards better understandings of the content nurtured a unique team dynamic. Thus, Nadine believed the process, which required the group to maintain an unrelenting focus on student thinking, fostered a more equitable intellectual space for group-based work to develop; it mitigated the distractions and potential interpersonal damage caused by individuals in the group who tended to be steered by their competitive egos during group-based work. Nadine said:

We all can understand and be looking for these similar kinds of things. How we work together then is, how do I say? It kind of ruffles the playing field so that everybody has the similar knowledge and that nobody else feels like, "I'm more of an expert on that," and it takes the ego out and we're looking at the materials in a more focused way, in a student way.

Nadine believed lesson study leveled the playing field with common experiences and by focusing the conversations on student thinking. In this way, team members were not the experts, the students were the experts. Sal, on the other hand, found that those in the group who had expertise had the opportunity to share that expertise with their colleagues. Lesson study leveled the playing field but also gave a forum to share knowledge.

Sal contended the protocols, the process that leveraged group-based work, increased teachers' opportunities to learn from each other. Moreover, in Sal's lesson study group, he found the process enabled teachers to share their knowledge, to share their expertise in a way that

fostered team members to view each other with more professional respect. Sal described this phenomenon:

There was a protocol, my point is to get the information and the knowledge of all the teachers at the table so that they discover with each other that sometimes another teacher knows very much about a subject and then they learn it from each other. I have the experience of the school. There was a math teacher and she was seen as the most effective math teacher. But after the lesson study, they saw that all the preparation she did, and during the preparation was also doing the executing of the lesson and the post-lesson, that she has a lot of know-how, a lot of skill. So their position changed in the team. They were moving through lesson study in the team.

Harold believed one of lesson study's beneficial characteristics is how the process provided opportunities for educators to share different perspectives about ideas as well as their knowledge. He contended that lesson study decreased his feelings of isolation as it offered the forum to obtain feedback from his colleagues about teaching practices he wanted to address.

Harold said:

The idea of sharing knowledge among faculty, and ideas, or even if it's all teaching the same unit, different approaches to it. I think that's one of the big benefits of lesson study. If you're teaching it by yourself, you just do whatever you think sounds right, but talking to people who have different perspectives on it and getting their feedback was probably the most useful part of the lesson study. The thing that lesson study does beyond just trying to do it on your own, is getting the feedback from other people and the other opinions.

York contended that lesson study gave his faculty the opportunity to work on challenging educational issues together for long sustained periods of times. The lesson study process nurtured types of conversations vastly different from the hurried, informal conversations about teaching practices frequently held in hallways, the teacher's lounge or just before students arrived in the classroom. York described the hurried informal conversations between colleagues: "I tried this, and it worked very well, you want to try this? Yeah, sure. Okay, see you later." York believed the lesson study process offered educators a time to slow things down, a chance to think, reflect, and discuss important ideas. York was pleased that through lesson study, his colleagues were having "sustained conversations over long periods of time. That's operating." York believed lesson study offered teachers a structure to talk about the plethora of educational issues dealing with problems of practice. The process naturally "forces" the conversations in meaningful directions. York said:

Lesson study offers the opportunity for faculty to talk together, to collaborate on something. More than that and this is really key, faculty can get together and talk about lot of things and lots of different venues, but what the lesson study does, it focuses the conversation on aspects of teaching and learning, that really matter to teachers. It's the day to day work that they do. It gives them the opportunity to talk about problems or practice. I think that's really been key to the interest.

**Formal and flexible.** Taylor discussed how the clearly defined lesson process promoted a flexible structure. All of her team members were cognizant of the eight-step process, and the end goal of their research lesson. The agenda or goals of each meeting were unambiguous and explicit. Nonetheless, if the teams did not achieve all of the goals for the meeting due to the unpredictable nature of deep reflection and discourse inherent to lesson study research cycles,



Taylor still believed they were making progress. Her teammates did not succumb to a rigid agenda-driven mentality fueled by the goal of checking items off of a list. The structured, yet flexible nature of the lesson study process enabled Taylor to relax; she knew to honor the process, and still keep the focus on the end goal—a worthy research lesson. Taylor said:

I think that's where the focus part comes in...you know the exact process and you know the steps and you know the goal, but it's not rigid enough. Like I said, the first time we spent a lot of time on the research. It's not rigid enough where it's like, "Okay, by the end of this meeting we have to be done discussing the research and by the end of this next meeting we have to be done writing the unit and by the end of this meeting..." but at the same time you have a clear path, so you know what the goal is. It's flexible enough that if you need more time for certain things, then you have it. At the same time, it's structured enough so you know exactly what the end goal is and all of the steps that you have to get there.

**Issues of familiarity.** Stephanie was cognizant of the importance of the lesson study process; however, during her first experience of facilitating a lesson study research team, she reported that her teammates challenged her and the lesson study process. Stephanie's teammates were a group of veteran teachers who felt free to express themselves due to their high-trust levels and familiarity. Stephanie reported her teammates argued with lesson study protocols. "Why is it that we have to spend this time on norms, why do we have to do this, why do we have to follow this protocol, we all know each other."

Stephanie wanted her teammates to have faith in the process, to have as much integrity to the lesson study steps as possible. Being a novice lesson study facilitator, Stephanie leaned on Lewis and Hurd's book, *Lesson Study Step by Step: How Teacher Learning Communities*

*Improve Instruction*, (2011) to help her facilitate this first cycle. Over time, as her team sustained their cycle, and with Stephanie's persistent prodding about integrity to the process, her teammates became less skeptical. They learned more than they expected they would learn about their students' thinking. The skeptics on her team were surprised they learned so much about their students, and what they thought about the content. The skeptics began to understand the importance of the steps in the process. Stephanie said:

We all know each other. I think they were skeptical, and then they were really surprised. They saw more than they thought they would see. And it made them think about student thinking; maybe that's what surprised them. Not everybody but I thought that the skeptics were surprised like... "I see now, I see why we go through the steps so painstakingly. I said to them that we are all doing this for the first time. So what makes good sense to me is that we follow the protocols as designed in the book because there must be a reason why it's there."

Taylor's quote is similar to Stephanie's. Taylor spoke about how the process kept all members of her team invested in the construction of a lesson. Like Stephanie, Taylor's team was familiar with each other. She recalled how at times meetings were less productive because of their closeness and comfort levels. Taylor contended that the lesson study process counterbalanced the effects of her teammates' historically-based camaraderie. She believed lesson study motivated her teammates to take their research lesson meetings more seriously. Taylor also referenced Lewis and Hurd's book on to how to engage in lesson study research cycles. Taylor stated:

*Lesson Study Step by Step*. Each person has a role and stuff like that that helps keep things more professional. It's interesting because I have been on the same team for 6

years, you just get very comfortable with each other, which is good, but it also kind of makes things a little bit more relaxed sometimes and you don't quite get as much done. I think what was nice about lesson study was it was a different type of collaboration. It was like, "Okay, here are the things we need to get done. You all have your roles." It just makes you take it more seriously.

Taylor and Stephanie's statements regarding teammates who are familiar with each other demonstrated the lesson study process worked to focus their two teams to keep them on track. On the other hand, Naomi contended that lesson study worked well for her on teams of teachers she wasn't familiar with, or teams that came from various grade-levels. She found the group dynamics on these teams more riveting, even more productive. Naomi stated:

I found that the vertical group is actually more interesting because not only do you get to learn about the standards across the grades better, but there's less [familiarity]. When a grade level comes, it's almost like a family. When it's a vertical team with people who haven't worked together before, it's much more even playing field. I think more gets actually accomplished, that's been my crude observation.

Yanni further illustrated this point as she also described working on lesson study teams with teachers from various grade levels:

I think one of the biggest moments of doing that was when I would work with people who had knowledge that I didn't or who worked at grade levels that I didn't. I was able to be open to "Oh, I don't know this" and be able to admit that or ask them to explain it to me. I think I grew that way and I think other people grow that way when they're being asked to really explain why they're doing [what they're doing] and what it means and

what they're expecting as a result and what's the end goal, like “what do you want the learning to be out of this?”

Ilana described how her participating in lesson study on a cross-grade level team inspired her to learn more about standards. She was fascinated by the standards required in the previous grades and the standards of those grade levels ahead of her. The experience motivated her to switch grade levels to enhance her knowledge of the standards. Ilana explained:

Then last year I also participated in a cross-grade level lesson study, second, third, and fourth grade, where we all did subtraction together. I thought to know what those [teachers] right before me [were doing with the standards], and know where they were going [with the standards] right ahead [higher than my grade level] was just amazing. To not only know where my standards are, but where it falls vertically was so important. It inspires me now to want to switch grade levels to learn more standards.

Lesson study protocols provided the atmosphere for teachers to feel that their group-based professional development was productive even when team configurations were varied. Participants described lesson study's adaptability and its flexibility in a variety of contexts.

My focus so far in this chapter has been on how the participants made sense of the protocols or structure inherent to lesson study. Participants reported another layer of the lesson study experience. This layer has to do with the interplay between roles, norms, and the step-by-step process. Now I will turn to how the participants made sense of the complementary nature of norms and roles in relation to the step-by-step process.

### **Norms and Roles**

Participants revealed how the steps in the lesson study process, coupled with norms and roles constructed at the outset of the cycles, were the reasons why lesson study stood apart from

their previous professional development. Similar to other professional learning communities, lesson study protocols required team members to perform specific roles during lesson study meetings. These roles were intended to keep the group process flowing smoothly. Roles included: facilitator, recorder, note taker, liaison, timekeeper, and materials organizer. Coupled with the roles were the norms.

Typically norms were constructed to raise awareness of and remind team members about listening, punctuality, demeanor towards self and others, investment in the process, and the destructive nature of gossip. Norms provided guidelines for the equitable sharing of intellectual space to minimize the effects of dominant personalities, or those who persistently find ways to control the group towards their professional, social or personal agendas. When norms function effectively, participants had opportunities to be vulnerable with their colleagues. Norms offered a space for the participants to share their strengths, debate, work towards consensus, and wrestle together with pedagogical problems productively. Norms were intended to foster a trusting climate for the team members, a necessary characteristic of productive group-based teams.

While norms served to promote a positive emotional climate, roles assisted with the logistics involved in group-based work. Norms and roles are related; their interplay supplied the infrastructure necessary for participants in their group-based work. Participants specifically mentioned how the norms affected their lesson study work. Roles on the other hand, were not explicitly mentioned. However, even though the function of norms is different than roles, they are related; they both work to support the eight-step process of lesson study. The following quotes center on participants' experiences of norms.

Ilana reported that prior to lesson study, she did not have the skills to work effectively during group-based events. She attributed the lack of rich experiences to “interpersonal stuff,”

and the inability of the group to be on the “same page.” Her experience with these two critical issues during group-based work changed after Ilana engaged in lesson study; through lesson study, she learned how to collaborate. Ilana stated:

I just think collaboration is very important, but it is also a learned skill. When we get to lesson study I can talk about how the collaboration changed after we went through lesson study process, and how because I didn't have the skills and we didn't have the skills to all be on the same page and not let our interpersonal stuff get in the way.

Participants reported lesson study altered their professional interactions in their meetings. Additionally, some stated lesson study raised the levels of professional conversations during informal conversations. Naomi stated, “Not only does it elevate the profession during the meetings, but it elevates it outside of the kinds of conversations that are happening in the hallways around teaching and learning.” Isabelle contended, “I've seen it work, where lesson study changes your building of norms, and what Catherine writes about, where lesson study changes the talking around the water cooler or the copier.”

Nadine believed the lesson study process focused on the interactions of the educators in a way that raised professional quality in the meetings. In her experience, she observed teachers “adhering to the norms, adhering to the process while exhibiting a sense of accomplishment. They elevate the profession quite frankly.” Professional behaviors improved in lesson study groups, and there was a sense of professional accomplishment. Notwithstanding these reports, group-based professional development, even with lesson study, got messy.

Norms helped mitigate interpersonal challenges. Even with the infrastructure of the lesson study process, interpersonal challenges still surfaced during lesson study meetings. Humans are complicated. Teaching is hard. The intellectual and emotional of realities of daily

life in the classroom create pressures leading to stress and exhaustion. Being human, teachers can be egotistical, hurtful, defensive, judgmental, and can personalize constructive or destructive criticism. These emotionally-based perceptions of group interactions can cause inappropriate behaviors that complicate group-based work. Participants reported these kinds of interpersonal situations in their lesson study groups.

Naomi described a lesson study experience with a “sticky situation.” In the beginning of Naomi’s team lesson study cycle, her team settled on a set of norms. Three of the norms they collectively created were: (a) assert yourself, to speak up especially if you disagree, (b) to take care of yourself as needed, (c) be present, be punctual. The following quote is Naomi’s description of the “sticky situation.”

There is one person who talks a lot, and she also gets hurt feelings extremely easily. She was cut off and somebody said, “Let's get back to the task at hand.” Then she stood up and she left the room. Then they said, “Oh, this is what she does, we're not going to worry about it.” That's what I mean by, when people know each other too well, sometimes [it can get too comfortable]. Then the person who cut her off went and talked to her because they're actually close believe it or not, even though it was an awful situation. They went and talked about it and everything was fine afterwards. Once again our norms, we just refer back to them, which is an objective measure I guess, of how we are keeping to our norms?

In this situation, Naomi’s colleague left the group to take care of her emotional well-being. Maybe she needed to cry, or maybe she needed to create space between herself and the colleague that cut her off so she would not lash out irrationally. There could have been a variety of reasons why she excused herself from the lesson study meeting. As this individual left the

group, she violated the norm be present, be punctual, yet she was trying to take care of herself. The two norms were conflicting. Naomi goes on to describe how she handled the conflicting situation in her own mind. She trusted that her colleague was taking care of herself and that she was still being accountable to the group process. Naomi stated:

I think instead of saying, “Hey you're not participating, get in here. Get back in the group.” It was trust [*sic*] that she was in the room, she pulled herself away from the table. It wasn't that it was just that moment, “Okay, that she's taking care of what she needs in the moment and it's still participating in the way she's participating that moment.” Okay this is part of our norm that we agreed to speak up with whatever we needed. To take care of ourselves. She wasn't necessarily negative and it wasn't that she wasn't contributing, but it was just a moment in time. I just kind of took it and trusted, and it turns out she was positive in what she needed to process to be able to get herself up to the place. It was a good strategy for her to pull back and take that quiet moment. If there was something that we disagreed on we would speak up on it and not hold it in, we would put it out, we'd speak to it.

**Norms: the substratum of a trusting culture.** Naomi also described how her team chose a norm to work on each meeting. After the meeting, they reviewed how they applied the norm during the meeting. “We go back and we reflect. We can do it personally, we can do it out loud, but we reflect on how we did with that norm.” In this way, the norms became a living set of guidelines emphasized in their minds during each step of the lesson study process. Naomi's experience demonstrated the importance of the norms to navigate through challenging interpersonal situations in a lesson study group. She relied on the norms to immediately process the situation in a productive manner; she trusted the norm and trusted her colleague.



Nadine described how her team spent time in their initial meetings to formulate their norms, and apply a disciplined mindset to focus on one norm each meeting. Similar to Naomi, Nadine stated her team continually evaluated how well they adhered to their norms, and how norms created a safe place to be vulnerable, a safe place to build trust. Nadine said:

It really felt comfortable. We wrote stuff down the norm to be where everybody felt we could all take that risk of being vulnerable, and learning, and growing together. It's been a real positive experience for me. When we set those norms in the beginning, we really tried to focus on that and then each day we meet we readdress the norms and kind of, "Okay, which one are we focusing on today?" We are always continually checking that as we work through our needs. They're always in our minds, "How are we working together?" I think that creates a space of trust.

The steps of the lesson study process, coupled with the group norms enabled the participants to connect to their colleagues in ways that they had not been able to in prior group-based work. Some participants contended that the lesson study steps and norms nurtured trust in their colleagues. Moreover, the lesson study process enabled teachers to perceive their colleagues as helpful resources; to trust that their professional interactions with each other would lead to more improved levels of teaching.

## **Trust**

Participants reported experiencing critical moments on their lesson study teams where feelings of trust were experienced within their teams. They stressed how trust was essential to their lesson study work; yet, building trust depended on the intrapersonal, the willingness of an individual to be honest with oneself and others about areas of pedagogical weaknesses. As with all interpersonal interactions, the intrapersonal is deeply involved. In these data, participants

reported the lesson study process, given appropriate logistical and emotional supports, empowered the participants with opportunities to be honest. Participants reported feeling free to brainstorm ideas without fear of criticism, and feeling free to argue about ideas without personalizing the feedback or reactions. Most importantly, participants reported situations on their lesson study teams where individuals felt free to admit they did not understand certain concepts about content. In the words of Isabelle, “We have to have trust! We have to have trust!”

**Vulnerability: the key to trust.** Taylor contended that she grew as a teacher because of lesson study's emphasis on collective reflection, and how it synchronized with her reflections about her practice. Taylor explained that the after-the-lesson debriefing discourse focused on the successes of the lesson and things to be tweaked for better student outcomes. Taylor believed this kind of collective reflectivity was essential in her growth as a teacher. To do this work, Taylor needed an emotional space free of negative judgment to share her areas of vulnerabilities about her teaching. Taylor reported being “happy” and fortunate to feel validated despite her weaknesses in content knowledge. She needed the feedback from a group of teachers she trusted, and who honored the practice of reflection like she did. In a sense, lesson study offered her a type of educational support group, a group of professionals solving educational challenges together.

Taylor said:

I think it is just that reflective piece, I think I was reflective before, but really being able to see and drill down. Actually, really work on the practices of teaching, with others. Let them help, working with other people so that they can help you grow as well and say, “Hey, I bombed today. What do you think? Here's what I'm thinking.” I think others

value that I am completely willing to say that I don't really know and that I'm going to do the best that I can, but I definitely am not the expert and let's see if we can figure it out and do some research and look at the resources that we have. I think that's what people value, kind of silly as that sounds. People value that I am okay with not knowing, but saying, "We'll figure it out."

Yanni echoed Taylor's sentiments about trust levels being critical to honest discourse, and more importantly, professional growth. Yanni stated:

If there isn't trust involved in being able to say what you know and what you don't know, because that, to me, is one of the biggest things about lesson study, is being able to be really honest about things. Because if I've been teaching this for 15 years, I don't really understand it, can someone please explain it to me or can we delve into it deeper and really figure it out? If you don't have the comfortability and the trust to be able to say that, then it's just a bunch of "surface-level hooey." It's not going to create deep learning of content. It's the teachers and then you're right back to teaching at a surface level because you don't know it really well.

According to Naomi, lesson study fosters deep discussions; it is far from Yanni's term, "surface-level hooey." Naomi emphasized lesson study was not contrived, or forced collegiality. She believed the lesson study process nurtured a school culture based in trust in her school. The trusting climate enabled teachers to break down the long-standing barrier of isolationism, which is no small task. In her experience, once her colleagues began to trust one another at deeper levels, they became more open to perceiving their colleagues as helpful learning partners. Naomi directly linked the shift in her school culture to lesson study. Naomi stated:

The collaboration that happens in lesson study is anything but contrived. It's so natural. Then what happens as a result of that too is that teachers start to trust one another and then start to become more curious about learning from one another. I remember 9 years ago when I started, "Oh we've got to get teachers opening classroom doors and watching each other." Somehow nothing ever stuck, it never happened. Now, through lesson studying, we have so many teachers going into other teachers' classrooms, watching a lesson, giving them feedback, or going into a classroom and teaching for that teacher.

Building trust takes time. Ilana felt professionally motivated by a group of teachers who cooperatively studied literature on mathematics instruction lesson study in the context of a research cycle. She liked how her team engaged in "popcorning out," or exposing their perspectives, ideas, misconceptions, or lack of knowledge in a trusting atmosphere. However, the trusting atmosphere she talked about took work to construct, it took time. Ilana described two critical moments in the lesson study process when her colleagues began to trust one another. Two critical events occurred that transformed their group-based work. In time, one of the participants who suffered from "knowing-it-all," surprised her teammates; she finally let down her guard. According to Ilana, this was the defining moment in their team's history. Moreover, moments after the "know-it-all" proclaimed she actually did not know-it-all, another intense argument broke out. The argument caused Ilana pause; this argument was heated, and at the same time, professional. Ilana explained:

We were doing an addition unit, and the know-it-all teacher said, "You know what? I don't understand this progression," and I thought we can finally start. She admitted she doesn't know everything. From there, there was a huge argument between the new person and the math coach over what's the difference between a model and a tool. That modeled

for me what a heated mathematical debate could be without it being about personality, it was about ideas. From that day on our team became much closer personally outside of school. We all accepted each other. It took us all going [thinking] “I don't know everything and I'm here to learn and work hard,” that we got all on the same page. We struggled and I learned.

What a meeting! First, Ilana, and most likely the entire team, were pleasantly surprised when the know-it-all teacher shared her vulnerability, her lack of understanding about the progression. This particular individual took an enormous step. Her statement, her shift in orientation towards her teammates became a defining moment for their lesson study team. Second, the group was able to experience dissent discourse; they had a lively debate filled with conflict about mathematics instruction. They understood their conflict was about ideas, it was not personal. The lively exchange between colleagues served as a model for Ilana in terms of how to engage in dissent discourse. According to Ilana, this particular meeting produced the moment when a group of teachers became a team; a team that could go beyond surface-level hooley, a team that could effectively struggle with ideas, not personalities. Time, intrapersonal maturity, and the structure of lesson study contributed to the building of trust in this team of teachers. Trust is critical to the success of a team, and it is required in all of the steps of the process, especially as one teacher teaches the team's lesson publically.

As stated before, the focus of the eight steps relates to the third and sixth steps. During these steps, a teacher on the team agrees to teach the collectively constructed lesson. Participants reported these steps in the process produced the most angst in the teammate who was willing to teach the lesson in front of peers. In many cases, this teacher enacts the lesson in front of a larger group of observers during the public lesson. The angst is centered on feelings of vulnerability

laced with performance anxiety. When this happens, trust is essential. The concept of the lesson being a team endeavor becomes paramount to the process. In lesson study, the research focus is not on the teacher, but on the teaching, and its effects on their students. American teachers tend to view teaching in front of other educators as an exercise to evaluate teaching capacities. In contrast, lesson study relentlessly focuses on student thinking, and their reactions during the lesson. Since the lesson is constructed jointly, team members know exactly how the teacher will enact the lesson. Of course, the students' reactions to the teacher-led activities have implications for teacher actions; nonetheless, student reactions are highlighted in the minds of the observers during the research lesson. Despite knowing this about lesson study, many teachers who choose to teach the public lessons still feel nervous. Feelings of trust within the team, coupled with this new way of thinking about teachers being observed, helped to lessen the anxiety associated with teaching in front of other educators. I will now unpack this required mind shift, and how the participants made sense of this step in the lesson study process.

### **Shift from Teacher to Teaching**

A critical feature of lesson study research cycles is testing the collectively constructed lesson in the laboratory of a classroom full of students. One of the teachers on the team agrees to teach the lesson while the other members observe and collect data for the next step of the process, the debriefing. In the quote above, Ilana explained the focus of the research lesson. Note that the phrase “Super Bowl” refers not to the teacher, but to the teaching. Usually, in effective lesson study teams, this idea of focusing on the teacher is explicitly discussed, and added to the norms. Ideally, all team members have the capacity to teach the lesson because the team constructed all steps in the lesson collectively. Having constructed the lesson together, team members are already fully aware of the teacher's actions throughout the lesson. Their attention

turns to the students' interactions with the content, their thinking about content, and how the activities in the lesson fostered conceptual understanding.

Odessa believed the discussions and reflections on the students thinking in relation to the lesson—not the teacher's actions—guided the team towards their intended goals. She thought that watching someone else teach the lesson she helped construct was beneficial. The team's reflections and discussions gave her deeper insights going into the lesson, which only enhanced her reflections after the lesson. Furthermore, the reflections produced by the team during the debriefings furthered her understandings of what she observed. "It's such an invaluable experience. It just really is."

Isabelle contended that multiple observers studying a lesson in real time provided the chance for educators to reflect collectively to, "...learn more about how the students are thinking and reacting." She believed lesson study provided educators with the opportunity to think ahead, to observe, and to problem-solve. The problem-solving leads to solutions to inform future lessons relative to the specific content. In her view, leveraging multiple observers' viewpoints and expertise in the context of the common experience of the public lesson provided invaluable information to illuminate the components of an effective lesson. Isabelle said:

My understanding of the possible benefits has deepened. Certainly, it's a chance for people to collaborate, to think ahead, to realize that there's [*sic*] so many details involved in having an effective lesson. That having more eyes in the classroom really helps us to learn more about how the students are thinking and reacting and what to do later.

Definitely, my appreciation has deepened as I do more of it.

Public research lessons can be conducted in a variety of ways. They can be conducted by the team on a small scale or the team can invite an entire school, district, or region to attend these

events. The large-scale events tend to increase teachers' performance anxiety. Teachers in the United States are unaccustomed to being observed by other teachers as they teach. Nevertheless, participants explained the benefits to hosting a research lesson with multiple observers. Ilana described her mindset regarding this step in the cycle. Ilana stated:

For me, it works to watch other people and have other people watch me and give feedback. That's the thing that has scared most people away from lesson study, is being observed. Once you realize all of us are good teachers, we're here just to focus on how we can be a better teacher, and it's about the teaching, not the teacher. Then people are more open to opening their doors. Every time I watch someone else teach I learn something new, I feel something, I get great ideas. That for me works a lot.

When Natane facilitated lesson study research teams with teachers, or with his undergraduates, he explicitly taught them to nurture feelings of collective accountability for the lesson. He told them, "When we do lesson plan together we are showing, 'It's not my lesson plan. It's not my plan. It's ours.' So, we cannot blame the teacher." "Xeno" is also a lesson study facilitator who believed the accountability of the lesson resided with the team. Her message from the beginning was that the lesson was not the responsibility of the teacher, but the entire team. Xeno stated:

When things go bad, they used what I said to reassure the teacher. Because I was the facilitator and from the very beginning I was saying that this lesson is not your lesson, the research teacher's lesson. It is our lesson and all levels are comfortable to look at the lesson and to think of ways and design it in ways that will help students solve the math problem in a conceptual way and not in a procedural way. The norms of practice, the



norms of collaboration, were discussed and reinforced throughout the whole planning process until the end.

Taylor explained she was nervous the first time she taught the public lesson. Her facilitator coached her to see the lesson outcomes as a group responsibility. This reframing allowed her to mitigate some of the nervous feelings she experienced; however, to some degree the performance anxiety was still part of the experience. Taylor explained:

It wasn't quite as nerve wracking. There's definitely comfort in [the fact that] we planned it together. It really is about the lesson. Of course you're going to talk about teacher moods, but for the most part, if the lesson goes as planned, then when you're talking about, "How come you didn't do it this way?" or "Why didn't you think it worked?" it really is on the entire team. It's not just the teacher. The teacher just delivers the lesson. That does make it less nerve wracking to a certain degree.

Taylor also believed the lesson study process, with its inherent pressure to teach a public lesson, fomented a sense of urgency in the group to be accountable, to take the process seriously. In this way, lesson study instilled an intrinsic sense of accountability different from the deeply entrenched and prevalent ideas of externally-based accountability American educators know so well. Taylor talked about the stress of preparing for the research lesson. Taylor stated:

There is that pressure that we are going to be presenting, so at some point, once you have that date, you know you have to get things done. I think that that's helpful. I think it just makes everything a lot more professional.

Feeling accountable to the public lesson served to focus the team towards increased productivity for a common goal. Collectively preparing for the research lesson added a healthy pressure Taylor believed raised their professionalism. The feelings of shared

accountability were further examples of how lesson study uniquely leveraged group-based work. For the onset of the cycle, teachers work together to study content, construct a lesson, test the lesson, and tweak what is necessary during the debriefing step. The team depended on one another to navigate the comprehensive steps of lesson study.

In the cases of lesson study discussed in this chapter, lesson study successfully leveraged the participants' collective intelligences by structuring their interactions using the protocols, roles and norms. Participants reported their interpersonal relationships and their professional learning communities were strengthened by the lesson study process. However, how did the process affect their learning about instruction, or their perceived capacities to increase student achievement? The next section of this chapter will address how lesson study affected the participants' learning of standards, content, and pedagogy, by leveraging student thinking as a form of data.

### **Collaboration Centered on Student Thinking**

York talked about lesson study influence on his capacity to view his teaching from a student perspective. He mentioned the term *cognitive empathy*, (Cerbin, 2013) in regard to how the collaborative process of lesson study with its opportunities for multiple educators to observe a lesson, enabled him to learn about student thinking and to empathize with students' intellectual ideas. He found lesson study enlightening; it shifted his thinking to focus on how students respond, react to, and deal with the content. Observing students in this way, goes against traditional norms and protocols. York stated:

That's not an opportunity that many faculty ever have. It actually goes against the tradition in higher education of classroom observation, which is, teacher evaluation.

Somebody comes into the classroom, sits in the back and watches you, the instructor,

pays no attention to students what so ever, and then at the end, shows you a check list of whatever's on there. I think the focus for me, the shift that I have seen that has made me better, is that we're looking at the right things in class if I really want to improve student learning. I think I have more cognitive empathy for students. To me cognitive empathy is the capacity to learn the subject from the students' point of view. At the classroom level a lot of faculty are interested in why students fail. Why do they drop out of a class? Why they don't think they'll be able to do this subject? The focus on success for student learning, I think, has been a kind of magnet for this activity. When I hear students talking about or responding to a question, my mind goes to, "Where is that coming from? How did they actually construe this? How are they thinking about this subject?" I think it's made me, I hope it has, I don't have any evidence, I think it's made me better at how to respond to them and how to give them feedback and guidance. It's more targeted than it would be in the past. Professionally, I think it's helped my own teaching practice.

Sal believed lesson study provided the opportunity for teachers to work together, to share their expertise, their experiences, and gather data in the context of learning about math content. As a lesson study facilitator, he discovered the importance of stressing to teachers how powerful their learning could be when they leveraged each other's knowledge. He believed this knowledge would lead to positive outcomes for their students. Sal stated:

It's also a way to promote more about the content of a subject like math, and it gives also a stimulus to cooperate more. When you get a flow in a school, they are not only doing things together but they are helping each other. They can use each other's experiences. They can exchange. I want to show them that they have a lot of knowledge and expertise by themselves and that they can use it, and that when they are doing things together, a lot

of cooperation, sharing of data, et cetera, then they can extend the outcomes of the students' successes and learning.

Val described a challenging pedagogical problem she faced with her teammate in deciding how to use a new textbook chapter featuring factoring binomials. Val remembered what she learned from a previous, 6-year-old lesson study research lesson about student misconceptions on factoring binomials. The study findings provided them a type of bridge from their previous work to the new textbook. They used these data to assist them in the pedagogical exercise of anticipating student thinking or anticipating the possible progression of the lesson. Val stated:

For me, it's understanding so deeply about where the kids get stuck in the mathematics and you can then anticipate where the lesson might go. I think it's the depth. I think it's the depth and understanding kid's thinking. You also understand a teacher's thinking. If you understand a kid's thinking then you also have a window into the teacher's thinking as well.

Natane, as a lesson study facilitator in a Far Eastern country, leveraged lesson study to assist teachers in learning how to shift their pedagogical approach to focus on the process of learning, and more of a conceptually-based orientation to teaching mathematics content. This orientation honors students' idiosyncratic thinking processes, in relation to prior lessons, and the multiple ways students can achieve answers to mathematical equations. Natane stated:

For lesson study, we focus on the way, to learn how to learn. Let's say 9 plus 4, most of the school teachers focus on 13. But for open approach lesson study we introduced in school, we focus on "Do you know how to make [*sic*] addition?" In order to make [*sic*] addition with 9 and 4 the previous period, you know how to decompose 1 from 4 and

make it one 10 and four 1s. Or how to do addition is you have to know how to decompose or compose numbers and you have to know how to make it become 10 [for the base 10 system].

Yanni found the use of lesson study to collect data was refreshing. In her view, lesson study provided a mechanism to collect data, analyze it, and then use it to improve student outcomes. Yanni was surprised her mindset shifted about data. Prior to lesson study, she was not given opportunities to collect and analyze student thinking as an approach to inform instruction. Summative assessments in relation to test scores were her previous orientation to data. Additionally, Yanni contended (like Sal) that lesson study shaped her team's group-based professional development. Lesson study provided a space for her colleagues to learn together, and allowed teachers to share their expertise. Yanni contended:

It's very good to see teachers collaborating, and it's been really good to see how data can be used in a different way than how a lot of times it's currently used. I never saw data, I never realized all the forms that data can take when you're observing all of this. That's been really eye opening and really beneficial. Yeah, I think a big positive was the data, finding a way to look at data and actually use it and have a mechanism to improve.

As a lesson study facilitator and a university professor, Xeno felt satisfied during her lesson study meetings when her students experienced the "aha" moment as they realized they finally understood a particular concept, or why a student behaved in a certain way. She believed the focus on the lesson enactment with "live" students enabled her students to think more critically about math instruction in regard to the sequence of instruction. That is, moments of clarity came to the fore as her students collectively engaged in discussion, and she realized the effectiveness of designing lessons that leveraged concrete materials, then pictures, and finally the

abstract ideas. Xeno thought this sequence was essential not only for the students being taught, but her undergraduates who she believed lacked sufficient content knowledge. Xeno stated:

Lesson study is not about getting at perfect or good lessons. The lesson enactment gave the content for a lot of discussion as to why it is that the students didn't understand the concept and not able to solve the problem. It got the teachers to think more deeply about mathematics. We have the MPA model, concrete to pictorial to abstract. What it means to design activities to get the students to move on concrete manipulation of objects to a pictorial form of mathematics before they go into abstract form. The teachers had been told about the "XYZ" model approach to mathematics, but it is something that they have not fully understood. The lesson study that we did got the teachers to really understand and unpack what the XYZ model is all about. For primary school teachers, many of whom had very poor subject matter knowledge or pedagogical content knowledge, that particular case is very powerful to uncover those aspects of their learning, of their understanding. The experience at the end became a very positive experience.

Stephanie communicated the benefits of collaborating with her colleagues using the lesson study process. She believed engaging in conversations with her teammates enabled her to become cognizant of different perspectives regarding student learning. Ideas about student learning previously hidden were unveiled to her, and Stephanie used the different perspectives to help her understand her students' thinking. She stated the entire lesson study process was powerful, unforgettable, and drove her lesson planning for future lessons. Stephanie said:

The things you learn about student thinking, and student learning, the things that they show you in their process, the things you take away from the lessons study cycles that you do, you don't forget those things, they are very powerful and you start looking at

your own students. I've known many x numbers of students but you start looking for those things that you didn't see before, or that a member of the team brings up, and so then you start planning future lessons, you say, "I remember when that happened, I want to make sure I do A, B, or C so that I can have that happen again." It just makes me more mindful of my teaching. How can that be bad for students?

"Natalia" also described a time when she observed her colleague's research methods class in the context of a lesson study research cycle. Her team constructed a lesson centered on developing research questions using hypotheses. During her observation, she listened carefully to students' responses and conversations. Natalia found the relentless focus on student thinking beneficial. She recalled one of her team's findings during the lesson debriefing demonstrated that their method was ineffective in reaching their instructional goal. After this experience, she became a firm believer in the power of constructing her courses informed by solid evidence of student learning. Natalia stated:

The tinkering and things that we do with our class really should have a foundation in what we know about student learning. I would say the reliance on evidence-based teaching. I think that's probably been the most significant change for me. I think you can always take away something. We sat down and really thought about how we were approaching teaching that particular skill to students and realized that the method that we were using was completely ineffective, that we weren't really modeling the skill very well for our students. We were not giving them the opportunity to practice that skill.

Nadine reported her conversations with her colleagues were focused on student learning and evidence of the same. Lesson study provided her team with a common language about standards and understanding of the concepts they were developing in their students. Lesson study

altered the foci of their pedagogical questions such as, “Okay, this is what I am seeing, how are they doing it? What kind of problem are they using?” If the students do not understand the concept, the question becomes, “What are their critical errors?”

Isabelle argued that lesson study made her work harder. She was not used to the relentless focus on student thinking; she had to make a shift in her teaching practices to become more cognizant of student thinking. Moreover, Isabelle believed it was incumbent on her to teach students to become more attentive to each other so they can learn from each other better. In general, Isabelle felt accountable to her entire learning community of educators and students because all involved were working in concert to create a better learning environment. She believed this shift in orientation towards student thinking equipped her students to perceive their roles as students differently. Isabelle stated:

It's like there's this whole community of teachers who care that these children or these teens, in this classroom, are learning. It has the power to change the way kids perceive what their job is as learners. I think what I said earlier about trying harder to be more attentive to student thinking. To work harder to elicit more student thinking. To listen better to it, to try to get the students to listen better to one another. Then, to try to figure out how to leverage it to turn that corner that they need to get from where they're at, to where you want them to be.

Ilana agreed with Isabelle. She concluded that lesson study benefited her students because she learned the standards in greater depth. She experienced the power of focusing on student thinking in the context of a lesson. She altered her overall pedagogical approach to listen to students with greater care, and to relinquish the idea she was the “sage on the stage.” In this



way, she believed she empowered her students to take more accountability for their learning.

Ilana explained:

The better I know the standards the more I can just ask the questions. I don't consider myself a keeper of the knowledge anymore. The facilitator keeps the conversation going, steers the ship but they aren't really rowing the oars and doing everything like that. I'm just trying to listen to them really well. They look forward to it. We just did our first math journal, it says, "Eighth day of school." Right now they're second graders, all of their reflections were that math is a lot of writing, but it's a lot of talking. They liked that they got to talk to someone. They like to say, to hear their ideas. I didn't hear any of my ideas, they got to share their ideas. They feel like they can be successful and take ownership of the math instead of it being something that's outside of them.

Naomi argued lesson study helped her learn the new standards, which were created to shift instruction to more of a student-centered process, a problem-solving approach to math instruction. This shift was perplexing to many teachers. It was hoped curriculum materials would serve as instructional tools sufficiently aligned with the standards to assist teachers in successfully navigating the unfamiliar waters of the standards. Naomi described how her district bought a new math curriculum misaligned to the standards even though the program was touted by the textbook company as being in-line with the new standards. According to Naomi, lesson study offered her and her colleagues an opportunity to make sense of the standards even in the context of being required to use a district resource they believed was ineffective. Naomi stated:

The topics that we've chosen in math has gotten me stronger, my knowledge. Because remember I did not have a math background. I didn't know that you could make sense out of math and absolutely love it. I would argue that our focus was lesson study and

teaching through problem solving is the reason that our scores jumped so much. Not only that, but our district adopted a horrendous text, they just dropped right in, when everyone was saying don't get a math textbook right now, there's nothing that's really Common Core. They did, and it was so bad that I think teachers felt “Well what are we going to do? We have this new set of standards and we've bought this horrible textbook.” I think that also helped create a need and in lesson study, teachers felt right away that in being able to choose their own topic of learning, whether it was because it was difficult for them, or difficult for students to learn, or both, that it allowed them to take the time necessary to learn about the standards. I think that worked in our favor. Well I remember our subject was in number talk; that was what we decided to focus on. We took the number talk and the one I did 8 years ago, and yeah, we studied whether or not the lesson went well.

## **Conclusion**

In closing, participants believed their lesson study experiences were more sophisticated and comprehensive than other forms of professional development they experienced prior to lesson study. Naomi expressed this idea when she said, “What emerges the most is how do we improve teaching and learning. Lesson study addresses both far more than any other professional development I've ever experienced.” From York's perspective, the Japanese model of lesson study was high-quality professional development; he was amazed by its power. York stated, “I have not seen a single thing that comes close regarding payoff for the activity itself.” He argued teachers at all levels would benefit from lesson study especially the way educators in Japan implement it.

In this chapter, I discussed the participants' reports of the ways lesson study protocols structured their discourse in their professional learning communities. Lesson study had wide-ranging effects on collaboration, which had positive effects for their students. Participants expressed confidence in the formal yet flexible process. The protocols, with attention to norms and roles, allowed participants to experience vulnerability, which led to cultures of trust. Participants reported their feelings of trust were enhanced by the shift in focusing on the teacher's actions to how the students interacted with the teaching materials. Student thinking drove the process, and this focus created the grist for teachers to discuss ways the teacher's actions affected student achievement. The lesson study process provided the necessary intellectual and emotional space for teachers to learn together without the specter of punitive measures, or judgment associated with teaching lessons publically. Those involved knew the person teaching the lesson was not being judged, which had the effect of relieving some of the pressure involved in teaching the public lesson.

The planning, studying and researching of a single lesson provided a common experience. Through the collaborative process, participants experienced beneficial learning regarding the standards, content, teaching materials, and their students in a single lesson. More importantly, as the participants collectively used the one lesson to research, they believed the experience informed their orientation to their overall teaching practices.

I will end this chapter with a quote from Ilana that I believe was emblematic of how the participants perceived their experiences of lesson study. Ilana explained lesson study re-inspired her as a professional like no other experience. In her view, lesson study evoked within her emotional feelings of pride in her chosen profession. Ilana contended that in spite of all the pervasive political negativity directed at the teaching profession, with all the common stressors

inherent in her work with complex human beings, lesson study provided validation for her and her colleagues that teachers are, in fact, professionals. Ilana contended:

It [lesson study] re-inspired me, and lit a fire under me like nothing else. I thought “I’m going to do more of this. I need to know more of this.” It inspired us to feel like a professional in a profession where we’re treated not as professionals at all or seen as professionals. It really brings professionalism back to that, to the art of teaching.... The research lesson, to me, is like the Super Bowl, that we’ve trained so hard for and the one person who does the lesson, they’re the team captain but I still feel part of the team. When my colleagues taught the first one 3 years ago, we were all just on the edge of our seats like what’s going to happen, is it going to go the way we hope it’s going to go, are people watching? When it didn’t go the way we all took responsibility for it. I like that aspect too. You’re not in it alone. Even if you’re the lone teacher, successes and failures, they’re all part of the group. I love that.

Participants painted a positive picture of their perceptions of lesson study. Participants reported lesson study had positive, beneficial effects on professional learning communities on a number of levels including the enhancement of collaborative capacities of those participating. Nevertheless, as I stated in the beginning of this chapter, there is a caveat. If the foundational support structures in regard to logistical assistance, administrative supports, and healthy cultural contexts are not in place, lesson study practitioners in this study described significant obstacles to their lesson study endeavors. In Chapter 6, I will address this phenomenon.

## Chapter 6

### Obstacles Confronting Lesson Study Practitioners

Most of the participants in this study were both lesson study practitioners and lesson study facilitators, which enabled them to share their lesson study experiences using two different lenses. The participants believed lesson study was beneficial, yet at the same time, it was difficult to implement within the existing system. Participants reported rich lesson study experiences, as discussed in the previous chapter, and experiences that were less than ideal, or even negative, depending on the local context. This variance in contexts led participants to report their lesson study experiences were contradictory.

This chapter will focus on these negative experiences, or those that placed obstacles in the way of the participants' lesson study endeavors. Most of the participants (12 out of 15) in this study enacted lesson study in the United States. The United States' professional development system is significantly different than in Japan, where lesson study is practiced on a wide scale. Lesson study in Japan is considered to be built into the system. In the United States, lesson study is considered, by those unfamiliar with the approach, as just another tool in the toolbox called professional development. The participants found this orientation problematic; they did not feel fully or consistently supported in their lesson study work.

The differences in the two systems are significant. First and foremost, Japanese lesson study facilitators and practitioners work in a collaborative culture, a critical ingredient for group-based professional development; they thrive on collaboration. They also have a sophisticated logistical support system for lesson study. Japanese educators are supported in their lesson study work at the local, prefecture, and federal levels. They are afforded assistance with implementing lesson study in regard to organizing research themes, meeting times, accessing students during

the school day, providing curriculum resources to research, leveraging the assistance of knowledgeable others, offering classroom coverage if needed, and finally, reporting their findings from the research lesson to the wider educational profession. Furthermore, Japanese teachers are familiar with the lesson study process; they have engaged in this system since the 1870s. Japanese educators understand the importance of using the researcher lens as they collectively reflect upon and then analyze their observations of student thinking during a lesson (Fernandez et al., 2003). They view the study of one lesson as a method to inform their overall teaching practices. Japanese teachers are also familiar with the process of being observed by colleagues; they understand student thinking is the focal point of the lesson, not the teacher's actions, when enacting the lesson.

Unlike their Japanese counterparts, the participants in this study found it challenging to facilitate a foreign process, one that leveraged collective reflection of a live lesson. It was difficult to engage in group-based work such as lesson study in a culture where professional development was viewed as something done outside of the school day, outside the context of a classroom of students. Lacking the necessary systemic supports that were afforded to their Japanese colleagues, American participants reported a number of formidable obstacles for their lesson study endeavors. These obstacles included misconceptions about lesson study, anxiety about teaching a public lesson, time constraints, competing initiatives, administrator turnover, and interpersonal conflicts. Before delving into these issues, I will begin by considering the participants' general ideas about lesson study in the United States. In short, the participants described the inadequacies of the American professional development system to support lesson study effectively.

## Conflicting Cultures

York facilitated lesson study at the university level and with in-service teachers. He discussed the tendency of American educators to adopt pedagogical theories or programs, and in time, abort them to engage in the next promising program or theory. He believed the American system tends to attract fads. This high turnover of programs is inconsistent with lesson study, which honors a different approach. The Japanese model of lesson study endeavors to improve upon a program or approach through the study of small tasks. The Japanese mathematics curriculum materials are built from Japanese lesson study reports that provide evidence of improvements. The Japanese also use national standards to inform their practices. The Japanese system is self-supporting. Their sustained practice leveraging lesson study leads to gradual improvements in pedagogy to enhance student achievement. The findings of the research are published for educators to access as needed. The profession improves slowly over time. York explained:

Lesson study is really embedded in the long-term development of expertise. That's how people get good at things, whether it's medicine, law, or anything else. You get good at things because you engage and deliver practice. You look at the things that aren't going well. You try to improve those, and over time, you get better and better and better. That just doesn't seem to be culturally compatible with what goes on right now. Does it work? Throw it out. Try something new. That won't work at the end of this year so we'll throw that out and try something else new. I think that's been a cultural barrier, for something like lesson study.

York found lesson study to be beneficial for his professional development. He wanted to share it with his colleagues at his university. He found it was hard for him to facilitate something

unfamiliar like lesson study. He believed many who participated had a positive experience; they could easily communicate what they learned. York contended the lesson study mindset had not worked itself into their culture. York said:

It's just really hard to continue to support something that's unfamiliar to a lot of people. In other words, here's the real issue, it's been great to participate in it for me. I think the people who have participated in it, a very high percentage of them would say this has been a positive experience and I've learned something from it. They can tell you what they've learned, but I don't know that it has worked the way into their culture. It's not a go-to tool, it's not the thing that they think about, when they think about improving teaching.

Harold explained some teachers might not appreciate the value of lesson study because they believed their current instructional practices were adequate and effective. He thought teachers with this attitude felt they don't need outside input or feedback about their teaching practices. Besides, lesson study was a peculiar form of professional development. Harold stated:

Some people probably see this as an odd type of project to be involved in. It's not just your normal traditional teaching, so probably some faculty might just think they're too busy for it, or they know what they're doing in their classes, they don't need a bunch of outside input on it.

Yanni bought into the benefits of lesson study. In her view, lesson study is a mechanism to improve instruction, but it was also a “double-edged sword.” That is, lesson study could be a viable, beneficial method to improve instruction in the United States, but it is “highly impractical in the current system.” After Yanni ended her teaching career as an elementary teacher, she decided to pursue an advanced degree, and at the same time, she became a lesson study



facilitator. She reported feeling frustrated with how lesson study fitted into the bigger picture. She stated, “I feel hypocritical sometimes, because I am asking teachers to do something the system is not set up to do very well. It's been frustrating, though, in thinking of how it fits into the big picture.” As a lesson study facilitator, she believed she was offering “a promise that you have a doubt of it ever being fulfilled.” Yanni stated:

It's [lesson study] actually an odd trajectory because I feel like I got really excited about it and thought that it could be a game changer and then got disappointed by how hard it is to implement and how slow the process has been, and how it feels like sometimes it feels like one step forward, two steps back. Better, two steps forward, one step back. Because there were teachers that I thought were really excited about it and then they wouldn't come back and it just waxed and waned so much.

With frustration in her voice, Isabelle stated lesson study has been compromised in the United States, because in this country, educational stakeholders have not found effective ways to truly integrate professional development into the calendar solidly. Isabelle said, “It's a huge political issue with changing the culture so that it's more seamless and it's not just an add-on thing that only a few people are doing.” Ultimately, in Isabelle's view, lesson study should not be a budget item. It should be built into our schools weekly. She believed most teachers she worked with on lesson study recognized the benefits of this approach, but there wasn't a “sufficient foundation for them to continue.” Isabelle discussed another of the culturally-embedded, systemic challenges that hinders the widespread use of lesson study. It is not just logistical challenges, but the ways teachers view their role as independent contractors. Despite the efforts of researchers to extol the benefits of collaboration, the hallmark component of lesson

study, teaching in the United States is still perceived as an individualistic venture, according to Isabelle. Isabelle continued:

Given the way things are in the US, this is another whole topic; teachers see themselves as independent contractors. I close my door; I do what I do. That's just ludicrous.

Children's lives surpass one teacher in one room. Teaching is extraordinarily complex.

We need to collaborate; we need to help each other. We need to use the best ideas we've got. Not just keep reinventing things. Young teachers should be standing on the shoulders of giants, not just going to the internet and using Pinterest to find this and that to do tomorrow.

Natalia referenced Stigler and Hiebert's work; these researchers informed Western countries about lesson study in 1999. Natalia said: "It's been over 20 years now-ish and it's still butting up against the old ways, the traditional ways. I'm tired of trying to persist against the old system, it's very powerful."

The theoretical supports needed for lesson study to flourish included a coherent working definition of lesson study in regard to its rationale, its protocols, and its benefits to the profession. Japanese teachers have this understanding; it is embedded in their professional development culture. Participants reported multiple instances where their teammates harbored misunderstandings of lesson study. These theoretical misunderstandings fomented certain situations that ran counter to lesson study protocols, and produced obstacles. The culturally-driven, theoretical conflicts centered on the teachers' perceptions of the amount of time spent on the study of one lesson, integrity to the process, and the rationales undergirding the components of the open research lesson.

**The fuss over one lesson.** Natalia argued, “I think someone who sees it as just another professional development opportunity probably doesn’t get it completely.” Val contended lesson study was misunderstood, because some educators didn’t comprehend the concept behind the study of one lesson. Val believed her colleagues did not fully understand that the research lesson was in reality an exercise in research; the process of studying one aspect of a lesson improved teachers’ knowledge in general. Not understanding the sophistication of the process proved to be problematic and an impediment to Val’s colleagues. Val sees this phenomenon as an obstacle to their lesson study work. Val said:

The teachers love to work. I think, like we said, that the obstacle of seeing it as a process, the process studies changes. It's understanding that this is a process that can be used to study anything is an obstacle.

Taylor remembered her initial experience with lesson study, and her confusion over the rigorous attention to aspects of one lesson. Taylor explained:

I'm remembering that when I first started, I didn't really understand. I was like, “Why on Earth would we ever spend all of this time planning one lesson?” It didn't really make sense to me. How are we going to spend all this time on one lesson?

York experienced this misconception at a conference when he presented his lesson study ideas to a group of K-12 teachers. He hadn't anticipated the questions he received from the teachers in regard to the time commitment to study one lesson. The general confusion was summarized by a teacher in the conference asking him, “Oh my gosh, you're going to spend that amount of time on one lesson?” He found it challenging to convince them about the benefits of spending three months with three other teachers working together to construct one lesson. He became acutely aware teachers in the audience produced approximately six lesson plans per

night. “I don’t know what dream world I was living in.” In an attempt to sell the concept to them, he emphasized lesson study is not about the perfect lesson. This distinction between a research lesson and a typical lesson leads to confusion about lesson study and can be a barrier. He stated that teachers focus on the amount of time it takes to study one lesson and “they quarrel with the process.”

**Integrity to the process.** Naomi described her first experience with lesson study. At first, Naomi thought teachers would gain a deeper knowledge of the benefits of lesson study by merely experiencing the process. However, she realized when her team jumped into the lesson study waters without full knowledge of the rationale behind the protocols, misunderstandings surfaced among her colleagues and within herself. In addition, the team did not use all components of the process. They were not clear about how their lesson fit into a unit, and how one lesson informed their overall teaching practices. Initially, her team became confused, disappointed, and harbored undeveloped ideas about lesson study. In time, Naomi’s lesson study team disbanded. Naomi explained:

I think you have to jump in, but you need to jump in with the right people or right person, because if it's not presented in the truest form, it may not stick. Because it didn't stick for me when I first joined, I partook in a lesson study cycle 8 years ago, it didn't stick. I don't believe I was taught lesson study the way the Japanese do it. It didn't stick because I don't think it was presented to us in the truest form. Well, I remember our subject was in number talk; that was what we decided to focus on. In an actual lesson you don't want to scaffold you want to present problems that the students haven't seen before in its truest form. You do scaffold in terms of building a unit, understanding where that lesson comes in the unit and making sure that students have those skills leading up to that lesson, so

that they can be successful. We took the number talk and the one I did 8 years ago, and yeah, we studied whether or not the lesson went well, but it was a little bit like in a vacuum. There was no connection, it wasn't tethered to any greater thing, it was really just a lesson and focusing on just the lesson. The lesson study that I've gotten from Japan, it's a much bigger picture. It's a lesson, but it's a lesson that's a part of a unit. That really, really changed things. Then of course the teaching through problem solving added another very rich layer that I didn't have the first time around.

Isabelle described an example of “gross misunderstanding of lesson study.” She attended a lesson study conference with 10 young elementary school teachers who had worked together on a fraction lesson. The team was scheduled to teach their collaboratively constructed lesson at the conference. The teacher who was going to teach the lesson told the team minutes before the lesson was to be enacted that she revised the lesson on her own the previous night. The teacher went on to explain her revisions. Isabelle was dismayed by the actions of the teacher, but did not interfere. Isabelle said:

The woman who was the research teacher said something during the day like, last night when I was rethinking this lesson, I thought about doing this instead of that, so here's what I did. She preempted the ownership of the lesson.

By revising the lesson independently of the team the night before, this teacher, with noble intentions, undermined the team's research. Her teammates needed to adjust their observational focus, which had already been solidified during all of the meetings in the weeks before the public lesson. The team's lesson became an individual lesson. Isabelle was concerned this breach and misunderstanding of lesson study protocols could potentially foment a variety of issues regarding the diffusion of content to the students. In addition, it had the potential to complicate

interpersonal relationships on the team. A further break with lesson study ideals pertained to the team's creation of a lesson without the use of high quality curriculum materials. Isabelle noted this team invented their lesson about fractions without using curriculum materials to guide their work. "Existing textbooks have already figured out ways to approach the lesson." Isabelle believed the team should not have invented curriculum at the same time they were inventing instruction.

After the conference, Isabelle approached the team's facilitator to address the two above-mentioned issues, and how they broke with lesson study protocols. The facilitator responded, "It was difficult for the teachers to find, learn, and use good materials." His response caused Isabelle pause; she was concerned that a lesson study facilitator allowed a team of teachers to engage in lesson study using two critical process-related misconceptions. In the end, Isabelle concluded the team members were still learning and the facilitator was trying to help them learn. "This is life in the USA."

**The novelty of the open research lesson.** Nadine described how educators unfamiliar with lesson study perceived their first observations of an open research lesson with live students. Even though the observers received a detailed, hard copy of the lesson before the event, it was hard for the lesson study neophytes to conceptualize all the work behind the lesson. "They don't necessarily understand the whole scope of what's happened and how deep it goes." It was a difficult challenge for Nadine to explain the process of lesson study to these educators. Nadine said:

I think it's hard as a person coming in and watching you at the research lesson. I think it's a challenge [for lesson study novices] to understand all the work that's come before. It's hard for them to conceptualize why all this work for this one lesson. They don't

necessarily understand the whole scope of what's happened and how deep it goes. That can be a challenge when we try to explain what the process is, I found.

Yanni knew little about lesson study when she attended her first research lesson. She was introduced to lesson study by attending a large research lesson. Yanni described her initial reaction to the event:

I went to the big open research lesson that was my first real foray into finding out what this [lesson study] even looked like. It's not that I didn't think much of it, but I don't think I got it. Going to bed I thought I was impressed by how many people were there and the kids were where you can see them, but I didn't quite grasp all the steps that went into it and what the outcome meant for future learning.

***Being observed.*** Participants believed fear of teaching the public lesson caused educators to reject the approach. The novelty of attending an open research lesson, complete with the “live students,” the team of teachers, the large number of educators in attendance, and the formality of the event, provided a cultural shock to those not accustomed to this type of event. A number of participants explained how the optics of the research lesson caused angst in their colleagues, especially in regard to being observed. Ilana adroitly described this phenomenon:

For me, it works to watch other people and have other people watch me and give feedback. That's the thing that has scared most people away from lesson study, is being observed. Others, honestly it's the fear of being observed! That culture in Japan, it's [lesson study] part of their teacher education to go in [other teachers' classrooms] and teach and watch each other all the time. Everybody does it in Japan. Nobody does it here. We shut our doors. I'm a little island. I really think it's about people having a fixed mind that they're a good teacher, if they open that door and they think they're a bad teacher

then they are going to completely change to a bad teacher instead of “I’m just a teacher in progress.” It’s pretty scary for people to allow themselves to put themselves out there like that.

Taylor agreed with Ilana. Teachers are hesitant to be vulnerable in front of their colleagues. Taylor explained:

Yeah, I think a lot of teachers are afraid. I think that gets in the way. I think, especially when they go and see the public lessons, then they’re like, “I don’t want to put myself out there. I don’t want people judging me, thinking that I don’t know what I’m doing.” A lot of people have said, “I don’t want to teach the lesson.” I think there’s a lot of fear in being the one to teach the [public] lesson or having people coming in to observe you teaching the dirty lesson [preliminary lesson].

Val also believed the issue of teaching publicly has the potential to turn educators away from lesson study. Val said, “Teachers don’t feel comfortable having other teachers go into the room and teach and you’re saying if that particular strategy is employed, then the teachers will balk at it.”

At the pre-lesson discussion, Isabelle made it clear to all in attendance after the public lesson concluded that the post-lesson discussion would not focus on the teacher’s actions. Instead, student thinking and student reactions would be highlighted. One of the guidelines she established for attendees regarding their observations during the lesson was, “To observe and learn and show what we observed. Think about what we think about, not to evaluate.” Still, the first thing one of the principals said in the post-lesson discussion was, “This is a terrific teacher, she gave a great lesson.” The principal was being natural, positive, and this is what he knew. Isabelle believed administrators’ traditional mindsets become lesson study obstacles unless they



spend the necessary efforts to become more knowledgeable about the essential features of lesson study. Isabelle argued, “It is difficult to break ourselves of the habits that run counter to lesson study norms and protocols.” Therefore, Isabelle contended it is critical that principals learn about lesson study on deep levels, and begin to “shake loose” their tendencies to evaluate the teachers’ actions as they engaged in lesson study. Isabelle stated:

It's really hard to break ourselves of those habits. This is just natural. This is the principal that I knew. He wasn't actually at that school. He was coming from another school to learn about it. He's somebody I worked with on other things. It's so hard to get out of that mold when that's what they do all the time. They have to be there to begin to shake loose that mantle and do something new with their observation.

The participants believed their facilitation of lesson study was compromised by their colleagues’ lack of knowledge of the rationales of lesson study. That is, lesson study proved to be less effective when all involved were thinking and reflecting in concert with one another. They were not coordinated in their theoretical understandings, and the common knowledge was underdeveloped. This underdevelopment was culturally based. The participants found the lesson study mindset had not worked its way into the culture. It was not the go-to professional development process teachers used to learn (see Chapter 4). Participants believed the current system was deeply entrenched and found it exhausting to superimpose lesson study on the existing culture. The systemic requirements for lesson study to flourish were not in place, and caused lesson study practitioners to pine for those supports. Lacking the necessary logistical and theoretical infrastructure, participants felt stress as they attempted to implement lesson study with their lesson study novice colleagues. This stress was intensified by logistical constraints including time, competing initiatives, and the chaos created when lesson study groups

experienced administrative turnover. I will now discuss time as a constraint to lesson study research teams, as it was the most reported logistical obstacle in this study.

## **Time**

The issue of lesson study and time as an obstacle proved to be a common theme in the data. Time as construct in this study can be categorized into two areas. The first category includes the actual number of professional development hours necessary to complete research cycles. The second category related to the participants' experiences and reactions to their time out of the classroom or how lesson study affected their feelings about fulfilling their daily responsibilities as classroom teachers.

**Time and the lesson study process.** Taylor argued that when teachers heard about the time involved, they rejected lesson study. Some have complicated and intense personal lives which prohibited their involvement in lesson study. She also explained part of the reason teachers steer away from lesson study had to do with their experiences of time wasted in previous professional development events. Their tainted notions of professional development made them wary of lesson study. Taylor reported:

I definitely think that is a huge obstacle. They just don't want to spend the time. They're very jaded as to professional development because of how it's looked in our district. I think they don't think it's going to be useful. They don't want to take the time. Some people honestly don't have time, they have to go pick up their kid at 3 o'clock, it doesn't fit with the schedule.

Agreeing with Taylor, Val said, "I think time, buying the time, is the biggest one [obstacle]." Similarly, Natalia said, "I think the biggest obstacle is time." Ilana described how some of her colleagues, at least initially, thought the extra time lesson study required was

restrictive. She said, “Not all of the teachers liked it at first. It's extra work, it takes time, you have to dedicate more of your time after school, and not everyone was into it.” York agreed: “It probably turned out to be more time than they thought it would be. I think people will, when they hear about it, will say, ‘Well, it's not for me because of the time commitment.’”

**The angst over time out of the classroom.** Yanni contended implementing lesson study created scheduling complications. Accommodating the schedules and needs of all the team members was difficult. Yanni reported, “I think it's just really hard because the time that's set aside for it, the mechanisms aren't set aside for teachers to have the time during the day, all of the time set aside for all of them, to participate, to be available.” Harold reported a similar phenomenon:

It is a little bit, I would say, clumsy or cumbersome, because you have so much face time and our schedules are so tight. It can seem like a lot of work for one lesson, but I think the benefits outweigh the challenges.

Isabelle explained:

When we tried to do lesson study, it's always a struggle because they [teachers] are reluctant to give up their teaching time in order to get to these lesson study workshops. I totally get it. I felt that way exactly when I was a young teacher myself.

Similar to other professional development events, lesson study required teachers to forgo their normal teaching responsibilities, like making lesson plans or grading papers. Teachers' routines were disrupted. Time away from the classroom created a feeling of angst. They feel accountable for their students' achievements. The potential for student misbehavior is more likely for a substitute teacher; a change in routine creates stress in some students. Some teachers believe a day out of the classroom is a day of instructional time lost. Plus, when teachers were

offered time outside the classroom, it required them to create a plan for the substitute teacher, among other things. What other profession requires their employees to create detailed plans when they are absent? Simply, extra work which involved being out of the classroom can be annoying.

Similar to teachers in the United States, Xeno, a professor in a Far Eastern country, articulated issues with time as well. However, in her experience, some of the principals she worked with offered to lighten the load of those teachers participating in lesson study. Xeno said:

Teachers are very busy and so they do not have time to meet for discussion and to share ideas and to develop lessons. Some teachers find that burdensome, because it takes time away from preparations or marking [papers]. Some principals have tried to reduce teachers' workload by reducing the number of committees that they have to be on and the number of core curricular activities that they are in charge of.

Taylor, an American teacher, had the opposite experience. She described how her superintendent disagreed with the lesson study process in regard to the amount of time teachers spent outside of the classroom. Taylor and her lesson study colleagues experienced significant obstacles to their lesson study work based on time constraints during the school day, and when they met after school hours. Taylor communicated:

We had to try to figure out how to minimize time out of the classroom. We also had our superintendent tell us that we were out of the classroom too much. That goes along with the administration getting in the way. I definitely think that is a huge obstacle if you don't have that, even at your school site. I think that if you are getting teachers who want to work to improve their practice and they're willing to take the time to write the sub plans and prepare to be out of the classroom, I think you're crazy to tell somebody no. I mean,

who wouldn't want teachers working together to improve their practice and take the extra time in meeting after school? We meet on weekends. It's also nice sometimes to have a long period of time. That's what we realized about the lesson study, is that it's really hard when you just try to meet for an hour or two hours after school. You can't, when you really want to dig in, by the time you just barely start digging in on something, then it's time to go. After school there's a lot of distraction. People have to pick up their kids or you're in the classroom and some kid forgot their book or they needed help with the homework or some parent emails you. I think it's really nice when you can have that full day to work and I think it's ridiculous that anyone would say that we couldn't do that. If you don't want teachers doing that, then I don't know what you want them doing. I think it's absolutely crazy.

Isabelle stated the Japanese don't have this issue with their administrators because, "There you don't have to convince the principals, it's a way of life."

Ilana was frustrated by her administrator's lack of support for their lesson study endeavors. Her team had a unique opportunity. Lesson study experts from a different part of the country requested to visit her school to discuss and study the manipulatives Ilana's team was using for mathematics instruction. That meant Ilana and her lesson study colleagues would need to take time away from their classrooms to work with their lesson study colleagues. Ilana's administrators argued this meeting would cause more time out of the classroom. Ilana reported, "The lesson study people from Montana wanted to come and look at these manipulatives they were thinking about using in the new curriculum. The district said, 'No.' They said, 'No!' It was a real struggle."

## Competing Initiatives

In general, those who do fully understand lesson study perceive it as another professional development approach to choose from among a plethora of other options. As discussed in Chapter 4, good or bad, teachers in the United States have choices to make for their professional development. Moreover, for a variety of reasons, many districts promote certain initiatives over others. Teachers in districts are required to attend those professional development events that are congruent with the various directives of their districts. A further argument, discussed by the participants as a reason not to engage in lesson study, centered on test scores. Teachers not familiar with the long-term benefits of lesson study, who don't see its value in the short term, or are not aware of lesson study's effect on test scores, may not choose to participate. Initiatives promoted as quick fixes will get the approval of district officials who influence how district funds are spent for professional development. Lesson study's slow, deliberate approach may not be attractive to those who honor the initiatives that promise high test scores quickly. Participants argued these competing initiatives caused an obstacle for lesson study. Yanni articulated this predicament:

There are so many competing things for their time. I think about myself. I think if I were in the classroom, I believe I would value a lesson study. I think of it highly but I don't know that I would feel like I could put in the time or that I would be able to actually participate given all the competing initiatives, at least in the district that I'm teaching in. Well, it's [lesson study] not fast, it's not a fast process. It's not something that, in the pure sense, is coming in saying, "We can help your test scores and ... if you participate," so it's lost a little ... and that's not what people want to hear. They want quick fixes and they want promises, whether they're true or not. I think we're competing. I think lesson study

is going up against those quick fixes that districts are so quick to align with because they don't know what else to do.

Natane, a university professor in the Far East, found it difficult to facilitate lesson study teams in schools where test scores were the primary focus, and where teachers felt the pressure to teach to the test. In these particular schools, teachers would emphasize the correct answers, and this orientation to instruction was geared to traditional teaching. Natane believed in conceptually-based instruction, and he intended to guide his lesson study teams to use problem-solving activities in their lesson study research teams. However, in these schools where test scores were emphasized, students were offered limited space to express their ideas. Natane believed lesson study was most effective in uncovering student misconceptions for teachers to leverage as they work to improve instruction. These conflicting ideas complicated his lesson study work. Natane said:

You know, in the lesson study classroom we focus on communication. How you express your idea in a mathematical way or you can reasoning upon your idea [*sic*]. Everything is okay as long as you can reason your idea. To plan the lesson, to me, is to help collaborate to create a problem situation. It's going to determine that the problem situation has to be relevant to the student. That is more important and more challenging for lesson study team [*sic*]. The focus is on the classroom. But, if the test is the focus, that so affects the way we do lesson study in school.

Xeno explained a similar phenomenon in her country. Even though for the most part, lesson study in her country is understood on deep levels as compared to teachers in the United States, there are still educators in some schools who perceived lesson study as an add-on. Xeno

described how these teachers, like their American counterparts, must deal with competing initiatives. In these schools, she argued there was confusion about lesson study. Xeno reported:

There is confusion about it [lesson study]. Yeah, there are some schools in my country that think lesson study is something like an add-on. We have schools that have to deal with different initiators of projects. For example, assessment for learning or differentiated instruction, so I have no time for lesson study.

Harold contended teachers are busy; they are inundated by numerous add-ons. He believed lesson study could be defined and categorized as an add-on. If teachers perceived lesson study as just another add-on, another mandate or option, they would reject it. Harold explained:

Again, I hate to, I know everybody says that they're too busy, but I just think that there are so many little add-ons we keep getting. This [lesson study] would just be another one. I think there'd be some push back against it.

Natalia argued that educators are interested in pursuing various educational ideas. This is understandable. The education profession is rich with topics to research and learn about for professional development. Natalia also explained how the pressure of budgetary constraints weighed on teachers' energy levels. Often, teachers are asked to do more with less, causing pressure. She believed lesson study could be perceived as an unnecessary luxury when considering the bigger picture. Natalia said:

There are different ideas that we'd like to pursue, but like so many other things, it takes time. At least at my institution, we're feeling a lot of pressure with staff cuts and more students. Having the ability to engage in that kind of research or engage in a lesson study sometimes seems a little bit like a luxury.



York mirrored Natalia's comments regarding the pressure on teachers to fulfill their multiple and varied responsibilities in their roles as educators. He believed teachers' energies are spread too thin to even consider engaging in lesson study. "Faculty are really crushed these days with multiple responsibilities and less and less time."

### **Principal Turnover**

Both Xeno and Natane facilitated lesson study in Far Eastern countries. Like their American colleagues, they experienced the problems in their lesson study teams when supportive principals left their positions to move on to other opportunities. Xeno discussed how critical principal leadership was to the lesson study process. Xeno invested a lot of effort in schools to introduce lesson study, facilitate teams, work with principals to supply teachers with the necessary logistical supports, and recruit more teachers to engage in the process. Because lesson study is intricate, complex, and nuanced, it takes time, energy, patience, and a positive working relationship with the principal to effectively enact its mechanisms. Xeno described feeling powerless in regard to principal turnover. When a supportive administrator leaves, it may mean the end of lesson study in that building, or it may have to be adjusted to meet the theoretical orientation of the new administrator. Xeno lamented:

It is a highly complex process. It is deceptively simple. Sometimes you have no control over the leadership within the school. One key challenge is after you invest a lot of time in the schools, the principals change, and when the principals change, you do not know whether or not the lesson study will be sustainable within the school. It may take a different form.

Natane explained how when a principal leaves a building for another position, or when a teacher leaves a lesson study team, it caused chaos for his lesson study teams. The time and

effort expended to recruit teachers and facilitate lesson study research teams is extensive; it can take years to develop. Natane said, “The first part is how to obtain the lesson study team in each school. Because when the principal moves or a teacher moves, then it's a lot of chaos with our lesson study team.”

Ilana reported when her principal left her building, the administrators at the district office worked to shut down lesson study in her building, citing time out of the classroom as the reason not to support this form of professional development. Ilana stated:

During that year the principal left. When the principal left, that district office came in and took over and they really shut down lesson study. They did not like it. They don't want any more days out of the classroom.

Val argued the system encourages principal turnover, and in turn, foments faddism. Most principals, like most teachers, believe in having a positive effect on students. Val discussed how principals with good intentions endeavor to implement their ideas to provide better opportunities for student achievement. There are also cases where principals encourage certain initiatives for self-promotion. Teachers are wary of principals' initiatives, because they are expected to implement their superiors' ideas in their classrooms. In Val's experience, principal turnover occurs frequently. It is difficult for teachers to buy into a new approach when they have learned that the new approach will eventually give way to the “next best thing.” Teachers equate new initiatives with fads. Val's comments illuminate the problems associated with principal turnover:

Well, what I see is that administrators change their jobs rapidly right now, at least in our area they are. Every 2 to 3 years, they're in a different job; they come in and they are trying to make a name for themselves so that the next job that they have, they'll be moving up. I think they're trying to find something that's different from what everybody

else is doing so they can say, “Look at me, I’m great. I instituted blah blah blah in our school.” What the teachers are saying is, “Well, this is the latest fad. We can wait this out,” so it’s even harder for them to buy into anything long term. I think that that’s where the ego is coming in is that they want to create a reputation so that their next job is attainable.

The time constraints, competing initiatives, the energy necessary for basic teaching responsibilities, personal lives, and principal turnover demonstrated the American system was ill-suited to support lesson study as it is in Japan. These less-than-ideal conditions for lesson study served as the context for the participants’ group-based work. Within this context, teachers interacted.

Contradicting what was reported in the previous chapter, participants reported their lesson study teams’ interpersonal behaviors were also less than ideal. I will now turn to the participants’ reports of their experiences of interpersonal failures within their lesson study teams. The interpersonal obstacles proved to be difficult and created an intense, sticky barrier to effective lesson study implementation. These interpersonal obstacles occurred within lesson study groups. In addition, local micro-political contexts also fomented interpersonal strife. A few participants reported their colleagues outside of lesson study teams raised concerns about lesson study, which eventually led to factions that exacerbated or caused conflict in their learning communities.

### **Interpersonal Obstacles**

In the previous chapter, the participants reported the effectiveness of the lesson study process on group-based professional development. In the following quotes, however, participants discussed how lesson study protocols were ineffective in mitigating the destructive power of

unchecked egos, toxic individuals, hurt feelings, or breakdowns in communication on teams. These interpersonal complications undermined the process, and caused disillusionment, gossip, factions in buildings, and disbanded some lesson study groups.

**Conflict within lesson study teams.** Participants reported disagreements within their lesson study teams. If a team could not move beyond the influence of negative personalities, if they could not move through their disagreements, or they could not minimize the negative interpersonal ramifications of cognitive conflict—despite the protocols and norms—their lesson study work was jeopardized.

Isabelle stressed when teachers engaged in argumentation about pedagogically-related ideas at any step in the lesson study process, the disagreements had the potential to devolve into personalization or hurt feelings. She stated, “It could throw off the whole project.” Isabelle, an experienced veteran on numerous successful lesson study research cycles, discussed how at times lesson study could not overcome the power of micro-political situations. She experienced interpersonal challenges when teachers were attempting to reach consensus on a topic or a content area to study. Isabelle reported:

I've seen it work, where lesson study changes the talking around the water cooler or the copier. In this one case, even that didn't work and lesson study just fell apart. A lot of them rejected it. It just was a political nightmare. I see it as more of a collaboration piece. That's one instance in my experience, where the lesson study, despite all of its nuance, it didn't fit that particular [team].

Odessa articulated the challenges of collaboration. She described how one individual on her lesson study team who manifested negative behaviors had the capacity to ruin her experience of lesson study. Odessa revealed her frustration of having to deal with this type of personality.

She wholeheartedly believed in the lesson study approach, however, the negative behaviors trumped lesson study protocols. Odessa recounted, “That’s one of the collaboration parts of lesson study. There’s a teacher where everything is critical, her tone and her voice. To me, that just ruins it all. It just ruins it all.”

Stephanie described her experience of facilitating a lesson study team. She recalled how individuals on the team were challenged to listen to others’ ideas, which caused gossip among team members. Stephanie said:

Folks were having a hard time letting go of their ideas and accepting others' ideas when the group made decisions about other people's ideas. And people had a hard time letting go of their own. There were times when I got the sense that people were sort of mumbling under their breaths as they left the meetings.

Interpersonal conflict proved to be a powerful lesson study obstacle. The negative egotistical characteristics of personalization, defensiveness, and lack of flexibility in thinking served to derail the effectiveness of lesson study research teams. Furthermore, one of lesson study’s strengths—as illuminated in Chapter 5—is its capacity to improve professional interactions within the context of a professional learning community. However, some of the participants described how this strength was outmatched by the power of interpersonal conflict generated in the wider school context.

**Lesson study and interpersonal conflict generated from local context.** In the following quote, Taylor described how lesson study fit into their school ethos. She cited lesson study as a divisive influence in her building; it caused factions among her colleagues. The factions were based on who decided to be a lesson study participant and who chose not to engage in lesson study. The teachers in the learning community who didn’t take a side explicitly, but

were unsure about lesson study, created another type of faction. The various factions perceived lesson study differently and constructed their opinions accordingly. The school culture in this regard was far from unified. Taylor explained:

I think that with our staff, there's a little bit of the “lesson study people versus the non-lesson study people.” I shouldn't say versus. It's not versus, but there's “Oh, these people are really into lesson study and they're all about it.” Then there's people in the middle who are like, “I don't know if I have the time yet. I thought it was useful.” Then there are people who are just trying to stay away from it as much as possible. I think that, right now at our school, there's a big divide as far as who's doing it and who's not doing it and who's way too into it. People have a lot of opinions about that. I think, for me there hasn't been any negative personally, but I do think it's kind of divided our staff some, as far as who's doing it and who's not doing it and why. I'm sure this happens with other lesson study people too.

Naomi described a similar context-driven, micro-political obstacle to her team's lesson study work; their team's lesson study experience was severely complicated by interpersonal obstacles despite the reality that her team was highly successful. In fact, their work was highlighted at a national conference. Outside of their home district, they were being honored, yet within their own school there was great turmoil that surrounded lesson study. Naomi dreamed of creating a learning community in her school driven by lesson study.

In Naomi's case, an added interpersonal burden affected her lesson study team. Her superintendent became involved in the conflict surrounding lesson study. According to Naomi, the superintendent's involvement fueled the factions and had a devastating effect on Naomi's supportive principal.

In her building, Naomi set out to realize the dream as lesson study facilitator and the mathematics instructional leader. However, in time, her dream turned into a nightmare. Naomi's passion for lesson study on a wider scale slammed into the brick wall of intrapersonal and interpersonal complications. These significant and powerful barriers hindered her ability to facilitate lesson study in her building. She realized her dream would have to wait; she said, "I don't think we are there yet."

Naomi contended the general atmosphere in the building around lesson study was fragile and driven by factions. Naomi believed the conflict intensified when the lesson study team was scheduled to attend a large-scale lesson study conference. Naomi's team of nine teachers was asked to present at this conference along with the principal. At one of the meetings to prepare for this event, Naomi believed her principal made a critical error. During the meeting, a team member suggested they invite the superintendent to attend the conference with them. Some were aware the superintendent wanted to attend the conference with the team. Naomi described what was said at the preparatory meeting, "Also, my principal didn't invite her to the conference, we took nine teachers to the lesson study conference, and she wanted to come. My principal made a huge mistake and said, 'No, I don't think that's a good idea.'"

At the time of the conference, the culture in the building was tenuous; the faction of teachers not supportive of lesson study was being vocal about its concerns; these teachers were also acting hostile towards the supportive principal. The scheduled trip to the lesson study conference exacerbated the situation. Naomi believed the superintendent, who wanted to attend the conference but was not invited, became less supportive and became more empathetic to the faction of teachers in her building who did not like lesson study. Naomi speculated her

supportive principal must have felt political pressure from multiple sides of the conflict. Naomi explained:

From that point on she [superintendent] was dead set against us. That was difficult because he [principal] was between these teachers who were acting out and a superintendent that wouldn't support him and [the superintendent] was stirring the pot with those teachers.

From there the situation became more serious. Not long after the conference, the superintendent attended a lesson study meeting facilitated by Naomi. At this meeting the superintendent announced to the team that the principal, their lesson study advocate, was leaving his position as principal. It was not clear if he was fired, or if he decided to leave on his own accord. It is not typical for a principal to leave his principalship mid-year. It was clear, however, the superintendent became less supportive of lesson study in her district. Naomi described what occurred at a meeting:

She came to our meeting to announce our principal leaving in the middle of the year. She tried to cast aspersions on lesson study, saying that we were a divided staff and lesson study was the reason. To which many people stood up and said, "How dare you? That's not true." That's what happened, and she definitely tried to fan those flames. It was definitely about her ego. We have all sorts of fun here.

For Naomi, the struggle continued. She experienced intrapersonal and interpersonal angst about what had transpired. She was cognizant of the cultural climate in her building; as the mathematics instructional leader and lesson study facilitator, she felt an added burden. Naomi felt targeted, or blamed, by the faction of resentful teachers against lesson study. Moreover, the superintendent implied Naomi positioned herself as more powerful than the principal. This was



difficult for her to understand; she believed lesson study grew on its own merits. She contended her intentions were not driven by a narcissistic desire to display power over her principal or colleagues. She reflected that she felt some degree of culpability due to weaknesses in her political skills within her leadership role. She also was frustrated that she was positioned by her superintendent as having more power than her principal. Naomi explained:

It's brought out the worst in me at times, I'm not going to lie, because I feel so passionate about it and no one wants to be undermined. I know that the teachers who aren't totally on board were resentful, they saw me as a leader. Even the superintendent came to my room and said, "There are questions around campus about who's the real person in charge." Insinuating I had more power than our own principal. That was never what I wanted or set out to do, it's just that this movement grew, it's [lesson study] by the teacher for the teacher; then it grows. I think in a way that it can't be contained, versus some kind of outside professional development.

After the dust had settled, the supportive principal left and the new principal took his position as the leader. Naomi knew he was made aware of the existing culture, and the history of lesson study in the building; Naomi felt the need to reassure her new principal he was the leader, not her. At the same time, she knew her team of teachers intended on continuing their lesson study work despite the history. Naomi felt pressure to socially engineer the necessary interpersonal and political conditions to acquire his support and honor the needs of her colleagues who desired to continue implementing lesson study, while taking into account the feedback of her colleagues in the wider community. Naomi described her strategies to facilitate more lesson study cycles:

What I'm trying to do is to make sure he knows that he's my boss. I've also assured him that once he sits in on a lesson study meeting, watches some teaching through problem-solving lessons in the research lesson, he won't turn back. I said, "Based on your philosophy, I have no doubt that you're going to be with us." I guess I'm trying to build him up and provide him with information as much as possible, and make sure he's seen as a leader, not me, so that there's no possible excuse, I don't want to be a reason something doesn't work. I guess that's how I'm going about it, and so far I'm feeling quite hopeful just because like I said his philosophy seems to be totally in line.

Naomi's perseverance to continue moving forward with her dream despite the setbacks demonstrated her commitment to lesson study. Her story illuminated the interplay between the multiple obstacles facing lesson study practitioners including interpersonal issues, time constraints, logistical issues, misconceptions of the lesson study process, principal turnover, and the intrapersonal challenges of being committed to a learning community. Naomi felt she needed to become pretzel-like to socially engineer conditions suitable for the continuation of lesson study in her community.

Severe interpersonal conflicts developed in Naomi's building around lesson study. She was unsure whether lesson study created the interpersonal issues, exacerbated them, or highlighted the existing social problems within her building. Naomi said:

There have definitely been staff issues, and I've wondered if lesson study has put the spotlight on it. That stuff was already there, and it just exacerbated it, or if it actually caused it, I won't know that. I don't want to go off and say how great lesson study is, and it's perfect, and this and this, because I know what happens, but I know in my own experience it wasn't lesson study's fault, it was the fault of the egos.

Naomi surmised ego played a significant role in the psychosocial conflict with lesson study in her building. Naomi's colleagues on the team, her colleagues in her building, her principals, and the superintendent played roles in the conflict. She believed lesson study itself could improve professional relationships in professional learning communities. However, in this particular situation, lesson study could not process the conflict productively. She asked an important question. "Did lesson study exacerbate existing problems or did lesson study cause the problems?"

### **Conclusion**

The participants did not consistently experience effective collaboration using lesson study's process and its norms, as described in Chapter 5. Lesson study's professional development process requires teachers to use extended time—beyond what is currently the norm—to collectively study curriculum, content, standards, and pedagogical approaches to construct and then enact a lesson with "live" students; this produces additional logistical complications for educators to consider. Moreover, given the historical realities of teacher isolationism, traditionalism, and current orientations to teacher evaluation, the public lesson component adds another level of emotional stress; participants described the significance of this phenomenon as an obstacle to lesson study. Teachers feel angst when colleagues observe their teaching. Thus, lesson study's constellation of features creates unique challenges for those who choose to engage in this foreign process. Naomi posed a question as she reflected on the obstacles she experienced with lesson study: "Did lesson study exacerbate existing problems or did lesson study cause the problems?" The answer to that question is complicated. Most likely, both possibilities she posed in the question contributed to the complications with collaboration. The logistical obstacles, coupled with micro-political issues within lesson study teams and from

colleagues outside of the teams, proved to be severe and daunting challenges for the participants to overcome. Despite the obstacles outlined in this chapter, 13 of the 15 participants remained steadfast in their support of lesson study as their preferred method of professional development.

## **Chapter 7**

### **Summary, Implications, Future Research, and Limitations**

Lesson study was reintroduced in America in 1999. This study added to and validated previous research findings about lesson study using a different research design than has previously been used. The data indicate that the same benefits and culturally-driven obstacles discovered by lesson study scholars over the past 20 years are still being experienced by the educators who participated in this research. This study added information about both lesson study's position within the American professional development system, and on the important role that context plays in the lesson study process. Moreover, this research adds new information about the participants' experience of obstacles. These obstacles relate to administrative support and interpersonal complications within lesson study teams, and with colleagues in the broader learning community who were not participating in lesson study. These findings about interpersonal obstacles not only relate to lesson study, but to the broader context of any group-based professional development activity.

#### **Brief Summary of This Research**

This study sought to answer the research question: How do teachers experience lesson study? I was fortunate to recruit 12 educators from the United States, two from the Far East, and one educator from Europe. All of the participants experienced lesson study cycles as participants, while nine out of the 15 were also facilitators of lesson study research teams. The interviews lasted an average of 54 minutes and 46 seconds; the research participants were forthcoming and honest about their experiences of lesson study.

Prior to this research project, I experienced lesson study as both a facilitator and a practitioner. I formulated ideas about lesson study and its viability to be employed in my country

(the US) at both local and national levels. Because of these preconceived ideas and biases, I employed the process of bracketing to admit to these biases, to be cognizant of them, and to use them as interpretive strategy aligned with the principles of hermeneutic phenomenology (Van Manen, 1990). I used the process of bracketing to highlight my biases; I wanted the participants' perceptions to drive the ideas that emerged about lesson study. I intended to engage in this research with adherence to the principles of hermeneutic phenomenology throughout this long process. I believe I held true to these intentions. The data from this study include the participants' experiences of professional development before lesson study, their experiences of the benefits of lesson study, and their perceptions of the obstacles that impeded their lesson study endeavors.

**Participants' experiences of professional development prior to lesson study.** The information I received about professional development was extensive. The variance in the type and scope of their prior experiences made pattern finding difficult. When participants explained their experiences, they used overlapping terms. Their shared vocabulary about professional development was ambiguous. I believe this was emblematic of how they viewed professional development—confusing and noisy. They viewed the professional development system as inapplicable, random, unfocused, perplexing, and not sustained due to time constraints and other logistical issues. Further, complications within collaborative groups hindered participants' experiences of effective professional development. In general, participants believed their professional development time was squandered. Alternatively, participants also reported characteristics of professional development they found effective. As they described these beneficial experiences, the participants unintentionally described features of lesson study research cycles. In a sense, they were predisposed to lesson study, which could account for their

preference for the approach. These data served as a baseline for comparative purposes. Asking the participants to describe their experiences or tell their stories about professional development uncovered their perceptions of the professional development ethos. This same ethos served as the backdrop, or the embedded system, where participants experienced lesson study.

**Participants' experiences of lesson study.** Participants reported that lesson study fostered efficacious orientations towards professional development in a way they had never experienced. They reported increased knowledge of content, standards, and conceptually-based pedagogy. Their orientation towards their students changed due to their improved capacities to listen to their students. They empathized with their students' intellectual strategies. Due to these experiences, participants argued lesson study offered them an opportunity to learn something new about teaching—at more profound levels—each time they engaged in the lesson study process. Participants attributed their positive experiences to lesson study's signature process and the explicit attention to norms and roles to guide their collaborative behaviors. In this way, participants reported feelings of trust, similar to what Tschannen-Moran and Hoy discussed in their 2000 article. This trust deepened to the point where the participants could express their professional vulnerabilities—a critical characteristic of productive professional learning communities. Participants had confidence in lesson study's formal, yet flexible, process. The slow, detailed-oriented, focused steps in the cycle provided them space to engage deeply with their intellectual work. The participants claimed their general experience of lesson study was positive. All but one stated it was the best form of professional development they had ever experienced in their careers. Lesson study bolstered their feelings of commitment, professionalism, and efficacy toward their teaching beyond lesson study research cycles, and into their overall teaching practices.

**Participants' perceptions of obstacles to lesson study.** The participants painted panacea-like pictures of lesson study. Conversely, when I asked questions about obstacles to the lesson study process, their conversational tone turned negative; their paintings of lesson study were splattered by a plethora of impediments that were difficult, if not impossible, to resolve given the logistical and interpersonal capacities in their local contexts. Participants candidly spoke of their varied experiences with lesson study. Lesson study's unique, deliberate, deep-dive approach to professional development was impeded by the inherent systemic characteristics of their current local professional development models. Furthermore, culturally-driven misconceptions about lesson study, fear of being observed, logistical requirements of lesson study including time, and principal turnover proved to be significant challenges for the participants. Thus, participants at times felt exhausted by these challenges which surfaced and persisted each time they employed research cycles. Participants had to persevere through the persistent obstacles and they were discouraged by this reality.

### **Implications**

The majority of this Implications section is organized by seven plausible insights. The Oxford Dictionary defines plausible as: "(of an argument or statement) seeming reasonable or probable" ("Plausible," n.d.). Some of the seven plausible insights are self-explanatory and some require further explanation or embellishment. After the seventh plausible insight, I turn to a brief discussion of possible systemic options for educators to consider as they employ lesson study's culturally foreign structures within the American professional development system.

### **Essences and Plausible Insights**

During data analysis, hermeneutic phenomenologists apply a process called the *Hermeneutic Circle* (Kafle, 2011; Lavery, 2003). Using this approach, the researcher moves



back and forth between analyzing parts of the experience to analyzing the whole of the experience. Researchers employ this cyclical, iterative pattern by reading the text, using reflective writing, and then interpreting. The hermeneutic circle is designed to assist with thematic analysis; thematic analysis illuminates the essences of an experience (Kafle, 2011; Laverty, 2003; Van Manen, 1990). Van Manen (1990) believed a phenomenological researcher's role is to effectively communicate the essence of a lived experience by providing descriptions of the experience more vividly. Van Manen stated:

A good description that constitutes the essence of something is construed so that the structure of a lived experience is revealed to us in such a fashion that we are now able to grasp the nature and significance of this experience in a hitherto unseen way. (1990, p. 39)

I created seven plausible insights using the interpretive, analytical process inherent to the methods of hermeneutic phenomenology previously discussed in Chapter 3. These seven insights were constructed by what I believe are the essences of the participants' stories about their lesson study experiences. I divided the insights into three categories: (a) plausible insights about the professional development system, (b) plausible insights about lesson study and administrators, and (c) plausible insights about lesson study and interpersonal obstacles.

### **Plausible Insights About America's Professional Development System**

The first two plausible insights are self-explanatory and refer to the essences of the participants' stories from Chapter 4.

- Plausible Insight 1: Group-based professional development events are dependent on the interpersonal capacities of those engaged in the process. If collaborative skills are lacking

in local contexts and if the climate of a school inhibits effective collaboration, the benefits of any group-based professional development will be compromised.

- **Plausible Insight 2:** The participants experienced significant professional growth, and learning was significantly enhanced when professional development before lesson study included: (a) access to experts; (b) a focus on content relative to student achievement; (c) sustained overtime; (d) applicability to their classrooms; (e) and the critical but challenging feature, productive collaboration. These features are inherent to lesson study research cycles. This may be the reason participants were drawn to lesson study and reported that it was their favorite professional development approach.

### **Plausible Insights About Lesson Study and Administrators**

The remaining five plausible insights emerged from the data in Chapter 6. Chapter 5 validated multiple studies involving the benefits of lesson study; therefore, I did not uncover any new information about the benefits of lesson study in this research. However, this hermeneutic phenomenology study offered more information about the obstacles to lesson study in American schools. Plausible Insights 3, 4, and 5 refer to lesson study, and the importance of administrators. Plausible Insight 3 involves the importance of lesson study stakeholders in increasing their efforts to provide administrators with more robust professional development about lesson study. With this insight, I have provided a deeper explanation.

- **Plausible Insight 3:** Lesson study stakeholders should not expect administrators to support lesson study if these administrators do not comprehensively understand the cultural requirements including the benefits, rationales, and logistics required to implement this approach to professional development. Lesson study facilitators will need to engage administrators, board members, and colleagues with comprehensive

professional development before employing the lesson study process in their learning communities.

**Engage superintendents and principals in lesson study professional development.** In terms of political strategy, principals and administrators are significant actors in constructing or altering school cultures and assisting informal teacher leaders with school climate. Administrators could assist lesson study facilitators with the vicissitudes of school climates and building cultural bridges. However, in this study, the participants were unclear on how much theoretical support was offered to the administrators regarding lesson study. Administrators' responsibilities are dauntingly complex and numerous, and their energies are spread in many directions. If administrators do not theoretically and logistically understand the requirements of lesson study's constellation of sophisticated features, they will not be able to support lesson study endeavors effectively. It might be necessary to spend more time assisting administrators to understand the foundational concepts behind lesson study before engaging teachers in lesson study research cycles.

Recall my discussion of Dr. Edward Sheldon from Chapter 2. I contend he is the grandfather of lesson study. He politically engineered the spread of the Oswego Movement (object lessons with criticism lessons) throughout America and in six countries during the Civil War era. Hollis (1898) writes: "Dr. Sheldon and his associates longed to see these changes working their beneficent results throughout the schools of our country" (p. 27).

After Sheldon's students graduated from his program, they served as conduits to spread the Oswego Movement throughout multiple states in America and in other countries. See Table A2 in the Appendix. Sheldon's enthusiasm to spread his methods was driven by his belief in his approach, and the reactions from the primary school students and their parents to the object

lessons (Hollis, 1898). One of his political strategies was the targeting of administrators and prominent education officials around the country to observe his methods first-hand. Hollis (1898) contends Sheldon did this so “that the teachers of the country might have an authoritative judgment concerning the new system” (p. 27).

Sheldon altered cultural disparities by influencing those in high-level positions who could make change. Sheldon’s political acumen allowed him and his associates to weather obstacles and criticisms of his methods. In his role as a professor and principal, Sheldon worked in concert with teachers and administrators to build a shared understanding—on deep levels—about the inherent features of his program. Sheldon’s movement spread to 36 states and five countries (Hollis, 1998). This example is from a different time, with different variables, but the importance of nurturing administrators as allies in building lesson study teams is as relevant today as it was back in Sheldon’s era when he was “selling” the Oswego Movement.

Usually, I find making comparisons between business and education problematic. The complexities in schools do not match the complexities of business. Nevertheless, both professions inherently involve human relationships. I am adding this idea to this discussion because of an interesting parallel involving these two professions and significant contributions to the country of Japan by American innovators. Along with Dr. Edward Sheldon’s influences on the Japanese educational system, American businessman W. Edwards Deming, in the 1950s, is credited with influencing and transforming Japanese business practices by making improvements to production (Ringle, 1981). Eventually, after thirty years of observing the business successes of the Japanese, American companies such as Xerox, Ford Motor Company, and Florida Power and Light began to adopt Deming’s methods (Saunders & Saunders, 1994). Saunders and Saunders

described Ringle's understanding of Deming's most important criteria in his decision to consult with American companies:

Although he worked as a consultant, Deming selected potential clients on one important criterion: Deming agreed to work only for those corporations in which the highest levels of management were willing to participate in change. Deming believed that the successes of his proposals “are [*sic*] contingent on total commitment at the pinnacle of management” (Saunders & Saunders, 1994, p. 115). This quote underscores the importance Deming placed on the role of leadership in innovation—similar to what Sheldon believed. Plus, this phenomenon of the Japanese adopting American ideas in both business and education is interesting. Ultimately, American business companies approved of and embraced an American idea only after they observed its successful implementation in a foreign country.

Providing lesson study professional development for administrators is just as critical to the process as providing professional development to teachers. Lesson study is designed as a bottom-up, top-down approach. As highlighted in this study, if the top-down (administrators and policy-makers) is not fully engaged and knowledgeable, the participants experienced obstacles that were annoying and exhausting. Informal teacher leaders can employ an effective political strategy to take necessary time and effort to lay the theoretical groundwork with those entities who could provide the necessary logistical and emotional support. This is easier said than done given competing initiatives inherent to America's professional development ethos, and the various egos involved in learning communities. Nonetheless, administrators have a substantial influence on culture in terms of altering what people think, believe, and assume about their educational practices (Van Houtte, 2005).

Plausible Insights 4 and 5 refer to the importance of administrators in building culture and climate in their schools; this daunting task includes the critical responsibility in assisting informal teacher leaders to enact their roles as teacher educators, and viewing informal teacher leaders as partners in reform. Both of these plausible insights require further explanation.

- Plausible Insight 4: Lesson study stakeholders and administrators can leverage the list of climate-based obstacles as a starting place to begin deep discussions about remolding the climate and culture in a building to support not only lesson study, but any form of group-based professional development.
- Plausible Insight 5: Principal turnover had a profound effect on culture and climate of the participants experiences of lesson study. As a proactive measure, lesson study stakeholders need to consider contingency plans to address the phenomenon of principal turnover. These plans can be a part of the discourse between all members of a learning community when addressing lesson study obstacles, as discussed in Plausible Insight 4.

**Context: A combination of culture and climate.** This study adds information about why lesson study is less impactful in the United States than it is in Japan. Participants reported experiencing the interplay between cultural differences and school climates as they introduced lesson study in American schools without the culturally-based support structures afforded their Japanese counterparts.

It will be important to understand why lesson study has been less consistently impactful outside of Japan—whether there are important aspects of lesson study as practiced in Japan that are getting “lost in translation” and can be fixed, or whether the problem is due to cultural differences that cannot be fixed. (Takahashi & McDougal, 2016, p. 514)

The participants experienced how cultural differences and school climates influenced their local contexts. Participants worked to the best of their abilities to navigate their local contexts in a manner conducive to the intense work of lesson study. Lesson study both altered local contexts and was affected by local contexts. Local contexts enabled the lesson study process or mitigated its benefits. The participants were perplexed by these varied experiences. When participants' lesson study experiences were less than optimal, they wondered whether lesson study caused problematic issues in their learning communities or aggravated existing ones. In this way, this study corroborates Lewis et al.'s (2006) contention that lesson study is affected by the powerful realities of local contexts. No two contexts are exactly the same. Murata (2011) contends: "While there is an emerging body of lesson study literature, we do not yet have a coherent and shared understanding of how lesson study effectively works in different contexts and models of teacher learning" (p. 1). This study characterized how local contexts—both positive and negative—influenced participants' lesson study experiences. Researchers contend that culture and climate are problematic constructs because the terms are often conflated; the nuance between the two terms is critical. In a 2005 article aptly titled, "Climate or Culture? A Plea for Conceptual Clarity in School Effectiveness Research," Van Houtte posits the distinction between the two constructs:

There is no doubt that, if one wishes to gain an insight into what members of an organization assume, believe, think, and so on, culture are better suited than climate. Climate entails the total environmental quality of the organization, and is, as such, broader than culture. (p. 84)

**Culture.** School culture is driven by the set of cognitive structures that guide an organization; it is the what and the how that governs the behavior of a learning community. The

sources of culture are known and malleable, making its components critical to school effectiveness (Van Houtte, 2005). Culture can be modified by changes in leadership or the different ways leaders address the assumed cognitive structures in a community (Rajbhandari et al., 2017).

The participants attempted to introduce elements of a new culture into an existing one with varying degrees of success. The successes drove their persistence; however, the obstacles caused frustration and angst about the future of lesson study in their learning communities. Educators in the participants' settings held intellectual assertions and assumptions about teacher professional development that were not congruent with those held by educators in Japan. Participants were challenged to build and share cultural understandings about lesson study with colleagues and with their administrators.

*Climate.* Climate is the feeling or atmosphere of a learning community. Climate includes the conditions of the organization including shared beliefs, physical surroundings, and interpersonal relationships between colleagues and groups of people within an organization (Van Houtte, 2005). Climate refers to the attitudes of the educators in the school regarding teachers' job satisfaction, the overall setting, safety, and student motivation (Cohen, McCabe, Michelli, & Pickeral, 2009). Rajbhandari et al. (2017) believe leadership has less influence on climate. In one educational setting, there may be multiple micro-climates, and they are hidden:

Climate can be stronger and rigid, resistant to change unless school leaders and professional communities have amicable agreements that are mutually beneficial.

Bringing about social harmony between individuals and groups is essential for school leaders. Although an educational setting reflects one culture, a school may have many clusters of microclimates created by individuals and groups of the professional



community and students. These clusters of micro-climates in organizations can impact school culture. (Rajbhandari et al., 2017, p. 144)

Culture and climate are not interchangeable, contend Rajbhandari et al. (2017); yet they are linked. The linkages and interplay between the two proved to be formidable challenges to the participants' ability to experience the full benefits of lesson study.

Recall a brief discussion of Yoshida's 2012 article in Chapter 2 where he summarized numerous researchers' discussions of lesson study and culturally-based obstacles. These obstacles include: (a) lack of understanding of lesson study, (b) insufficient content and pedagogical knowledge of teachers, (c) lack of support and resources to conduct high-quality lesson study, (d) non-systematic approach for conducting high-quality lesson study, and (e) short-sighted planning for improvement and lack of professional development time. Yoshida confirmed he observed these culturally-based obstacles during his 12 years of lesson study work with teachers in 11 school districts and 30 schools.

The findings in this study added five school climate-based obstructions to Yoshida's list. They are: (f) micro-political conflicts within lesson study teams; (g) micro-climate factions in learning communities between those engaging in lesson study, those who do not want lesson study to be employed in the larger community, and those teachers wavering between the two; (h) micro-political issues between lesson study facilitators and administrators, (i) conflicts between administrators about lesson study, and (j) micro-political complications induced by principal turnover.

In both explanations of climate and culture, the essential role of the administrator in creating and nurturing both climate and culture is implied. Since climate is more feeling-based, it is unseen, hidden, and more difficult for administrators to influence because a variety of micro-

climates may be present in an educational setting. Usually, schools don't have one climate but many micro-climates (Rajbhandari et al. (2017). The unseen micro-climates may account for many of the micro-political complications the participants experienced as they facilitated and led their local contexts from the middle as informal teacher leaders.

The political climate in schools is sticky. People are complex. Participants candidly recounted their experiences with internal politics both before lesson study and in the context of their lesson study research teams. In this study, the participants were either informal teacher leaders, formal teacher leaders (district math coordinators), or outside experts. Their power to lead comes from their colleagues' perceptions of their expertise, respect they garnered as classroom teachers, and their titles. Those in the study who did not have a formal title such as district math coordinator or university professor were considered informal teacher leaders. Each of the participants in this study, no matter what their title, was leading from the middle. They did not have the power of a district administrator. This adds a layer of complication when school climates are not ideal, or when interpersonal relationships became strained. To be successful, teachers leading from the middle need direct support from the principal of the building. Participants experienced challenges similar to the challenges faced by other informal teacher leaders who lead other initiatives or projects. Informal teacher leaders are vulnerable to the micro-political currents within a building and need extensive support from administration; however, even administrators are vulnerable in this regard.

**Principals and informal teacher leaders: Potential partners.** In the American professional development system, when introducing an alternative approach in a building, the relationship between the leaders of the approach and the principal is critical. Principals foster healthy building climate in the ways they nurture collaboration and empower teachers to play out

their informal leadership roles (York-Barr & Duke, 2004). Ideally, principals support teacher leaders with the school climate by helping them anticipate resistances, helping teachers broker relationships, and building support by ensuring all in the community understand the rationale behind the informal teachers' roles in the community (Donaldson, 2007). If these supports are not in place, teachers leading from the middle may not experience success. Teachers need to be supported and taught how to be leaders (York-Barr & Duke, 2004). If teacher leaders lack feelings of efficacy in their leadership roles, even if they naturally possess leadership qualities, their effectiveness in this regard suffers (Harris & Muijs, 2005).

Informal teacher leaders and principals, using a shared vision, work in concert to organize and implement a plan in a coordinated manner. Principals provide necessary resources for high quality instruction which leads to academic student growth. When informal teacher leaders are supported with structures that inherently reinforce collective participation, they are potentially successful in their endeavors. (Harris & Muijs, 2005; Hart, 1994; Johnson & Donaldson, 2007; Lambert, 2005).

The role of principals appears daunting. Clearly, the role of the principal in building both climate and culture is critical in assisting the participants in their roles as informal teacher leaders of lesson study. Participants reported varying experiences with principals; in general, the participants perceived their administrators as lacking sufficient knowledge of the foundational ideas of lesson study. When principals supported the lesson study teams, they did so from the periphery. As was mentioned in Chapter 6, Isabelle was frustrated by her administrator's misconceptions about lesson study. She believed it was necessary for the administrators to choose a topic of study and engage in an administrators-only lesson study research cycle. In this

way, she believed administrators would experience the process and be better equipped to support teachers' lesson study endeavors.

*Participants' experience of a partnership.* Recall in Chapter 6 how Naomi believed her supportive principal made a mistake by not inviting the superintendent to the lesson study conference. It appeared the superintendent was interested in learning more about the process and the necessary cultural shifts; he wanted to attend. However, according to Naomi, the superintendent felt slighted by this principal and by the lesson study team and this created significant climate-based complications for her principal, her lesson study team, and her entire learning community. When her supportive principal was fired, she was determined to build a positive relationship with her new principal to gain his support for lesson study. Naomi's dilemma highlighted a number of micro-political issues including the problematic phenomenon of principal turnover and the extra stress placed on lesson study teams.

As an experienced lesson study facilitator, Sal understood the importance of school climate and culture. Sal described his strategy when first entering a school to begin the process of introducing lesson study. In his first few meetings with school principals, he would interview the principals to ascertain the characteristics of the school's climate and culture. When Sal believed he obtained enough information in this regard, he then decided whether or not to introduce lesson study into a building. If a local context had the cultural and social infrastructure in place, Sal felt comfortable introducing the complex process of lesson study. If not, he would employ other less sophisticated professional development activities in those schools.

These examples from this study address this issue of gaining the support of administrators for lesson study. For a variety of reasons, including the overall professional development ethos in America (given the variance of micro-climates or multiple micro-climates

in one school), the participants were uncertain how to marshal the necessary support of administrators and the wider community for their lesson study endeavors.

### **Plausible Insights About Lesson Study and Climate-Based Obstacles**

Plausible Insights 6 and 7 address climate-based or interpersonal complications within lesson study teams and in the larger school community. Plausible Insight 6 dovetails with the previous insights regarding climate-based issues, and is self-explanatory. Plausible Insight 7 concerns facilitators' efforts to introduce and implement lesson study as informal teacher leaders in challenging contexts.

- Plausible Insight 6: The successful implementation of lesson study is dependent on the interpersonal and intrapersonal capacities of those within lesson study teams, colleagues not engaged in lesson study, and those in positions who can provide support.
- Plausible Insight 7: Due to the unique features of the lesson study process, including the leveraging of cognitive conflict, addressing perceived expertise, peer observation and dependence on interpersonal intelligence, facilitators require increased attention to the political ramifications of their work of introducing lesson study to a learning community. Lesson study facilitators will need to strengthen their capacities to facilitate lessons study events by applying an optimistic mindset, and seek the guidance of experts in the discipline of psychology. In addition, facilitators can also strengthen their ties to national and international lesson study networks that can provide support.

**Explicit attention to the politics of lesson study implementation.** Within the current professional development environment in America, the spread of lesson study is limited. Lesson study advocates require more support and knowledge of how to politically and interpersonally navigate the complex contexts in American schools in their efforts to promote lesson study. To

grow lesson study, facilitators can work to increase their informal leadership capacities, and continue to optimistically implement lesson study even when support structures are less than optimal.

**Increase leadership capacities.** Informal teacher leaders are distinguished by their passion for intellectual pursuits, their pedagogical prowess, and their reliance on their intrapersonal skills to negotiate the highly intricate and unique cultures and climates inherent within educational institutions (York-Barr & Duke, 2004). Informal teacher leaders are cognizant that leadership opportunities live in the region of the interpersonal, and act accordingly. In the hierarchical structure within schools, teacher leaders are situated in the convoluted and challenging position between their colleagues and administrators (Donaldson, 2007).

Many of the participants reported the challenge of working in school climates where expressions of negative ego emerged during collaboration. The data in this study indicate collaboration as a professional development strategy is less effective in these instances; it was challenging for the participants to facilitate lesson study groups and engage in other forms of professional development that leveraged collaboration. Further, school climates have been strained by punitive accountability measures (Comber & Nixon, 2009; Daly, 2009; Ingersoll, 2003; von der Embse, Pendergast, Segool, Saeki, & Ryan, 2016). A few participants described that their school climates harbored teachers exhibiting jealous and competitive behaviors or the “crab bucket culture” as described by Duke (1994). This phenomenon relates to teacher leaders who climb out of the “bucket” and are pulled back down by the other crabs at the bottom of the bucket. Traditional school climates have tended towards isolation, little interaction, or withholding of knowledge due to a competitive environment. The mentality is, “The better you look, the worse I look.” Adversarial relationships include basic contempt where teachers dislike

one another and refuse to interact. Worse, teachers intentionally use gossip or other insults to undermine their fellow educators in front of parents and colleagues. In these confrontational climates, teachers will withhold their pedagogical wisdom from their colleagues during collaborative events in favor of the subversion of knowledge distribution; this is hurtful to both fellow teachers and students who could benefit from the sharing of knowledge (Barth, 2006).

Collegial relationships, the type of relationship lesson study facilitators strive to create, foster the space for personal and professional growth, reflection about practices, research, and the sharing of knowledge for the purposes of increasing student achievement. It is well worth the effort in terms of nourishing healthy school climates for teachers, students, and administrators. Principals and teachers alike should work to promote these kinds of relationships that enable teachers to exert their knowledge collectively to restructure schools into vibrant professional learning communities (Barth, 2006; Lieberman & Miller, 2005). Korthagen (2017) believes teacher in-service facilitators and innovators have a responsibility to link academic knowledge to the personal strengths of the teachers. “What do the teachers think, feel, want, what are their ideals, what inspires them, what kinds of teachers do they want to be? And above all: What is their potential?” (Korthagen, 2017, p. 399). If facilitators neglect to leverage the personal strengths of teachers, the power of the school climate and culture will counteract the intentions of professional development endeavors to change teachers’ beliefs, attitudes, and behaviors (Korthagen, 2017). By increasing intrapersonal and interpersonal skills and knowledge of lesson study, a lesson study facilitator could potentially be better equipped to navigate the unique challenges presented by micro-climates and micro-political battles on lesson study teams and in their learning communities. Lesson study challenges a person’s traditional, culturally-based mindset. Lesson study challenges teachers’ perceived expertise through reflection and cognitive

conflict. These challenges require professional development facilitators and their colleagues to possess certain interpersonal skills. Promoting these types of school climates is a subtle responsibility of a lesson study leader.

**Optimism and teacher-driven efforts.** Engaging in lesson study, the participants sought to improve their teaching and spread lesson study on a broader scale to benefit their colleagues and the profession. This theme of spreading lesson study was discussed by all of the participants. When participants considered spreading lesson study further into their learning communities, given the obstacles, they were unsure how to introduce lesson study moving forward.

For the past 20 years, educators have employed and introduced lesson study into America's system on their own without the necessary administrative support structures. Given the current professional development infrastructure in America, introducing lesson study through teacher-driven efforts seems to be the only option available; it is the only game in town. Even though they were not offered the necessary support structures, the participants agreed their efforts with lesson study enabled them to grow as educators; however, their intention to spread lesson study throughout their learning communities was a source of frustration. Participants made statements that signaled feelings of powerlessness about their inability to change the professional development system to accommodate lesson study more effectively.

***Pessimistic view.*** Given the historically-based professional climate and culture of America's professional development system, as described in Chapter 4, and the information in this study on lesson study obstacles, one could pessimistically argue lesson study's trajectory in America is problematic, even fragile. It could be headed for the proverbial professional development graveyard and laid to rest besides other reforms and innovations. Thinking this way, those who are attempting to spread this innovation are wasting their efforts. In other words,



why bother. The system continuously produces or discovers a wide-variety of innovations with ease but discards them just as easily; it is incapable of supporting lesson study as it needs to be supported both logistically and financially. Plus, the insidious nature of micro-political conflicts is exhausting to deal with as a facilitator. In the end, lesson study will become a fad. In this pessimistic way of thinking, lesson study, with its complexity and its foreign cultural and collaborative requirements, is a mismatch with the American educational culture. It is not a “translation” problem; it is a cultural problem. The chasm between the two cultures cannot be bridged. Nevertheless, in a way, this view of lesson study in America is fascinatingly filled with irony. To believe lesson study is foreign and cannot be successfully implemented in the American system belies the historical evidence of the genesis of lesson study.

*Optimistic view.* Alternatively, using an optimistic orientation to introducing lesson study in America, the participants in this study may have experienced the evolutionary growing pains—both the highs and lows—of a system beginning to embrace elements of an alternative approach to professional development as currently practiced. This approach includes teachers engaging in professional development while collaborating in professional learning communities to learn about conceptually-based standards and pedagogy to implement in their classrooms. There are reasons to believe they experienced the initial phases of a cultural shift.

*Four ideas.* This optimistic view is based on four ideas. First, the participants reported their professional development experiences before lesson study included professional learning communities. Education officials were supporting professional development driven by collaboration. The participants stated the current problems with professional learning communities were two-fold: (a) leaders have ambiguous understandings of the rationales supporting professional learning communities; and (b) before lesson study, with some

exceptions, participants experienced professional learning community events as unfocused; leaders were unsure how to facilitate them effectively. Nevertheless, this movement towards leveraging collaboration and the genius of multiple perspectives is an indication a shift is occurring. Attempting to solve pedagogical issues using professional learning communities for professional development is a move beyond isolationism and traditionalism. Lesson study is a type of focused, structured professional learning community.

Second, the standards movement, although linked to teacher evaluation, signals education officials and policy-makers support policies that have the potential to offer more coherency within the profession. Participants contended that one of lesson study's strengths was how the process enabled them to deeply learn the standards.

Third, over the past 20 years, lesson study researchers have produced a plethora of research illuminating the benefits of lesson study. Even in the face of the obstacles discussed in the literature and in this study, lesson study is still being practiced throughout the country. Participants were not satisfied with the way lesson study has been received in the country. However, even though the circumstances were not ideal to support their lesson study efforts, introducing lesson study using this method has provided beneficial consequences to many educators and students.

Fourth, the history of lesson study in Japan demonstrated that when the Japanese teachers implemented lesson study without systemic supports, their teacher-driven efforts eventually led to more widespread use of lesson study in that country. This fourth reason needs more explanation. Takamine brought the Oswego Movement to Japan in the late 1870s where it gained some support. Ten years later in 1887, the educational officials embraced other approaches. After this faded, the Japanese focused on educational researchers from America, including Dewey, to

guide their educational system (Hollis, 1898; Kaigo, 1952). During this time, and for the next 60 plus years, through teacher-driven efforts, Japanese educators continued to leverage the methods imported by Takamine in various schools (Fernandez & Yoshida, 2004).

In the mid-1960s, teachers in Japan combined Takamine's approach with *konaikenshu*. *Konaikenshu* is a school-based professional development model where teachers focus their learning in sustained ways to address a school-wide collective goal. Lesson study was used as the process to achieve those goals; this implied a certain degree of collective organization. By the middle of the 1970s, the Japanese federal government noted the effectiveness of combining *konaikenshu* with lesson study. Japanese education officials established incentives and limited funding for teachers to employ this approach, and this continues today. Even though the federal government supports lesson study and *konaikenshu*, lesson study is not mandated. Teachers and administrators consider lesson study as voluntary (Fernandez & Yoshida, 2004). With large numbers of teachers practicing lesson study, with administrators and government officials offering support, lesson study in Japan has flourished and serves as the chosen method for teacher professional development. It has become an essential component to their entire education profession. Thus, when considering the historical trajectory of lesson study in Japan, the participants can find solace in their teacher-driven efforts.

***Applying optimism.*** Using an optimistic perspective, America's professional development system—warts and all—has brought the profession to a place of embracing a number of foundational ideas associated with lesson study. The professional development system enabled teachers and administrators to “find” and introduce lesson study to various learning communities around the country through teacher-driven, bottom-up methods. The system, to a certain extent, supported lesson study endeavors; this limited support continues to this day.

The top-down mandates of standards and the use of professional learning communities signal alignment of ideals and goals within the educational system and lesson study. Therefore, some of the participants' goals with lesson study align with some of the goals of other actors in their learning communities. This, and the idea that lesson study research cycles are driven by focused professional learning communities, provides lesson study advocates with a cogent argument. Of course, this apparent evolutionary alignment does not necessarily mean lesson study will become America's preferred professional development method. The future of lesson study in America is unknown. Instead of harboring feelings of impotence to change school cultures and climates, participants can view themselves as pioneers, or trailblazers like their Japanese counterparts from the early 1900s-1960s, rather than victims of a powerful system. Taking the optimistic long-view, participants could alter their frustrations with the process of introducing lesson study to their colleagues while leveraging the bottom-up approach; this may be the most pragmatic intellectual and emotional mindset to employ given the current circumstances.

### **Systemic Options to Support Teachers in Lesson Study**

The current professional development system honors teachers' autonomy. During some professional development events, administrators offer their teachers choices; at other events, teachers are required to attend mandated professional development. The following options are ways lesson study can be used in the current system:

*Option 1.* Lesson study remains a professional development option. As a professional development option, it provides teachers with autonomy and the opportunity to reap any benefits offered by this approach. However, interested teachers must secure funding (if available) and work with administrators to meet the logistical requirements inherent to lesson study.

Administrators may or may not be supportive or understand the rationale behind lesson study. However, as reiterated in this study, if professional development facilitators allow teachers to engage in lesson study as an option without the supporting structures, they will experience a variety of obstacles.

**Option 2.** All teachers are mandated to engage in a lesson study cycle one time a year. This option offers some benefits. If those involved implement lesson study with integrity and explicitly address and monitor collaboration skills, there is potential for teacher learning. The findings from each lesson study team potentially provide valuable information to inform the profession. Mandating only one lesson cycle per year is key. After the one cycle, administrators return to their traditional approaches to professional development, including choice. In this way, stakeholders would perceive lesson study as a way for teachers to research their practices, a necessary aspect of any profession.

Option 2 will create a significant upheaval in the ways district officials organize their professional development. Plus, as with any mandate, there will be micro-political pushback. Even though administrators offer each lesson study team the ability to choose the topic of study on their lesson study teams, the requirement to engage in lesson study goes against the notion of freedom of choice.

**Option 3.** In this option, teachers voluntarily choose to participate in lesson study. The difference between Option 1 and Option 2 is the level of support. Administrators are significantly engaged in this Option 3. Administrators commit to professional development to deeply learn, to develop a shared comprehensive understanding of lesson study and ideally participate with the teachers. Due to the principals' deeper knowledge of and interest in facilitating lesson study as a professional learning community, all necessary supports—both

theoretical and logistical—are readily available to the lesson study participants. Administrators and lesson study participants will consistently communicate with colleagues in the community not participating in the lesson study cycles. In this way, administrators and lesson study members assist all community members in working towards a better understanding of the rationales underpinning lesson study. Option 3 requires significant time and collaborative efforts between lesson study facilitators and administrators to build the infrastructure and lay the foundation required for vibrant professional learning communities driven by the lesson study process.

Option 3 requires high levels of in-depth discussion and planning between lesson study informal teacher leaders and administrators. Ideally, this should occur before teams employ the lesson study process. In keeping with an optimistic orientation towards the work of introducing lesson study in American schools, planning teams can leverage the obstacles reported in this study and the literature as the focus of the planning sessions. In this way, instead of perceiving the lesson study obstacles as insurmountable, the obstacles become challenges for creative problem-solving. Table A3 in the Appendix highlights the lesson study obstacles as reported by the participants. This table offers suggestions, based on these obstacles, to guide the discourse between lesson study facilitators and administrators as they proactively plan the implementation of lesson study into their communities. These suggestions are not exhaustive but serve as flexible starting points. Given the reality that local contexts vary, other ideas to inventively use local resources will arise in the problem-solving discourse. These preliminary meetings may require some months to build shared understandings about lesson study between lesson study facilitators and administrators.

## **Limitations and Future Research**

The information from this study provided a general overview of participants' perceptions of lesson study's introduction into their schools. Data collection was constrained by the limitations of snowball sampling, as described in Chapter 3. Two of the participants in this study were committed to lesson study but had reservations about its implementation in American schools due to the cultural differences. Moreover, the majority of the data was generated by educators clearly and passionately committed to lesson study.

My intention was to gather data focused on teachers' perceptions of their lesson study experiences; it was possible the participants may have inaccurately reported or selectively suppressed certain details of the lesson study events, certain aspects of the school climates, or interpersonal interactions they described. Although my interview questions were designed to mitigate this limitation, reporter subjectivity may have occurred in this study. I employed snowball sampling and specifically asked the participants to refer me to teachers in their community who were previously on their lesson study teams but decided not to participate any longer. Teachers in this category declined to participate. Further, exploring the perspectives of the principals and superintendents involved in the participants' learning communities would have provided rich data to add to the findings of how participants experienced lesson study. Even though the participants were candid about their frustrations with lesson study, with context being so critical and perceptions of climate and cultural underpinnings so important to my findings, the conclusions are not generalizable. To learn about lesson study's introduction into various contexts using teacher-driven, bottom-up efforts in more depth, research using case studies is necessary.

Another limitation of this study was the possibility of subjective interpretation. The interviews averaged 54 minutes and 46 seconds in length and were transcribed. The amount of data was extensive. I understood my responsibility as a researcher was to explore three qualities existing in the language of the participants: (a) what was said, (b) how it was said, and (c) what remained unsaid (McCormack, 2004). Due to my capacities as a researcher or through the use of phone interviews, it is possible I unintentionally missed subtle cues participants provided relating to these three language features. Plus, the phone interviews limited my ability to examine the participants' cues in terms of body language and facial expressions. Even so, I found the phone interviews to be an effective data collection method. The participants chose the time and place for our conversations, which offered efficiency and logistical ease especially considering the distances involved between me and the participants. I believe the participants felt comfortable enough to provide honest, detailed descriptions of their lesson study experiences. Despite the limitations, I believe phone interviews have promise when researching an international approach to professional development like lesson study.

The sample size for this study was also a limitation. School climates and cultures in elementary schools, middle schools, high schools, and college are varied and diverse. Even though I was able to interview 15 educators in total, the sample size for each level was about four participants. Still, this study gathered data from each of the levels. Shulman (2005a) conjectured lesson study has the potential to become the signature pedagogy of the education profession. By gathering data from teachers' experiences at each level—in spite of the varied cultures and climates—it was fascinating to learn that participants described similar benefits and obstacles even when considering the experiences of the participants from other countries.



**Possible future research.** As mentioned in the above paragraph, the sample size from each of the levels was small and more research at each of the levels (elementary school, middle school, high school, and college) is needed to validate or refute Shulman’s ideas about lesson study as signature pedagogy.

A further area to research relates to Chapter 4 on the participants’ experiences of professional development before lesson study. Participants described how the American professional development system provides teachers many options to choose from to support their learning. Some of these options allow room for administrators to mandate specific professional development. Wilson et al. (2011) argued, “School systems and states select programs on the basis of interest, taste, convenience or mandate. Seldom—if ever—are they selected on the basis of empirical evidence of effectiveness” (p. 383). In light of policy and districts’ logistical constraints, future research would be useful that explores, in depth, why administrators choose particular professional development programs; administrators’ perspectives about their choices and about professional development in general, would be informative. Plus, understanding how teachers make sense of the choices provided by their districts’ administrators, and how these choices are in line with or opposed to their choices would add further information about professional development. In this study, administrators’ decisions and choices to provide logistical or interpersonal support—or not—was a significant factor in the participants’ experiences of lesson study.

A related topic for research is the effect of administrator turnover on professional learning communities, including those communities using lesson study. Lesson study is designed to be sustained. Laying the groundwork for it requires much time and effort. Two participants used the term “chaos” when referring to lesson study and principal turnover. Superintendents or

principals supportive of lesson study who leave their positions create significant challenges for lesson study teams to sustain their work. In other words, lesson study practitioners must hope the new administrator will choose to be supportive, but there is no guarantee.

In this study, nine out of the 15 participants were both practitioners and facilitators. Facilitating lesson study is a complicated endeavor. Facilitators require high levels of knowledge about content, pedagogy, instruction, curricula materials, and most importantly, they require deep knowledge of the lesson study process. Plus, in order to lead lesson study research cycles effectively, facilitators of lesson study need emotional intelligence to guide lesson study teams through cognitive conflict and micro-political complications. Future research is needed to understand the challenges and successes experienced by lesson study practitioners and facilitators in their endeavors to recruit their colleagues to engage in lesson study. Research on lesson study facilitators could inform our understandings of informal teacher leadership and professional learning communities. Moreover, case studies are needed to help us understand how successful lesson study research teams successfully navigated the obstacles in their lesson study endeavors.

## **Conclusion**

Despite the previously mentioned limitations inherent to a study, the participants provided helpful information on the status of lesson study in American schools. Participants provided a snapshot, a general picture, of the effectiveness of their teacher-driven attempts to introduce lesson study into their learning communities from various regions in the country. Participants' reports of their experiences corroborated numerous studies previously conducted on the benefits of lesson study. The study also illuminated the obstacles to the spreading of lesson

study piecemeal. This difficulty spreading lesson study was a critical theme in the data. When thinking of the future of lesson study in American schools, there is a reason for concern.

The lesson study obstacles confronted by the participants signaled the need for adjustment to their bottom-up strategies. As informal teacher leaders, participants were perplexed how to move forward; they needed more resources and support. Participants could bolster their lesson study advocacy by employing an explicitly designed political strategy to address the various social climates. Engaging administrators more comprehensively in terms of professional development and their involvement in the process is an approach to consider. A fully informed administrator is more likely to be a powerful ally. Taking the time to build these relationships before facilitating lesson study groups may be fruitful. Further, collaborative capacities are essential to group-based professional development events especially professional learning communities. American educators are learning to collaborate in professional learning communities. Participants were especially concerned about this critical component within schools. Providing more resources and support to assist facilitators in nurturing cognitive conflict and in learning how to address the various egos that surface in collaborative work is another approach. Lesson study networks could provide support and resources in this regard. Also, providing lesson study facilitators and team members with opportunities to engage with and learn from those with expertise in the areas of cultural psychology, occupational health psychology, positive psychology, and performance psychology could be helpful in nurturing effective professional learning communities.

For comparative purposes, the data on lesson study were embedded within the ethos of America's professional development system. Understanding the differences and common features (professional learning communities, standards) between the two professional

development systems could assist lesson study stakeholders in enhancing their ability to grow lesson study within the system. Even in light of the cultural disparities, lesson study is aligned with the goals of American education. When considering the complex, intricate local contexts within American schools, educators interested in spreading the culture of lesson study through bottom-up methods, or as informal teacher leaders, will require an extraordinary mindset. This particular mindset includes political skill, thorough understanding of the principles of lesson study, emotional intelligence, perseverance, and great passion.

## Appendix

### Coda

#### **Why Lesson Study?**

My goal in doing this research is to add to the micro-level knowledge base about the Japanese model of professional development called lesson study. I realize that my experiences with lesson study influenced my ability to understand and interpret the different perspectives that have surfaced in the data. Throughout the study, I was cognizant of my biases. On the other hand, I believe my experiences with lesson study have provided me with invaluable insights that informed this research project. In this Coda section, I clarify my biases regarding why I chose lesson study to research, and how my experiences as a practitioner and facilitator shaped my orientation to lesson study.

I chose to conduct a study on lesson study because I believe it has the potential, if implemented on a broad scale, to create a paradigm shift in the American educational system. I think lesson study, as practiced in Japan, features inherent structures that provide all stakeholders with a complex accountability system. I believe it is a more humane, more appropriate system for a profession that claims to focus on the intellectual and emotional development of its nation's youth. However, given the current political climate and structural supports geared towards punitive, neo-liberal accountability measures, lesson study, if primarily used as a professional development system, would be a significant upgrade to the current manifestation of professional development employed in the American system.

In the fall of 2004, I was first introduced to lesson study while participating in a doctoral level course. The professor facilitating the course shared an article authored by Dr. Lee Shulman (2005a) entitled, "The Signature Pedagogies of the Professions of Law, Medicine, Engineering

and the Clergy: Potential Lessons for the Education of Teachers.” In Shulman’s article, he discussed the “signature pedagogies” inherent to the professions mentioned above. Shulman also described how Japanese educators participate in professional development. He compared these approaches to common American professional development; the following quote summarizes his conceptualizations of lesson study:

Lesson study is part of a larger, generic pedagogy of design, experiment, evaluate, redesign engaged collectively and collaboratively, with lots of visibility, engagement, passion and accountability among all members of the learning group. This is the language of signature pedagogies, and it is a model we must aspire to in teacher education.

(Shulman, 2005a, p. 19)

Shulman’s article caused me to pause. After spending the last 30 years as an American educator, I could not resist making comparisons between my experiences with professional development and the professional development opportunities offered to teachers in Japan. A variety of feelings, thoughts, and intriguing possibilities arose in my mind by the information presented in Shulman’s article.

As I contemplated the benefits of lesson study, I felt both excitement, and at the same time, frustration. I was excited to think that teachers in another country had strived to improve an intuitively simple, yet theoretically sophisticated model of professional development. I was also impressed by the professionalism of the Japanese educators and the respect offered to them by all of the stakeholders within that country’s educational system. On the other hand, my musings about lesson study took a pessimistic twist because of my experiences with professional development as an elementary teacher in the United States. Despite the efforts and good intentions of those in positions to facilitate professional development opportunities, my

professional development experiences have been cyclically incoherent, isolating, and for the most part, ineffective.

In my attempts here to describe my frustrations about my professional development, I take the risk of being perceived as a negative cynic who assigns blame to hard-working professional development facilitators who missed the mark, at least in my case. I think these professionals have been (as had I) ensnarled in a culturally-driven archaic system awash in a plethora of programs, untested innovations labeled as fads, and traditionally-based mindsets that compete for professional development resources. Wilson, Rozelle, and Mikeska (2011) eloquently illustrated the predicament of American teachers in regard to professional development. In their article, they described the (non-) system of professional development opportunities for the three levels of teacher education (teacher preparation, induction, and professional development). The variation between and across these levels inhibited the construction of a synchronistic system that fosters teaching quality. This article had a significant impact on my thinking about education. Based on this lack of coordination between these three critical levels of teacher education, I am wondering if we can label the field of education as a profession when compared to other professions and their signature pedagogies (Shulman, 2005a, 2005b).

Based on my learning experiences as a teacher in the United States, professional development was ineffective because numerous cultural impediments complicated my attempts to enthusiastically apply the new knowledge from the professional development opportunities. Some of these obstacles included hyper-testing; accountability mandates; locally-driven initiatives that ran counter to what I was learning at workshops; deficient administrative supporting structures; and the general ethos of apathy, isolationism, or traditionalism exhibited

by some of my colleagues—partially caused by these cultural pressures. Consequentially, I felt isolated. In my case, being isolated was a detriment, because to grow as a learner, I required an instructor to explain the new concepts and then a social, collaborative environment to implement the new ideas. I was not able to share or test what I learned with my colleagues. My colleagues, on the other hand, were either applying their knowledge from the workshops they attended, or were too busy surviving the onslaught of neo-liberal educational mandates to care about my pedagogical interests. I felt that I had to embrace the “go it alone” strategy.

After learning about lesson study, I was jealous of the professional, collaborative atmosphere where Japanese educators teach. I was jealous that Japanese administrators and educational department officials trusted their teachers and honored them as researchers capable of driving curriculum reforms. Bluntly stated, I felt cheated as an American educator. I believe if my professional development opportunities were similar to my Japanese counterparts, then I could have viewed myself as a more sophisticated teacher. Even though I believed that I was a competent, talented, intelligent, and caring educator, my potential was stunted due to systemic incoherence and lack of synchronistic vision. No doubt, Shulman’s article had a big impact on my thinking about my profession.

In 2010, I met with a local university professor. I had worked with her students and was impressed by what she was teaching them in her undergraduate classes. I observed this professor’s students implementing science notebooks with an orientation towards problem-based learning. I wanted to learn more about this engaging, sophisticated approach, and I scheduled a meeting with this professor. During the meeting, I learned that they were not only an expert in science education but that she was also an expert in lesson study. We celebrated our common



interests by forging a university partnership centered on science education and the use of lesson study.

In this partnership, we gained a great deal of knowledge about lesson study. We experienced much success as well. Our successes included facilitating open research lessons, acquiring new pedagogical content knowledge, publishing research articles, having numerous speaking engagements regarding our work in science education and lesson study, and receiving funding from grants. In conjunction with these successes, we gained invaluable experiences implementing lesson study, despite some significant structural and cultural obstacles. These obstacles included accountability testing, local initiatives, and the newly implemented teacher evaluation system. Many of the participants stated that they honored lesson study, but the energy and time required to engage in this type of professional development was difficult to manage given all of the aforementioned competing contextual realities. Time was a critical issue. Despite these issues, my vision of lesson study as a viable approach for professional development was validated. I wonder if lesson study can be adopted on a large scale in the way it has been in Japan. I understand the political climate, the disjointed professional development paradigm in America, and the general cultural milieu found in schools pose formidable barriers to the successful macro-level implementation of lesson study.

### **Diving Deeper into My Lesson Study Background**

**The positive.** As a researcher, I am cognizant of my history with lesson study. As a teacher who had been working in elementary classrooms, I believed I benefitted from lesson study. I have engaged in numerous lesson study research cycles since 2010. In that time, our lesson study teams were able to spread this approach to a total of three different schools in our district. I had both positive and negative experiences in regard to my professional interactions

with colleagues within the structures of lesson study. As a researcher, I endeavored to disclose how my experiences with lesson study have influenced my thinking. In this section, I will discuss the positive experiences I had with lesson study both as a participant and a facilitator. Then, I will move to the negative to explain how in one case in particular, lesson study did not thrive; many participants from one of the sites chose not to continue with lesson study.

Lesson study altered my ideas about the role of a teacher. It caused a significant paradigm shift in terms of how I interacted with curricula as well as how I viewed student thinking. I used to think that if I made learning fun, my students would learn. I believed this because when I entered teaching in 1986, I observed many teachers relying on dittos and textbooks. I firmly believed that in order for learning to occur, I needed to bond intellectually and emotionally with my students. Plus, my experiences as a student in the educational system were influenced by the overarching theme of boredom. I thought that excessive boredom was not conducive to learning. Some boredom is necessary; it provides the opportunity to practice perseverance and attention to detail. However, I argued that classrooms, where boredom is the norm each day throughout the majority of the day, create poor learning environments.

Additionally, as a pre-service teacher, I learned that creativity—propelled by a passion for the content—was critical to the educational process. I believed that if I brought my love of the content to my students, my students would learn. However, being creative also meant that I needed to reinvent the wheel. Frequently, as I practiced creativity with the goal of making learning fun, many times I minimized pedagogical strategies and curricula that could have assisted my students in learning. With a broad brush, I painted curriculum materials as tedious and cumbersome. I was also profoundly influenced by the work of Michael Apple (1985) and Michael Foucault (1977). Apple's thoughts on the political nature of textbooks and Foucault's

thinking on power and knowledge angered me. I believed curriculum materials served as a means of social control and commercialism in American education. I wanted to push back. In the beginning of my career, and throughout most of my career, I believed curricula materials represented the status quo; they were the enemy.

District administrators provided textbooks for the curricula and professional development workshops for my education throughout my career. Occasionally, I would be enthusiastic about a workshop; yet, the main thrust of my work centered on creativity. To supplement my creativity, I searched for alternative pedagogical methods to teach math, science, and language arts based on some of my professional development activities. I had the inclination to be reform-minded, open to change, and I had a deep love of reading educational research to enhance my knowledge to grow as an educator.

Still, my mentality was guided by the need to provide my students with an enjoyable classroom experience. I experienced some success bringing joy to the everyday lives of my students. For the most part, parents appreciated my methods and frequently told me that their children loved coming to school, which was a significant change from their previous experiences. Even in light of these compliments, I was not entirely satisfied with my teaching. I was not reaching all of my students, and I was not convinced any of my students deeply owned the content. Intuitively, I knew something was amiss. I knew I could be more effective teaching content; I could have been more sophisticated. This line of thinking was at odds with my belief in creativity. My conundrum was how to become a more effective teacher when my professional development opportunities were not adequately meeting my needs as a learner. For 25 years, I experienced this tension between being creative and not feeling confident I was growing as an educator in relation to my students' achievement. Throughout those 25 years, my intuition

cogently argued that I was not reaching my potential. Then, in 2010, 5 years before I was to retire, I experienced lesson study.

Lesson study had been beneficial for me as a classroom teacher in a variety of ways. I came to understand the importance of student thinking as a means to inform my instruction. Japanese teachers believe student misconceptions are treasures that can be leveraged to guide pedagogical decisions. To discover the misconceptions, with laser-like focus, Japanese teachers focus on what their students say and do in response to the educational activities within their lessons. I know now that student misconceptions are portals that allow me to view how students are cognitively interacting with my teaching methods. Due to my work in lesson study groups, I became more cognizant of the power of student thinking as the focus that drives my instruction as opposed to primarily using my creativity in this regard. Despite my reticence concerning published curricula materials and the idea that these materials produced boredom in my students, lesson study fostered a shift in my thinking. With this new orientation to my lesson planning, I did not have to reinvent the wheel; I did not have to be a curriculum developer. I learned that through observing my students engage in the curriculum activities, by listening to them talk about their learning, I gained critical data to guide my decisions about teaching. My analysis and subsequent decisions based on the analysis included creative and flexible thinking. I learned that creativity is not at the center of my teaching decisions; student thinking—authentic data—steers my analysis and subsequent decisions throughout the process.

Curriculum materials are not perfect and neither are the standards. I also believe we should not reject them outright. Standards have the potential to unite the profession in a beneficial and progressive way. I witnessed how lesson study procedures empowered me to study curricula and standards within the context of my classroom, and the classrooms of my

colleagues, systematically. After undergoing this process, I felt more in control of the content; I felt more efficacious about what I had learned.

This was a significant shift in my thinking and the catalyst for my newfound efficacy as a teacher. The curriculum was not the enemy. I could trust it as a starting point. Student thinking informed my pedagogical choices. Sometimes these choices included a creative mindset and sometimes they did not. This epiphany allowed me to surrender my self-proclaimed and exhausting role as the creative curriculum developer. Besides, I was not qualified to be a curriculum developer. My undergraduate and master's studies focused on teaching. In lesson study, in my role as a teacher, I learned to analyze student thinking in a systematic way. I believe this aspect of my learning about teaching through lesson study was the most impactful for my professional development.

As I engaged in lesson study, I believed my pedagogical content knowledge grew after I completed each research cycle. I was impressed by lesson study, because for the first time in my 25 years of teaching, I engaged in productive discussions about content with my colleagues. In order to learn I required that social component. As a result, I felt more confident in my ability to teach the content.

Further, lesson study groups taught me how insightful my colleagues were in their abilities to examine and analyze our work in our classrooms. Lesson study's systematic process drove our professional development in meaningful ways. Before lesson study, I felt isolated. In order for me to learn, I needed to interact with others. After engaging in my first full research cycle, I experienced the power of a learning community. The culmination of this first cycle was the first public research lesson in our county. We taught a public lesson in front of over 100 people including professors, teachers, administrators, and parents. In this gathering, our entire

community met to discuss student thinking. For me, this was a powerful experience. The challenges and complexities of our work with children were on full display. For the first time, I felt proud to be an educator.

Although lesson study is primarily a method of professional development, I was able to experience an alternative model of a form of accountability. My experience of accountability over most of my career was that it was punitive and norm-based. I felt anxiety about measuring up against my colleagues especially when I believed teaching was largely a creative endeavor. My scores were dependent on my students' abilities to successfully navigate through standardized tests. Some years were better than others. For me, the anxiety was omnipresent. If my students' scores were below the scores of my colleagues' students, I felt like a failure. I felt helpless to demonstrate my teaching skills when the measure of my effectiveness was dependent on my students' abilities to perform on high-stakes tests during a few days at the end of the school year. Then, the results were shared online and in the local newspapers. This fueled my professional shame in certain years when my students did not perform as expected.

With lesson study, I was able to experience accountability from a different vantage point. I experienced that accountability was beneficial for my colleagues, my profession, and myself. I believed, after engaging in lesson study, I was becoming more knowledgeable and skilled. In my mind, lesson study provided a model of accountability appropriate to the context of working with children in schools. In the previously mentioned public research lesson, we publically demonstrated our accountability to our students, our community, and the taxpayers.

Lesson study demonstrated how a professional development model could honor the intellectual and emotional complexities of teaching. It showed me a path that has the potential to move our splintered profession forward systematically and collectively. For the first time, I

noticed that in general, most of my colleagues working in lesson study groups with me had a genuine desire to grow as educators. In addition, I became aware of my colleagues' passion for teaching. In the lesson study context, I did not feel isolated anymore. Simply stated, for me, working in this kind of environment was exhilarating.

**The negative.** On the other hand, I also experienced structural and psychosocial obstacles with lesson study in one of the buildings that engaged in this approach. The micro-political issues in this particular building limited my ability to appreciate the process, despite the reality that this process of lesson study was not responsible for the complicated issues that arose. Lesson study was the forum that enabled the idiosyncratic situations to play out.

In this particular building, the structural obstacle of time became a significant factor. The first 2 years, participants had to engage in lesson study outside of school hours. During that time, lesson study participants were giving their own time and volunteering; it was not funded. Some of the participants, for a variety of personal reasons, could not put in the time that was necessary to engage fully in research cycles. Others were able to put in the time. This disparity caused some friction that led to issues of fairness.

Even later, when funding became available, participants still reported frustrations about fairness. All of the participants were given the same stipend regardless of how much time they gave to the activities involved with the research teams. Those who were able to spend the necessary time felt resentment of those who could not spend as much time. Whether funded or not, lack of time to do the necessary work led to degrees of resentment among the educators in this building. In some participants, these emotions were conflated to lesson study in general. Some of the educators who were frustrated by the time factor communicated their perceptions of their lesson study experiences with their colleagues who were not participating. These

individuals fomented a negative perception of lesson study to the wider school community; thus, this had the effect of hindering my capability to recruit more educators to work with us in lesson study. The resentment and frustration fueled mistrust and this was a more serious complication to our lesson study initiative. It made my role as one of the facilitators more difficult and less enjoyable.

In the initial year, in this same building, another negative concern surfaced in our lesson study groups. This concern centered on our university partnership. The professor involved in the partnership and our lesson study venture, worked tirelessly to socially engineer a positive experience for all involved. Among the teachers, she was perceived to be in a position of “power” due to the fact she was a professor, a content expert, and she was also facilitating our lesson study groups. We were novice lesson study participants. It was rumored that the lesson study team had cult-like qualities. The professor was the “cult leader” while her sycophantic followers fawned on each word she uttered. This rumor was curious to me. In a cult, all benefits of the group’s work cycle back to the cult leader. In our lesson study teams, a number of the participants reported higher levels of efficacy, improved pedagogical content knowledge, and because lesson study provided them an alternate way to view their work, some reported an overall feeling of pride to be an educator. Plus, the professor provided funding for the participants to attend conferences as presenters in numerous locations around the country. Three educators, who were able to put in the extra time, were provided the opportunity to co-author two articles describing their work in lesson study. Clearly, the cult leader was not the only one to benefit from the learning community. Nevertheless, the idea that our lesson study team was a cult hindered its growth in the building.

Further micro-political issues arose that significantly affected the lesson study teams and



caused factions in this building. Lesson study became the site of some conflicts; lesson study provided a context in which melodramas played out. Those in the building who were on the fence about lesson study saw these melodramas and conflated lesson study to those dramas. A further micro-political issue related to the melodramas centered on the principal's perception of lesson study in his building. Because of the melodramas, this principal decided to withdraw his support of lesson study. Without the principal's support, our work with lesson study became much more challenging.

In addition to the conflicts, another less dramatic, yet serious kind of conflict surfaced in the lesson study teams. Using the first phase in lesson study protocols, team members chose a research question to study. They studied the standards and the specific content associated with the standard. Due to lesson study's cooperative format, space is provided for disagreement and the questioning of existing practices. That is, in lesson study, cognitive conflict is both nurtured and required. In our teams, we engaged in discourse about the use of district curricula and the district-created standards. In this district, teachers created curricula and standards to address the curricula.

We had a debate about the use of standards. There was a lot of disagreement. In the end, the discussion led to some personalizing; those members disgruntled by some of the ideas expressed in the debate communicated with administrators that the questioning of local standards was undermining district mandates. I could understand why cognitive conflict was not embraced by some of the group members; we were not comfortable with argumentation, because we were novices with this practice. There was little understanding about the importance of cognitive conflict as it relates to professional development.

Consequentially, I cannot blame lesson study for the negative experiences I had working

in research groups. However, lesson study is a collective endeavor and is dependent on the unique cultural context in which it functions. At times, as I was going through the negative psychosocial situation, in my darkest moments, I wanted to quit lesson study. I still believed in lesson study; however, I had to work with individuals who exhibited behaviors that went beyond the vicissitudes of benign interpersonal conflicts. It was unfortunate, but still, it happened within the context of lesson study research teams.

## **Example of Research Lesson Proposal**

Names of instructor and lesson study research team, and school have been erased. This is an example of a research lesson proposal for first grade science that was recently enacted in a public research lesson.

**Instructor:**

**Lesson plan developed by:**

### **Our Ideals**

When our students graduate from, we would like them to possess the intellectual skills that enable them to function as successful citizens and community members. Some of these characteristics include being inquisitive, self-motivated, driven by goals, and being able to communicate their ideas logically. When required, we would like our students to support their ideas with evidence. Communicating ideas intelligently also depends on specific character traits. We endeavor to teach our students to be well-rounded, and to be respectful as they hold conversations with their peers. We aspire to prepare our students to be kind, compassionate, and happy just being themselves. Intellectual and interpersonal skills are equally important in a well-rounded individual. We believe the following research lesson addresses both our long and short-term ideals for our first-grade students.

**1. Title of the Lesson:** Good Vibrations- What is needed to make sound?

**2. Brief description of the lesson:** Students will complete their sound investigation. They will use patterns of movement in objects that make sound to argue from evidence that vibration causes sound. They discuss their observations as a group. They learn that argument in science is a good thing because it helps scientists answer questions. Students build a final claim, then support that claim with evidence from their investigations. In the end, the students should understand vibrating objects cause sound.

### **3. Research Theme**

The Smithsonian unit for 1st grade called, *How Can We Send a Message Using Sound?* offered us high-quality curriculum linked to the newly adopted Next Generation Science Standards. It also provided us with ideas for science notebooks. We used their ideas about notebooks, and adapted them based on our knowledge of the developmental levels of first-grade students in the first few months of a new school year. Our research theme endeavors to address the effectiveness

of our adaptations to our students' notebook entries, and how it affects our students' capacity to engage in productive talk with science content.

### **Hypotheses**

Our first hypothesis or testable questions focus on how the science notebook pages enable our students to record their thinking efficiently. Our primary hypothesis is: **If we alter the notebook pages to include pictures as a means to communicate our expectations and if we provide the students more space to draw and write their ideas, then our students will be better able to express their scientific thinking more efficiently and effectively in their notebooks.**

Our second hypothesis relates to our whole class discussion. **If we visually organize the students' ideas about evidence they collected during the lesson on the whiteboard in sequential order, then our students will be better able construct claim(s) linked to that evidence.**

### **4. Goals of the Unit**

Students will be able to:

- A. Identify arguments that are supported by evidence;
- B. Distinguish between explanations that account for all gathered evidence and those that do not;
- C. Analyze why some evidence is relevant to a scientific question and some is not;
- D. Distinguish between opinions and evidence in one's own explanations;
- E. Listen actively to arguments to indicate agreement or disagreement based upon evidence, and/or retell the main points of the argument;
- F. Construct an argument with evidence to support a claim; and
- G. Make a claim about the effectiveness of an object, tool, or solution that is supported by relevant evidence.

### **5. Goals of the Lesson:**

- A. Students will understand that sound can make matter vibrate, and vibrating matter can make sound;
- B. Students will be able to construct explanations;
- C. Students will engage in argument from evidence, using multiple pieces of evidence from all or most of their stations to support their claim;
- D. Students will listen actively to other students' claims and respond using evidence; and
- E. Students will observe a pattern in objects that make sound, e.g., they say that all objects that make sound vibrate.

## 6. Relationship of the Unit to the Standards:

The unit “How Can We Send a Message Using Sound” was developed specifically for the Next Generation Science Standards. The unit is aligned to meet the following disciplinary core ideas:

- PS4.A: Wave Properties
- PS4.C: Information Technologies and Instrumentation
- ETS1.A: Defining and Delimiting Engineering Problems
- ETS1.B: Developing Possible Solutions
- ETS1.C: Optimizing the Design Solution

### Research Lesson Standards

**1-PS4-1 Performance Expectation:** Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. [Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.]

### Disciplinary Core Idea:

PS4.-1 A. Wave Properties: Sound can make matter vibrate, and vibrating matter can make sound.

WAVE PROPERTIES *What are the characteristic properties and behaviors of waves?*

**Science and Engineering Practices:** Planning and Carrying out Investigations

**Cross-Cutting Concepts:** Cause and Effect

### ELA Connections:

#### Speaking and listening

Comprehension and collaboration (SL.1.1 and SL.1.3)

Presentation of knowledge and idea (SL.1.4.)

#### Reading

Foundational skills: Phonological awareness (RF.1.2.)

#### Writing

Notebooks: Research to build and present knowledge (W.1.8.)

## **7. Background and Rationale**

### **a) Notebooks**

Notebooks serve a variety of educational purposes. A science notebook is a flexible, integral tool that provides space for our students to record their scientific thinking in the written, art and mathematical forms. The science notebook is the glue that connects the investigation to the whole-class discussions. It is critical to the entire learning experience. Students learn how to engage in a scientific analysis by collecting, organizing, and processing data. A science notebook is a necessary tool for our students to hold the data they collect during investigations or engineering design challenges. Students use this evidence to support their claims about the phenomenon in question.

During the initial whole group phase of the preliminary lesson--the entire class discussion--we observed our students were unable to collectively construct a claim about the relationship between the vibration of the larynx and the humming sound. We became concerned about our students' capacities to make claims in general. As the students moved into the second phase of the lesson--the stations--we observed them making claims and conceptual connections as they informally discussed their experiences with their peers. However, the students did not record those claims in their notebooks consistently, or they did not record their thinking at all.

Another issue that surfaced during the station phase of the lesson related to students understanding the procedures at the stations especially the station with the tuning fork. Students were not handling the tuning fork correctly, or they did not fully understand how to proceed. Incorrect use of the tuning fork was problematic because it limited their learning experiences.

To address these issues, we changed the notebook pages for each of the stations to include spaces to draw their ideas adjacent to spaces for them to write their ideas. The pictures were designed to clarify, and scaffold the procedures of the investigation, and to help those students who find it difficult to write their thoughts. Given the reality that our students are in their first three months of a new school year as first graders, we attempted to find the correct balance between providing enough direction without directly telling them the most accurate way to manipulate the materials or write in the notebooks. We did not want our notebook pages to look like glorified worksheets. We wanted to create notebook pages aligned with the science and engineering practices articulated in the Next Generation Science Standards, and with the intentions of the scientists at Smithsonian who designed the investigation.

### **b) Productive Talk**

We expect our students to use science notebook entries as a point of reference during whole class discussions. We believe the class discussions are just as critical as the hands-on investigations. The classroom discussions provide our students with opportunities to express their misconceptions, practice their skills in argumentation using claims based on evidence, and eventually learn the targeted science content.

During our preliminary lesson, the whole class discussion after the stations did not go as expected. We wanted our students to make conceptual connections between the stations, and their experience creating the humming sound from the beginning of the lesson. We think we can

facilitate the discussion for our students more efficiently by publicly highlighting their data from the three stations. We have attempted to structure our whiteboard to record students ideas strategically. We will display the progression of the lesson sequentially, and post student ideas about the evidence they recorded in their notebooks from each station. We believe if the students see the evidence they collected from each station organized on the whiteboard and situated within the context of the entire lesson, they will be able to communicate appropriate claims with greater ease as they engage in the whole class discussion.

## **8. Research and Kyozaikenkyu**

In researching the topic of teaching about sound, the team began by looking at the Next Generation Science Standards, on which the unit is designed. We specifically looked at standard PS4.A:Wave Properties-Sound can make matter vibrate, and vibrating matter can make sound. To learn more about the topic, we read Chapter 5 of *Disciplinary Core Ideas: Reshaping Teaching and Learning*, entitled "Core Idea PS4:Waves and their applications in Technologies for Information Transfer," by David Fortus and Joseph Krajcik. This selection highlights the importance of students' awareness and understanding of waves, because waves are virtually all around us at all times. They state, "Understanding wave properties and the interactions of electromagnetic radiation with matter is critical to the investigation of nature at all scales, including the invisible world of atoms and molecules and the faraway world of stars and galaxies. Wave properties and interactions of electromagnetic radiation with matter explain how information can be transferred over long distances and stored as digital information." For the first grade unit "How Can We Send a Message Using Sound?," we require that students acquire the knowledge at its very infancy, simply that sound is created by vibration, and can be used to send messages, or communicate, with others.

When analyzing the unit, we quickly realized that the challenges of the third and fourth lessons are most crucial in developing the solid foundational knowledge of not only the aforementioned standard, but also in serving as a foundation for the NGSS Science Engineering Practices of developing and using models, carrying out investigations, constructing explanations, and engaging in argument from evidence. After delving further into these lessons (which are paired due to the nature of the activities and how they are structured) we decided that it would be impossible to teach one without the other, and decided to combine them for our lesson study process. We quickly realized that the challenges in this lesson would be threefold for our students. First, they would be introduced to a scientific claim, and required for the first time, to make one. Second, they would be asked to engage in exploratory activities, and record their scientific thinking and observations/evidence. Finally, they would be asked to analyze the evidence that they had collected, and use it to participate in discussion, and further support their initial claim. The latter of these two, seemed to us to be the most challenging for our students, based on their developmental level and the hindrances presented by their lack of prior

knowledge, language development and motor skills, inexperience in science related dialogue, and conversational practices.

Based on our many years of collective experience teaching first grade students, we decided that we definitely needed to make some adaptations to the organization of the lesson and adjust some of the content, and further, we all agreed that the “science notebook” provided in the Smithsonian unit would need to be adapted to best encourage our students’ success in these areas. The original plan of the lesson has the teacher introducing the scientific practices of claims and evidence, as well as introducing the idea of cause and effect, all of which are unfamiliar concepts to many of our students. We decided that focusing on simply the idea of making a scientific claim and collecting the evidence to support, or refute a claim, should be the priority. Cause and effect could be addressed in a follow up discussion, or as a component of a later activity.

Upon examining the unit, we immediately realized that the science notebook pages provided as backline masters would be problematic for first grade students. They were designed as a half page booklet, which doesn’t take into account the motor skills of a typical first grade student, and the space required to adequately record an idea. Secondly, all of the recording places were designed with lines, with very few opportunities to draw or create simple diagrams to record observations and ideas. Prior to our test lesson, one informal lesson was taught to another class, with a modified notebook format for students, using a whole page design, and spaces for recording both pictures and words. Our test lesson used only enlarged versions of those provided in the Smithsonian manual. After comparing the two, it seemed that the modified version encouraged more diagram use and description, and that students could more readily recall their observations afterward. As learners of this age are also early in their language development, it provided a means for all students to record ideas, even if they weren’t capable of doing so through written words that could be read later.

The final modification we made to the lesson, was to change the method of sharing and recording students’ ideas during the concluding discussion. While we observed that many students had made great discoveries and observations, directly supporting the idea that movement creates sound, or that sound is created by vibrations, these discoveries and observations did not translate back to our whole group discussion. As these conversations are so key in further developing scientific concepts, comparing and contrasting observations, and supporting the initial claim, we chose to modify the ‘board plan’ for recording the final conversation, so that students could view their observations recorded by the teacher as they were sharing them, in a format that reflected observations made at each of the sound stations. This will ideally provide students with a visual tool to compare observations made at the different stations, and to see the common observation that movement is related to sound.



## 9. Unit Plan

Lesson	Learning goal and tasks
1	<p>Students will define the problem of how to send a message long distance by playing the telephone game.</p> <p>Students will identify and sort objects people use to send messages short and long distances using a T-chart.</p>
2	<p>Students will develop a pattern of beats that solves the problem of sending a message a short distance.</p> <p>Students will test a pattern of beats to see how well it solves the problem by playing a board game.</p>
Combination of 3 & 4	<p><b>Research Lesson:</b> Students will ask questions about what causes sound.</p> <p>Students will do three station activities by carrying out an investigation to answer the question: What is needed to make sound?</p> <p>Students will complete their investigation to answer the question: What is needed to make sound?</p> <p>Students will argue from evidence that sound is caused by something vibrating.</p>
5	<p>Students will read a text on a musical instrument and use evidence to answer the question: How is music made?</p> <p>Students will make a claim that music is caused by parts of an instrument vibrating.</p>
6	<p>Students will plan and carry out an investigation to test different kazoo parts. Students will identify the parts of a kazoo.</p> <p>Students will argue from evidence for which kazoo parts make the best kazoo sound.</p>
7	<p>Students will plan and carry out an investigation to answer the question: Does sound cause vibration?</p>
8	<p>Students will read a text on human ears and use evidence to answer the</p>

	<p>question: How do our ears hear sounds?</p> <p>Students will construct an explanation for what causes us to hear sounds?</p>
9	<p>Students will ask questions about what parts of a banjo are needed to make the banjo's sound. Students will identify the components they need to make a banjo by reviewing pictures of different banjos.</p> <p>Students will argue from evidence for which banjo parts make the best banjo sound.</p>
10	<p>Students will design a pattern of sounds that solves the problem of sending a message a short distance that will help Hopper the frog cross the river without being seen by Brian the beaver.</p> <p>Students will test a pattern of sounds to see how well it solves a problem.</p>

## 10. Design of the Unit and Lesson

### a. The Science

The unit was designed to provide our students with the opportunity to work both as scientists and as engineers. The emphasis of the unit is on students solving problems using engineering design. Scientists and engineers have a variety of similarities and at the same time critical differences. Science begins with a question about the natural world. Scientists seek to explain natural phenomenon using evidence. Engineering starts with a problem people need to solve. Engineers work to design solutions to the issues targeted. The unit was designed to provide our students with the opportunity to work both as scientists and as engineers with an emphasis on engineering design.

In this unit, students learn about ways people send messages short and long distances. They experience patterns of sound that can be used to send messages. Students learn that vibration causes music and that we hear due to the way sound causes our eardrums to vibrate. The unit concludes with students designing instruments, and then using their instruments to solve an engineering problem. They experience the idea that different solutions need to be tested to see which solution is best to solve the problem.

With Smithsonian ideas and materials as our foundation, we designed our research lesson to offer our students the opportunity to think and act like scientists. The information they learn in this lesson builds content knowledge about sound. This information will help them solve the engineering challenges offered to them later in the unit. This lesson provides the students with

three objects (ruler, loom, and tuning fork) for them to manipulate. Students will experience the interplay between vibrating objects and sound.

### **b. Cognitive Demand**

The Smithsonian constructed this unit for students to build knowledge about sound gradually. The progressive design of the unit allows students to use what they have already learned to make sense of new information. Eventually, they should understand how the new information informs their work solving novel engineering design problems or investigating science phenomenon. As students are introduced to novel problems and required to solve the problems collectively in small groups, they have the opportunity to experience productive struggle. Productive struggle using a developmentally appropriate task designed within this lesson is cognitively demanding.

### **c. Equitable Access to Content**

The structure of this lesson has been designed to maximize the active engagement of all students. The class is presented with the same objects to investigate to provide a shared experience. We offered all students small group work time to think deeply about the problem with a peer and to write down their ideas in their science notebooks. Partner and table discussions allow for all students to listen to their friend's scientific ideas, and express their thoughts to justify their scientific reasoning. The lesson progresses to a whole group discussion, which allows our first-graders the chance to learn how their ideas relate to their classmate's ideas. In this way, students have the opportunity to engage in argumentation using evidence to support their claims. Additionally, we hope to observe if our students are becoming cognizant of how their ideas fit into the targeted concepts associated with the goals in this lesson.

### **d. Agency, Authority and Identity**

In designing this lesson, the team was careful to consider the agency of our students. That is, we wanted to offer our students the opportunity to think independently, to be free to manipulate the objects in the lesson as they see fit. The teacher will provide strategic advice through facial expressions, body language, and if needed, verbal directions if their productive struggle leads to abject frustration. Still, we welcome some struggle, some failing forward as an intellectual and character building exercise. The notebooks provide limited direction through the pictures. There will be some verbal directions as well; yet, we are confident the lesson design is developmentally appropriate for our first graders. The teacher's role shifts from showing students how to solve problems and giving them scientific answers up front, to asking questions and facilitating student investigations. We want to empower our students with authority to make decisions as they manipulate the materials, and express their knowledge or misconceptions in discussions to deepen their conceptual knowledge about sound.

### e. Uses of Assessment

The use of student notebooks as the central artifact in the lesson provides an opportunity for ongoing formative assessment. Students are recording their thoughts, feelings, and science reasoning in their notebook using sketches and words. In this lesson format, teachers are continually checking student work, because student ideas and reactions to the activities implicate how we move forward, how we construct our next lessons. We agree with our colleagues in Japan who believe, "Student misconceptions are treasures." We intend on analyzing student responses in this lesson both written and verbal to guide our decisions for next steps in the unit. We will not include any form of summative assessment in this research lesson.

### 11. Research lesson plan

Steps, Learning Activities Teacher's Questions and Expected Student Reactions	Teacher Support	Assessment
<p><b>1. Introduction</b>            Conduct discussion about sound from previous lessons.            -What caused the sound in the drum (Zoo Game)?            -Think of an everyday sound.            -How do we make sound/What makes the sound?            Demonstrate touching throat and humming. Ask kids to do the same, and think about what they notice.            -What did you feel when you hummed?            -What do you think caused the humming sound?</p> <p>3) Introduce activity. "Today you're going to be scientists. You will collect evidence —The things scientists observe when they're conducting an experiment.—"Today you will be collecting evidence to answer the</p>	<p>Students hum and make observations.</p> <p>Students speculate about what makes sound. They connect this to observations about what makes noise when we hum.</p> <p>Students speculate what causes humming</p>	<p>Are students able to make a claim?</p>

<p>question, “WHAT IS NEEDED TO MAKE SOUND?”</p> <p>4) Pose question: What evidence do we have so far about what is needed to make sound? -What causes sound when we hum? RECORD: I feel something moving/tingling/vibrating when I hum.”</p> <p>5) Tell students that you’re going to introduce another word scientists use: claim. A claim is something scientists say to answer a question. -What causes sound when we hum? RECORD: Humming is caused by something moving. -Whether they agree with this claim and explain why, or why not.</p>	<p>Students agree or disagree with claim.</p>	
<p><b>2. Posing the Task</b></p> <p>Introduce “Sound Journey.” Explain that students are going on a ‘sound journey’ to collect more evidence to answer the question, “What is needed to make sound?”— You will use your evidence to improve your claim.</p> <p>Explain that there will be 3 sound stations, and students will be divided among them. Read the instructions for each sound stop and model. Ask students if they have any questions. Briefly outline the notebook pages for</p>	<p>In explaining the sound stop stations, it is important that the teacher makes clear the proper technique for using the materials for the explorations, and also briefly highlight and review the methods they may use for recording their observations.</p>	<p>Are students recording their observations in ways that they will be</p>

<p>each activity. Ask students the following guiding questions:</p> <ul style="list-style-type: none"> <li>-What will you write in the different boxes on the notebook sheet?</li> <li>-What senses will you use to make observations?</li> <li>-How will you show sound?</li> <li>-How will you show something moving?</li> </ul> <p>Give students 5-7 minutes to carry out the activity and record at each station, then ask them to rotate to the next. Rotate among the groups and ask:</p> <ul style="list-style-type: none"> <li>-Do you have any more evidence to answer the lesson question yet?</li> </ul>	<p>Students conduct activities at each Sound Stop, as modeled and described for them.</p>	<p>able to read and use later for the discussion? Are they using diagrams, words or both?</p>
<p><b>3. Anticipated Recording Results</b> Students may draw pictures, write observations with words, or both. Ideally, they will draw diagrams in a way that they can later understand their observations and share them with others.</p>		
<p><b>4. Comparing and Discussing</b> Bring the class back together in the common seating area.. Use the following guiding questions to facilitate a discussion about observations/evidence:</p> <ul style="list-style-type: none"> <li>-What happened at the first sound stop when you pushed the ruler? What did you observe?</li> <li>-What happened at the second sound</li> </ul>	<p>In facilitation the discussion, it is important that the teacher record student observations as well, reflecting both written notes and diagrams.</p> <p>If the term has not yet</p>	<p>In facilitation the discussion, it is important that the teacher record student observations as well, reflecting both written notes and diagrams.</p>

<p>stop when you plucked the elastic bands? What did you observe?</p> <p>-What happened at the third sound stop when you tapped the tuning fork?</p> <p>-What happened when you touched the tuning fork to your hand?</p> <p>-What happened when you put the tuning fork into the water?</p>	<p>been suggested by students, introduce the term vibration, and briefly describe what it is. Have students demonstrate it with their finger or hand.</p>	
<p><b>4. Summing up</b></p> <p>Tell students that we are going to review their original claim and see if they can make a better one that answers the question: What is needed to make sound?</p>	<p>Tell students that scientists always do the following when they make/evaluate/discuss a claim:</p> <ul style="list-style-type: none"> <li>● Listen quietly to other people</li> <li>● Ask questions politely and respectfully</li> <li>● Speak loudly and clearly</li> <li>● Always use evidence</li> </ul> <p>Explain that it is OKAY for scientists to disagree about a claim, so long as they are respectful to one another's ideas, and can use evidence to support their position.</p>	
<p><b>5. Reflection</b></p> <p>Ask for a volunteer to share a claim about what they think is needed to make sound. Use these sentence frames for dialogue:</p>		

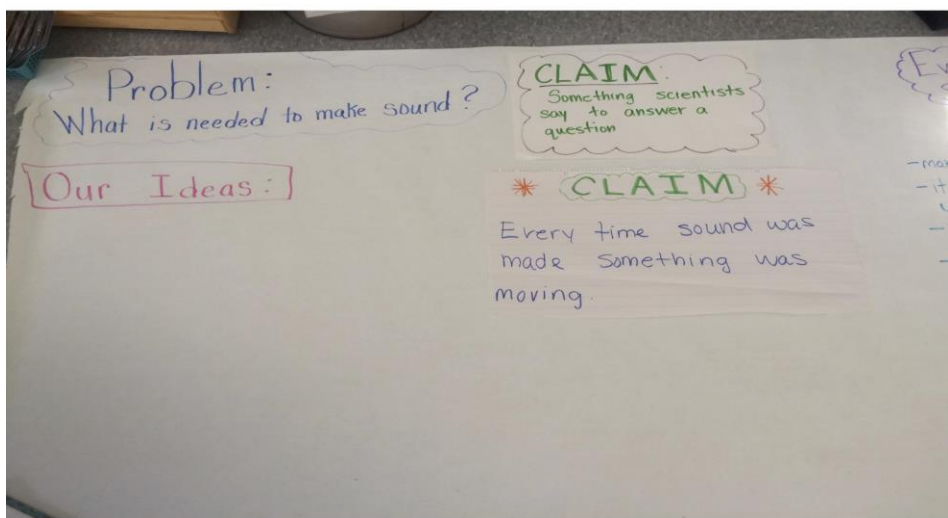
<p>-I think sound is caused by _____ because _____.</p> <p>-I agree/disagree with the claim _____ because _____.</p> <p>Once the many students have had the opportunity to share, write the final claim on chart paper. - i.e. "Sound is caused by something vibrating."</p>		
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**12. Evaluation**

- Do the students utilize their scientific notebooks to record their thought process during their science experiments?
- Does the research lesson design encourage students to justify their ideas using scientific evidence to support their claims?

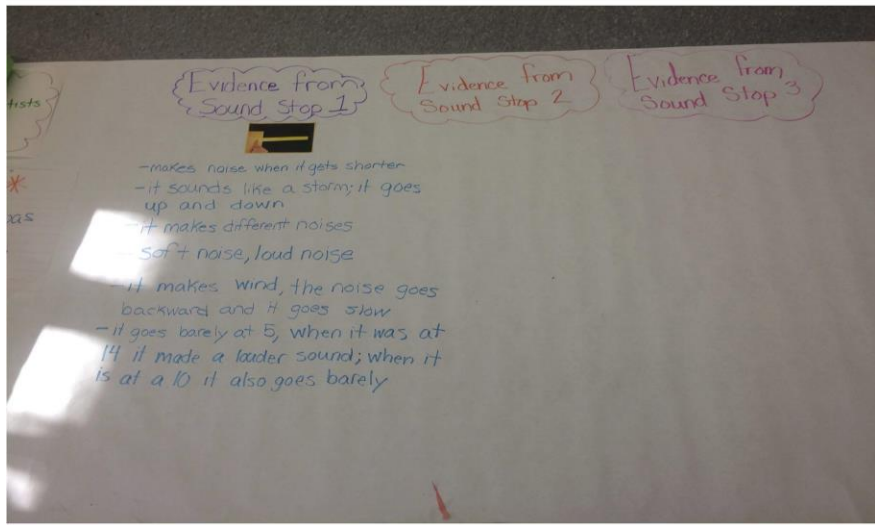
**13. Board Plan (With anticipated responses)**

**Section # 1**

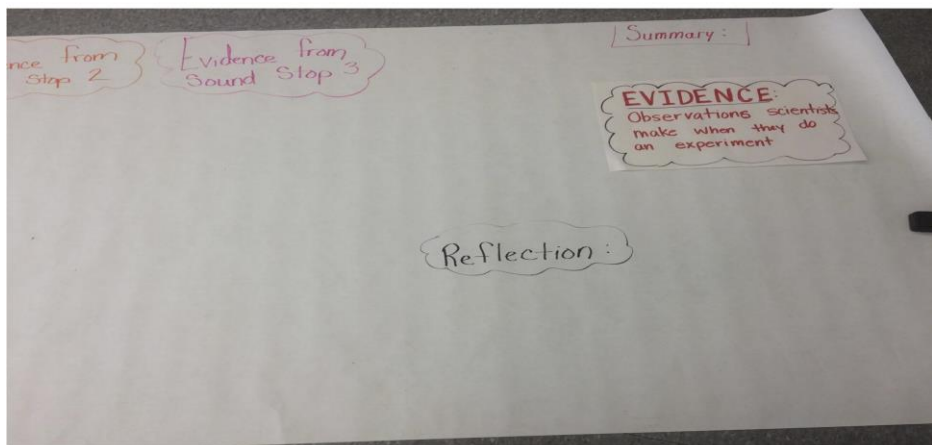




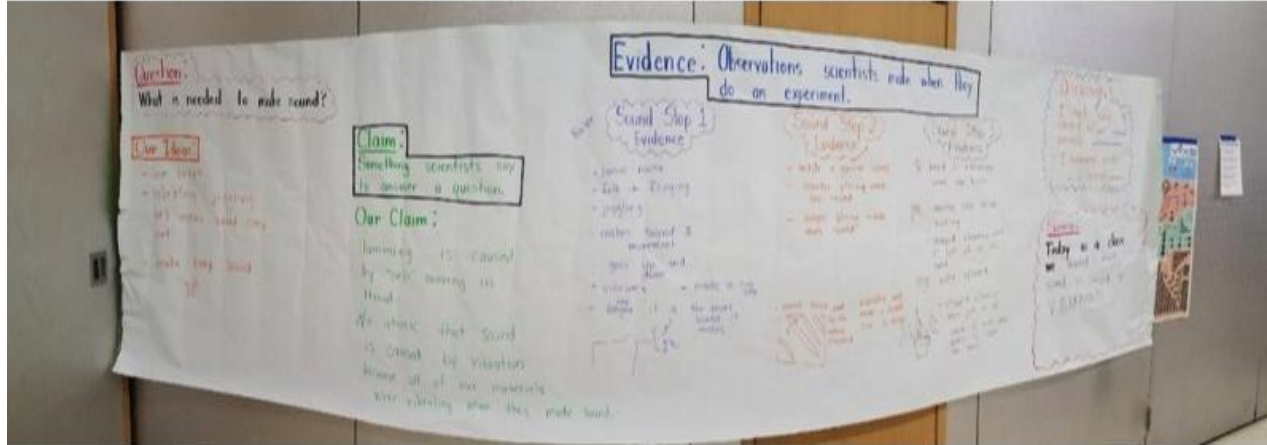
### Section # 2



### Section # 3



### Completed Whiteboard from research lesson (see below).



## Copyright Permission for Figure 1

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Jun 11, 2018

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Licensed Content Publisher	Springer Nature
Licensed Content Publication	ZDM
Licensed Content Title	How does lesson study improve mathematics instruction?
Licensed Content Author	Catherine Lewis
Licensed Content Date	Jan 1, 2016
Licensed Content Volume	48
Licensed Content Issue	4
Type of Use	Thesis/Dissertation
Requestor type	academic/university or research institute
Format	print and electronic
Portion	figures/tables/illustrations
Number of figures/tables /illustrations	1
Will you be translating?	no
Circulation/distribution	<501
Author of this Springer Nature content	no
Title	How do teachers make sense of their lesson study experiences?
Instructor name	Dr. Sharon Dotger
Institution name	Syracuse University
Expected presentation date	Jun 2018
Portions	Figure 1. Lesson study cycle and pathways of impact: a theoretical model page 572

## Recruitment Letter

Hi,

My name is F. Kevin Moquin. In 2015, I retired from my position as an elementary classroom teacher in New York State.

I fell in love with teaching in 1982 when I was offered the job as a preschool special education teaching assistant. This experience motivated me to pursue my teaching certificate. Upon completion of my undergraduate degree from Cortland State and my master's degree from Syracuse University in 1986, I began my teaching career as an elementary special education teacher. I served in that role for one year. Then, I became a classroom teacher. During the remainder of my career, I taught 3rd, 4th, and 5th grades. My favorite grade to teach was 4th, and that is where I spent the majority of my career.

During my last five years as an educator, I experienced at least 15 lesson study research lessons as a participant and facilitator. This approach to professional development intrigued me.

Currently, I am a doctoral candidate working on my dissertation involving lesson study. Specifically, I would like to examine how teachers make sense of their work on lesson study teams. I am inviting you to participate in a phone interview to discuss your lesson study experiences. The phone interview format enables you to schedule the interview at a time that is convenient for you. Our conversation should last no more than an hour. Your participation will provide helpful information about lesson study as a professional development model.

If you are considering participating, please go to the following link to read more details about the study. This link also provides informed consent and contact information forms.

[https://syracuseuniversity.qualtrics.com/SE/?SID=SV\\_88EGaO9kn77u14p](https://syracuseuniversity.qualtrics.com/SE/?SID=SV_88EGaO9kn77u14p)

Thank you,

F. Kevin Moquin

## Permission Letter from Researcher A

Dissertation

Today 10:41 AM Francis Kevin Moquin

Hi Kevin,

First of all, my apologies for being so egregiously slow in getting back to you. I've been traveling, and struggling to keep up with several urgent things that arose on the road.

Let me just confirm what I think I read in my race through your earlier email. You'd like me to introduce teachers you can interview. I'm happy to do that. Tell me (I may have read too quickly) whether you only want particular grade levels or positions (e.g., eliminate coaches and retired teachers?) We don't have a bulk email for our network, so I think it would end up being people I pull out of my address book. Is that a problem? I could see whether another local network (might be willing).

Assuming I do write an email, I'd like to include a few more details about you when I email people--like how many years you've been teaching at what levels. I think that would gain you more people, if they feel they're responding to a colleague. It would be nice if I could say I met you in the context of your pioneering work in LS (Or maybe you want more anonymity.)

Great to hear you're working on a dissertation!

Best,

Researcher A

**Permission Letter from Researcher B**

Cooperation Letter  
Tue 5:48 PM (June 28, 2016)  
Francis Kevin Moquin  
Inbox

Dear Kevin,

I consent to send a bulk email to my network to assist in recruiting subjects for you research on lesson study.

Researcher B

## IRB Exempt Authorization

**SYRACUSE UNIVERSITY**



**INSTITUTIONAL REVIEW BOARD  
MEMORANDUM**

**TO:** Sharon Dotger  
**DATE:** July 15, 2016  
**SUBJECT:** **Determination of Exemption from Regulations**  
**IRB #:** 16-211  
**TITLE:** *How Do Teachers Experience Lesson Study? What Sense Do They Make of Those Experiences?*

The above referenced application, submitted for consideration as exempt from federal regulations as defined in 45 C.F.R. 46, has been evaluated by the Institutional Review Board (IRB) for the following:

1. determination that it falls within the one or more of the five exempt categories allowed by the organization;
2. determination that the research meets the organization's ethical standards.

It has been determined by the IRB this protocol qualifies for exemption and has been assigned to category **2**. This authorization will remain active for a period of five years from **July 14, 2016** until **July 13, 2021**.

**CHANGES TO PROTOCOL:** Proposed changes to this protocol during the period for which IRB authorization has already been given, cannot be initiated without additional IRB review. If there is a change in your research, you should notify the IRB immediately to determine whether your research protocol continues to qualify for exemption or if submission of an expedited or full board IRB protocol is required. Information about the University's human participants protection program can be found at: <http://orip.syr.edu/human-research/human-research-irb.html> Protocol changes are requested on an amendment application available on the IRB web site; please reference your IRB number and attach any documents that are being amended.

**STUDY COMPLETION:** Study completion is when all research activities are complete or when a study is closed to enrollment and only data analysis remains on data that have been de-identified. A Study Closure Form should be completed and submitted to the IRB for review ([Study Closure Form](#)).

Thank you for your cooperation in our shared efforts to assure that the rights and welfare of people participating in research are protected.

Tracy Cromp, M.S.W.  
Director

**DEPT:** Teaching & Leadership, 107 Heroy Geology Lab

**STUDENT:** Francis Kevin Moquin

**Email Regarding Permission for Table A2**

**From:** Permissions, School <[SchoolPermission@hnhco.com](mailto:SchoolPermission@hnhco.com)>  
**Sent:** Thursday, September 20, 2018 11:47 AM  
**To:** Francis Kevin Moquin  
**Subject:** FW: Permission request - 10544 - Syracuse University

Dear Mr. F. Kevin Moquin,

Thank you for your attached inquiry requesting permission to reproduce a table “Geographical Distribution of Oswego Graduates During Its First Quarter Century” from

*THE CONTRIBUTION OF THE OSWEGO NORMAL SCHOOL TO EDUCATIONAL PROGRESS IN THE UNITED STATES*, by Andrew Phillip Hollis ©1898.

While we have no objection to your use of the excerpt in the manner requested, the content doesn't appear to be owned by Houghton Mifflin Harcourt Publishing Company. We believe that the selection is in the public domain.

We appreciate your continuing interest in this program. Please contact me if I can further assist you.

Sincerely,

Kristin Riggs

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**Kristin Riggs**  
IP Analyst  
Shared Services (CS/SIS)

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**Table A1***Selective Themes*

<b>Selective Theme Cluster: Types of Professional Development Before Lesson Study</b>	
<b>Selective Themes</b>	<b>Definition of Selective Themes</b>
Terms for professional development events	The terms participants used to label professional development events they attended before participants engage lesson study research cycles (e.g., workshop, seminar, in-service, conference, professional learning community).
Description of professional development terms	The language participants used to describe or define the terms they used to label their professional development events before they engaged in lesson study research cycles.
Professional development driven by independent study	Participants described their experiences of professional development leveraging self-directed inquiry, independent study, or using their classroom as a laboratory to study a topic of interest. The independent study relates to outside experts, professional literature, or board certification requirements.
Professional development driven by outside experts	Participants described their experiences of attending professional development events that offered them access to outside experts.
Professional development driven by district “in-house” facilitators	Participants described their experiences attending professional development events mandated by their districts. These offerings provide participants access to “in-house” facilitators. “In-house” facilitators may include colleagues situated as experts or leaders in a certain content area, or administrators serving as professional development facilitators.
Professional development driven by collaboration	Participants described their experiences of professional development leveraging collaboration as an approach to increase their professional knowledge. This selective theme may overlap with the independent study selective theme(s) driven by outside experts, because elements of collaboration may be included in those events.
<b>Selective Theme Cluster: Collaboration During Professional Development Before Lesson Study</b>	
<b>Selective Themes</b>	<b>Definition of Selective Themes</b>
Types of collaboration	Participants described their experiences of professional development regarding types of collaboration relating to sophistication of the collaborative experience (i.e., formal, informal).
Collaboration with colleagues outside of school or district	Participants described their experiences of collaborating with colleagues outside of their school districts. This could include their experiences at conferences, with projects, or with initiatives.
Logistical features of collaboration that supported collaboration	Participants described their experiences of collaboration when their collective work was enhanced due to structural supports (e.g., time, opportunities, space, materials, substitute teachers, organization, focus).
Logistical features of collaboration unavailable to the participants	Participants described their experiences of collaboration when their collective work was compromised by a lack of supportive logistical structures (e.g., time, opportunities, space, materials, substitute teachers, organization, focus).
Interpersonal capacities that enhanced collaborative experiences	Participants described their experiences of positive interactions with colleagues that enabled them to gain professional knowledge.
Interpersonal capacities that hindered collaborative experiences	Participants described their experiences of negative interactions with colleagues that complicated their abilities to gain professional knowledge.



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**Selective Theme Cluster: The Benefits of Lesson Study**


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<b>Selective Themes</b>	<b>Definition of Selective Themes</b>
Access to knowledgeable others	Participants described their experiences with outside experts assisting them through the lesson study process by providing the team with feedback, offering their expertise regarding content, or pedagogy.
Increased feelings of professionalism	Participants explained how they felt more professional as they engaged in the lesson study process due to the feedback they received from parents or other stakeholders. This selective theme deals with intrapersonal feelings and associated changes in participants' feelings about being a teacher in a society disrespectful of teachers.
Assists teachers with understanding standards	Participants described how the lesson study process increased their understanding of the standards. This selective theme includes participants' discussions about higher levels of comfort with the complexities of the standards regarding content and pedagogy concerning their students.
Changes conversations of teachers	Participants described how teacher talk—both informal meetings or informal situations—changed to including more concepts-based ideas during conversations (e.g., student-achievement, pedagogy, how to enact the standards, research articles, the information offered by outside experts).
Increases student achievement	Participants explained how lesson study increased their knowledge about instruction which transferred to their students. This selective theme includes participants' references to test scores, or anecdotal accounts of their students' increased capacities to meet teaching objectives.
Improves instruction	Participants talked about concrete ways lesson study increased their teaching capacities.
Provides forum for feedback	Participants explained how their shared experience of studying, planning a research lesson, and enacting the lesson affected their conversations during reflection or the debriefing steps of the process.
Provides structure for collaboration	Participants discussed how the lesson study structure, the organized protocols required in the lesson study process, enhanced their ability to learn from each other.
Provides teachers with time to learn	Participants talked about how the lesson study structure provided them the necessary time to meaningfully interact with each other to offer learning opportunities fueled by collaboration.
Improves overall teaching	Participants explained how lesson study research cycles offered them opportunities to learn about their overall teaching practices beyond what they learned about the topic in the research cycle.
Most effective form of professional development	Participants talked about lesson study as the most “powerful” form of professional development, or that lesson study was the best option for them.

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**Selective Theme Cluster: Obstacles to Lesson Study**


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<b>Selective Themes</b>	<b>Definition of Selective Themes</b>
Time	Participants talked about complications of time.
1. Time to enact entire the lesson study process	1. Participants talked about the extraordinary time to conduct lesson study research cycles. This selective theme included participants' comments about issues that were both personal and professional.
2. Time out of the classroom	2. Participants talked about the extraordinary time out of the classroom regarding academic and behavioral disruptions to students and their routines.
Sustainability	Participants talked about lesson study's sustainability in American schools.

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Logistics	Participants explained the challenges of providing the necessary logistical support for lesson study (e.g., substitute teachers, incentives).
Fear of being observed	Participants discussed the stress of teaching in front of colleagues and administrators.
Misconceptions of lesson study	Participants talked about their challenge to fully communicate the rationales that undergirded lesson study.
<ul style="list-style-type: none"> <li>• Arguing with the process</li> </ul>	Participants discussed their challenge to communicate, maintain, and enforce the critical idea that the lesson study process requires strict adherence to all of the steps in the process.
<ul style="list-style-type: none"> <li>• The lesson study cycle as a research endeavor</li> </ul>	Participants talked about the difficulties in explaining to colleagues and administrators the rationale behind lesson study as a teacher-driven research method.
<ul style="list-style-type: none"> <li>• Big deal over one lesson</li> </ul>	Participants described the misconceptions by their colleagues, administrators, board members, or the parents about the extraordinary time spent on one lesson. This selective theme included participants' comments on their challenges with communicating that lesson study was about improving instruction not polishing a lesson.
<ul style="list-style-type: none"> <li>• Public research lesson</li> </ul>	Participants described the difficulty in explaining to stakeholders that the public lesson was a research endeavor eliciting the help of observers to collect and analyze data, not a forum to display teacher acumen.
Interpersonal complications	Participants talked about unhealthy interpersonal issues and their influence on their ability to successfully leverage the benefits of collaboration.
<ul style="list-style-type: none"> <li>• Ego</li> </ul>	Participants talked about their perceptions of colleagues and administrators' intrapersonal capacities.
<ul style="list-style-type: none"> <li>• Factions</li> </ul>	Participants described the interpersonal interactions between lesson study team members and colleagues in their schools or learning communities.
<ul style="list-style-type: none"> <li>• Philosophical conflicts</li> </ul>	Participants discussed the capacities of their colleagues on lesson study teams to engage in cognitive conflict.
Lack of incentives	Participants described the context of lesson study situated as one option on the menu of other professional development options.
Administrative obstacles	(see "Lesson Study and Administrators" coding category)

#### Selective Theme Cluster: Lesson Study and Administrators

Selective Themes	Definition of Selective Themes
Administrators supportive of lesson study	Participants talked about administrators supporting their lesson study work.
"Selling" lesson study to administrators	Participants talked about their efforts to "sell" lesson study to their administrators.
Administrators' non-support of lesson study	Participants talked about administrators not supporting their lesson study work.
1. Hostile administrators	1. Participants talking about administrators intentionally creating barriers to lesson study.
Obstacles confronting administrators in their attempts to support lesson study	Participants described their experiences of working with administrators who were supportive of lesson study but were challenged by obstacles.
Feelings about administrators	Participants shared general feelings about their administrators regarding their lesson study work.
Administrators' misconceptions about lesson study	Participants shared their experiences of examples of their administrators demonstrating misconceptions about the lesson study process.
Principal turnover	Participants talked about how principal turnover influenced their lesson study work.

Table A2

*Geographical Distribution of Oswego Graduates During Its First Quarter-Century (1861-1886)*

APPENDIX A.

TABLE I.<sup>1</sup>

Geographical Distribution of Oswego Graduates During Its First  
Quarter-Century (1861-1886).

STATE.	NO. OF GRADU- ATES TAUGHT IN STATE.	STATE.	NO. OF GRADU- ATES TAUGHT IN STATE.	STATE.	NO. OF GRADU- ATES TAUGHT IN STATE.
Maine,	10	Michigan,	93	No. Carolina,	8
New Hampshire,	5	Wisconsin,	17	So. Carolina,	6
Vermont,	35	Minnesota,	66	Georgia,	8
Massachusetts,	32	Iowa,	46	Alabama,	7
Connecticut,	19	Missouri,	24	Florida,	2
Rhode Island,	3	Kansas,	20	Arkansas,	4
New York,	1276	Nebraska,	36	Louisiana,	7
Pennsylvania,	70	The Dakotas,	3	Indian Ter.,	1
New Jersey,	72	Colorado,	10	Texas,	1
Delaware.	2	California,	20		
				COUNTRY.	
Maryland,	8	Arizona,	1	Canada,	4
Virginia,	8	Wyoming,	4	Mexico,	1
Dist. Columbia,	5	Montana,	1	So. America,	6
West Virginia,	1	Oregon,	1	Japan,	2
Ohio,	60	Washington,	1	Hawaii,	3
Maryland,	73	Kentucky,	9	India,	1
Illinois,	94	Tennessee,	4		

<sup>1</sup> Based on alumni records. It is needless to say that the table is incomplete, for many graduates have changed positions since the record was made. The figures represent the number of graduates between the dates named who have been traced to a given State. For the purposes of the table, which is to show by the direct method the extent of Oswego influence, where one graduate has taught in several places, each place is taken as representing an Oswego teacher.

*Note.* From *The Contribution of the Oswego Normal School to Educational Progress in the United States* (p. 153), by A.P. Hollis, 1898, Lexington, MA: DC Heath & Co. In the public domain.

Table A3

*Possible Points of Discussion and Strategies to Address Lesson Study Obstacles*

Obstacle	Points of Discussion and Strategies
Conflicting Cultures	<p>Lesson study need not be rejected based on the idea this approach has flourished in a different country with a different set of cultural beliefs, assumptions and intellectual ideas about teaching.</p> <p>The idea that lesson study is a cultural mismatch in America is debatable when considering how and where lesson study was created. Adjustments and reform efforts are necessary to accommodate the logistical requirements that are needed, yet studies have produced evidence from both the past and present indicating lesson study is a viable approach in America.</p> <p>Lesson study principles are intuitively simple yet conceptually complex. Conceptual understandings of lesson study occur over time and with multiple experiences. Learning about lesson study will take educators time to adjust to the cultural changes associated with the process.</p> <p>Lesson study is a top-down, bottom-up innovation which offers educators the experience of accountability as a state of being. It has been reported that lesson study increases feelings of efficacy, responsibility, and professionalism in teachers.</p> <p>Lesson study is an integral component of the Japanese educational system; however, for 60 years, Japanese educators used teacher-driven efforts until the federal government provided support for its voluntary use.</p> <p>Lesson study is a focused, professional learning community. Educational stakeholders in the American educational system value professional learning communities as a means to harness the power of collective wisdom to increase student achievement. Lesson study has been proven to assist teachers in learning content and how to implement standards-based pedagogy, which are critical principles behind the use of professional learning communities.</p>
The Fuss Over One Lesson	<p>A serious misconception about lesson study is that it is a method to improve a single lesson. This is a wildly inappropriate understanding of lesson study research lessons.</p> <p>The research lesson is:</p> <ul style="list-style-type: none"> <li>• A research method to collect data on students in “live” classrooms to inform those involved and to add to the knowledge base of the entire profession.</li> <li>• The research lesson is a product of an extensive, long-term collaborative process designed to improve instruction in small increments.</li> <li>• A method to study standards, curriculum, and associated materials, pedagogical techniques or approaches, issues related to themes uncovered by standardized tests, and matters of interest raised by teachers or administrators to improve teachers’ instructional capacities.</li> <li>• Teachers report that lesson study can be a way to increase their instructional abilities in other content areas beyond the topic of the particular lesson studied.</li> </ul> <p>In addition, lessons are the focal point of our profession; by studying the nuances of one lesson, the process allows teachers the opportunity to understand student thinking and their associated reactions deeply. Research lessons are also:</p> <ul style="list-style-type: none"> <li>• Embedded within a unit of study.</li> </ul>

	<ul style="list-style-type: none"> <li>• Based on existing curriculum materials, not teacher inventions.</li> <li>• Constructed with a researcher lens, complete with hypotheses to focus the planning and guide the data collection (see start of Appendix).</li> </ul>
<p>Integrity to the Process</p>	<p>Lesson study practitioners must conduct their research cycles with integrity to the process. If practitioners neglect any steps in the process, if those employing the approach hold misconceptions or are unfamiliar with the rationales behind this process, naive ideas will surface about lesson study. Before engaging in lesson study, it would be prudent for all involved to build a common understanding of lesson study's constellation of features regarding professional development in the context of a professional learning community.</p> <p>Japanese educators developed protocols through decades of work; the protocols were explicitly created to enhance the research capacities of teachers to study ways to increase student achievement.</p> <p>Optimally, to ensure the integrity of the process, novice lesson study communities should seek assistance from experienced lesson study practitioners. Lewis and Hurd's (2011) seminal work, <i>Lesson Study Step by Step: How Teacher Learning Communities Improve Instruction</i>, is also an excellent resource in this regard.</p> <p>Lesson study is an orientation that honors process. The goal of the process is not to produce a perfect lesson. There is no such thing as a perfect lesson. Lessons created in research cycles may or may not be effective. Teachers experience professional development through the process, through the study of content and standards, through their discourse, by engaging in research with colleagues and most importantly, teachers learn from their students.</p>
<p>The Novelty of the Research Lesson</p>	<p>Educators unfamiliar with lesson study who attend research lessons need to be provided with an explanation of the process through a comprehensive orientation before they observe a research lesson. Teachers unfamiliar with the process should not leave the experience perceiving the research lesson as a "dog and pony show."</p> <p>Attendees at public research lessons, especially those in America who are unfamiliar with the process, require an information session to orient them to the rationales behind lesson study. Lesson study facilitators need to offer this orientation before a research lesson. The presentation should be strategically designed to introduce lesson study in a way that honors the complexity of the process, highlights the behaviors of attendees during the lesson, describes the main components of the lesson, includes the team's hypotheses and explains the overall benefits of lesson study; the importance of the orientation is essential to novices for their first experience in lesson study.</p> <p>The research lesson is just that, research. Attendees of a research lesson are participants in research. Their perspectives and analysis of the data presented are critical to the research team. A research lesson is also a form of professional development for the attendees.</p> <p>The research lesson is not a forum for individual teachers on the team to highlight their teaching acumen. It requires teachers to check their egos and embrace the challenging work of teaching by leveraging the genius of the team.</p> <p>The research lesson is not a formal or informal opportunity to evaluate teachers in any manner. Comments about teacher performance in any fashion are not the purpose of the experience.</p> <p>A research lesson is most effective when the team constructs the lesson based on activities that encourage and highlight student thinking and student discourse. Although teacher-</p>

directed traditional pedagogical methods may include student-focused activities, lessons where students are passive do not produce the necessary data for observers and attendees of the research lesson to collect. Hands-on, minds-on activities, including student argumentation, generate the required data points for the research team to analyze.

The research lesson is also an opportunity for all stakeholders in the field of education including teachers, administrators, parents, media, and policy-makers to experience the complexities of teaching. Public research lessons can serve to demonstrate the intellectual and emotional challenges confronting teachers in classrooms and possibly raise the level of public discourse surrounding the complex work of teachers.

Public research lessons have the potential to empower students to believe their roles as students are important because students are the focus and the reason for educators to gather in this forum. Students need to be explicitly told the adults at the research lesson are interested in what they are thinking.

Providing attendees with a copy of the research lesson, the rationale behind lesson study and the schedule highlighting the lesson study process is essential. The hard copy of the research lesson should provide space for the attendees to create notes of their observations. Attendees also play a role in the research and should consider perceiving their experiences observing a lesson study research cycle as professional development.

One way to introduce lesson study to community members is to attend live research lessons nationally.

#### Being Observed

Teachers may reject lesson study merely based on an understandable and historically-based fear about being observed. This fear requires examination and explicit attention.

Fear of being observed relates to teachers' intrapersonal capacities, the historically-based pressure caused by punitive accountability measures, teacher evaluation, and the history of isolationism in America. The difference between observation in a research lesson and an observation for evaluative purposes must be made explicitly clear.

Lesson study offers more "eyes on the students" to help understand how students are interacting with the activities of the lesson. During a research lesson, team members are intensively focused on the students to gather data for the debriefing to inform their analysis.

Lesson study research teams construct a lesson together. During a research lesson, the observers are mindful of the teacher actions because they collectively "scripted" those actions. The focus, or the "stars" of the research lesson, is the students and their reactions to the activities in the lesson. Observers of the lesson are more concerned with student thinking than with judging the moves of their colleague teaching the lesson; the observers know the teacher's moves.

Despite the rhetoric that the research lesson is not about teacher moves, but the teaching, many teachers still believe it is about them. They don't want to be labeled a "bad teacher." The optics of a research lesson induces performance anxiety in some teachers. Teachers reject lesson study based on this anxiety. Fear of being judged is one aspect of ego. Ego should not be an obstacle to professional development and the evolution of the profession.

Superintendents or administrators can demonstrate their commitment to lesson study by participating in lesson study research cycles and volunteering to teach the research lesson. By teaching the lesson, administrators may experience a furthered empathetic orientation to teaching. This practice demonstrates to teachers that their administrator is present and there to

	<p>support teachers and students. By teaching the research lesson, administrators provide a powerful action-fueled message about their commitment to their learning community.</p> <p>Lesson study team members should carefully consider who teaches the research lesson; team members may have varying degrees of emotional comfortability with being observed by so many of their colleagues. Leveraging the expertise or literature of those in the field of performance psychology may help in this regard. Performance psychologists assist individuals or groups of people to nurture, develop, or maintain healthy habits to perform better in situations involving eustress.</p> <p>Vulnerability is the portal to trust. Trusting professional relationships is critical to any professional learning community. Being observed in the context of a jointly created lesson provides a unique opportunity to nurture trusting relationships. Lesson study stretches teachers' interpersonal and intrapersonal capacities, which is why lesson study may trigger interpersonal strife. This kind of conflict offers opportunities to build trust.</p> <p>Feeling vulnerable has the potential to affect a professional learning community significantly. Explicitly using the literature on trust and vulnerability in schools and in general will inform members of a professional learning community about the benefits of the trust. Building this shared knowledge about trust has the potential to improve school climates. It will take time to develop this shared understanding of this critical feature of professional learning communities.</p>
<p>Time and the Lesson Study Process</p>	<p>Lesson study cycles require significant time to complete. There is no way around this fact. Lesson study is not a short-term fix. It is a steady, deliberate approach to professional development created to reform educational practices in small increments over time.</p> <p>A common complaint from American educators' daily lives in the classroom is that it is "hurried and hectic." Many educators lament that their daily teaching responsibilities and personal lives are too daunting to engage in such a time-consuming approach to professional development. Lesson study addresses this phenomenon by allowing teachers to take the time necessary to learn content, standards, and new pedagogical techniques in a uniquely structured process. Taking the time to deeply learn about issues in the profession in the context of a "live" lesson requires significant planning, organization, and a comprehensive understanding of the rationales supporting lesson study. Without this understanding, carving out time for lesson study will be less fruitful due to misconceptions. All involved require this deep understanding of the lesson. Numerous studies indicate the time involved in lesson study produces beneficial results.</p> <p>Depending on how local lesson study stakeholders organize their research cycles, lesson study meetings can be built into the school day, during professional learning community time, before or after school. Lewis and Hurd (2011) provide substantive advice on this critical feature of lesson study. The following is a snapshot, or highlights, of the information offered in their book, <i>Lesson Study Step by Step: How Teacher Learning Communities Improve Instruction</i>. For further details, use this book as a resource.</p> <ul style="list-style-type: none"> <li>• Schedule lesson study meetings in advance, so the meeting times are not interrupted by scheduling concerns. Proactive scheduling also enables teams to plan for substitute teachers.</li> <li>• It is possible for lesson study research teams to complete cycles in 8-10 hours; however, most teams complete the cycles in 20 hours. Many lesson study research teams complete three cycles each year.</li> <li>• Weekly meetings for a 10 to 14 week lesson study cycle are optimal.</li> </ul>

<p>The Angst Over Time Out of the Classroom</p>	<p>Lesson study requires time out of the classroom. Lesson study stakeholders can view this requirement as a creative challenge rather than an obstacle.</p> <p>Lewis and Hurd (2011) state: “The guiding principles behind scheduling are to maintain high-quality instruction for students and to schedule lesson study in a way that will permit it to become part of school culture” (p. 40). Lewis and Hurd (2011) further highlight the principles by providing the following quote from principal Lynn Liptak:</p> <p style="padding-left: 40px;">Time is one sure measure of commitment. When leaders see serious time commitment to lesson study, and the administrators taking time to engage in lesson study, they feel confident of a high level of support on a day-to-day basis and over the long haul. Lesson study should be scheduled by reallocating currently existing resources. In our school, it does not rely on “soft” money or the hiring of substitute teachers. Quality instruction must be provided in the classroom while the teachers are engaged in lesson study. (p. 41)</p> <p>Liptak states her school does not use substitute teachers to help facilitate lesson study; however, the use of substitute teachers can be a strategy to address time out of the classroom. Liptak contends: “Substitute teachers, pre-service teachers, partner teachers, artists-in-residence, parent and community service volunteers, outside experts, or para-professional teachers can provide quality instruction. Quality instruction can include art, music, research, literacy, or science, or community service projects” (Lewis &amp; Hurd, 2011, p. 40).</p> <p>Alternatively, "soft" funding is also an option to provide compensation for participating in lesson study research teams; grants and other forms of educational funding are available.</p> <p>Further, the educators, as mentioned earlier, could teach lessons based on past lesson study research cycles. Given that lesson study cycles are inherently a professional development activity, teaching a lesson based on research findings can, in effect, be a form of professional development for substitute teachers or pre-service teachers.</p> <p>Para-professionals can be assigned to teachers on research teams to assist them with the grading of papers during research lesson cycles. Research lessons can be scheduled during district-wide professional development days, before school, after school, or even in the evening when parents can attend. Some districts have compensatory funding through their local professional development programs to pay for substitute teachers and offer stipends to teachers engaged in professional development outside of contract hours.</p> <p>Many schools including elementary schools leverage departmentalization. Departmentalization offers opportunities to provide “coverage” for teachers engaged in lesson study while at the same time enable students with high-quality instructional activities.</p> <p>Through the public research lessons, students have the potential to feel honored for their work in the classroom as they feel honored for the extracurricular activities. Lesson study potentially alters students’ beliefs about their roles as students.</p>
<p>Competing Initiatives</p>	<p>If viewed with deep knowledge and understanding, lesson study does not compete with other initiatives, it affords educators with a systematic process to examine the effectiveness of initiatives, projects and reform measures.</p> <p>Lesson study functions to study the effectiveness of existing curricula, curricula resources, pedagogical practices, standards, textbooks, and local initiatives. Lesson study offers educators a credible research-based process to study educational issues pertinent to teachers, administrators, and policy-makers.</p>



	<p>The notion that lesson study is another professional development topic to choose out of a number of other professional development topics is a false choice. Lesson study is a sophisticated process to study professional development topics. Situating lesson study in this way demonstrates significant misconceptions about the process.</p> <p>Understanding that lesson study is the long-view reform is critical. It takes time to build a foundation for lesson study. Lesson study is not a quick-fix type of change. The foundation for lesson study requires time and attention which requires a shift in thinking about the professional development system. Lesson study's slow, deliberate approach may not be attractive to those who honor the initiatives that promise high test scores quickly.</p> <p>Lesson study was most effective in uncovering student misconceptions for teachers to leverage as they work to improve instruction. Lesson study research cycles have the potential to improve teaching, which is the goal of the quick fix approaches.</p>
Principal Turnover	<p>Principal turnover is a serious problem in education. The role of a principal is critical to a learning community. Superintendents and principals have the power to undermine years of lesson study work through their professional development choices. Lesson study practitioners need to proactively create contingency plans tailored to their local community in the event of principal turnover.</p> <p>Possibly, districts and states need to address this phenomenon by developing systems (professional development committees) to nurture continuity, coherence, and commitment to established professional learning communities like lesson study. These committees will provide support and encouragement to principals and those educators who choose to engage in lesson study, or any other professional development approach deemed credible and supported by research.</p>
Conflict Within Lesson Study Teams	<p>Lesson study research teams in America require consistency in their orientation to the norms and roles they constructed before they began their collective work together. As described by Lewis and Hurd (2011), before each meeting, they should review all of the norms and choose one norm to focus on as they engage in their lesson study discourse. Hopefully, the discourse includes cognitive conflict, consensus building, listening to the ideas of teammates, letting go of rigid thinking, and an overall atmosphere of respect.</p>
Interpersonal Obstacles: Conflict Generated From Local Contexts	<p>Even though administrators' ability to influence the school climate is limited, collaboration, in general, is an area needing explicit attention in American schools. Merely providing time to collaborate is not enough. Lesson study research teams and the wider community could benefit from their administrators' efforts to facilitate shared understandings within the entire learning community regarding the critical concepts of collaboration. Administrators could explicitly teach and work to maintain a set of norms for collaboration and intellectual discourse for the whole of the community. These norms would assist lesson study teams to construct norms aligned with the norms guiding the community as a whole.</p> <p>School climate is an immensely complicated phenomenon. Administrators require support from the teachers within the community. Administrators could employ support from entities with expertise in mental health disciplines. Many school districts have access to Employee Assistance Programs. Bringing in experts in the field of occupational psychology, positive psychology, or at least sharing literature from these disciplines with all stakeholders in the learning community could prove to be beneficial. Issues around school climate, especially regarding interpersonal relationships, are of great importance to student achievement.</p>

Colliding egos mitigate the benefits of collaborative discourse during any form of group-based professional development. The essential principles of lesson study require those engaged in the approach to put their egos aside. The lesson study process will challenge the limits of any learning community's collaborative capacities. Given the literature on collaboration and professional learning communities, this challenge is most critical in the evolution of American educational profession.

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## Vita

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### EDUCATION

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Syracuse University	2019
Doctor of Philosophy, Teaching and Curriculum	
Syracuse University	1986
Master of Science, Teaching and Curriculum	
State University of New York at Cortland	1985
Bachelor of Science, Early Childhood Education (Grades N-6)	

### PROFESSIONAL EXPERIENCE

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<i>Teaching Assistant of Science Education</i> , Syracuse University Department of Science Teaching, College of Arts and Sciences Department of Teaching and Leadership, School of Education	2015-2018
<i>Teacher-Educator of Elementary Science Instruction</i> , Onondaga-Cortland-Madison BOCES	2017-2018
<i>New York State Elementary Teacher</i> , Liverpool Central Schools (Grades 3, 4, & 5)	1987-2015 (Retired)
<i>Teaching Assistant of Inclusive and Special Education (Grades 1-6)</i> , Syracuse University, Department of Teaching and Leadership, School of Education (Sabbatical From In-Service Teaching)	2003-2004
<i>New York State Elementary Special Education Resource Teacher</i> , Liverpool Central Schools (Grades 1-6)	1986-1987
<i>Special Education Teaching Assistant</i> , North Syracuse Central School District, North Syracuse Early Education Program at Main Street	1982-1983

### PUBLICATIONS

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Dotger, S., Moquin, F.K., & Hammond, K. (2012). Lesson study as a mechanism for assessing student learning. *Educator's Voice*, 5, 22-31.

### GRANTS

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Moquin, F.K. (2012-2015). *Lesson Study Improving Science Instruction*. McCarthy Dressman Education Foundation (\$30,000).

### PEER REVIEWED RESEARCH CONFERENCE PRESENTATIONS

---

Dotger, S., Moquin, K., & Hammond, K. (2014). *Developing trust to improve elementary science teaching through lesson study*. Paper presented at the National Association of Science Teachers, Boston, April 3-6.

Bearkland, M., Dotger, S., Moquin, K., Osborne, S., & Walsh, D. (2014). *How do we know what they know? Using student interviews to illuminate student knowledge*. Paper for presentation at the annual meeting of the National Association of Science Teachers, Boston, April 3-6.

Moquin, K. (2011). *Keeping lesson study on track; Using emotion to avoid the language arts trap*. Paper presented at the Science at the Crossroads Conference, San Antonio, Texas, September 25-27.

### **REGIONAL CONFERENCE PRESENTATIONS**

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Bearkland, M., Dotger, S., Moquin, K., Osborne, S., & Walsh, D. (2014). *Using science notebooks in lesson study to make student thinking visible*. Paper presented at the Annual Meeting of the Science Teacher Association of New York State.

Bearkland, M., Dotger, S., Moquin, K., Osborne, S., & Walsh, D. (2014). *How do we know what they know? Using student interviews to illuminate student knowledge*. Paper presented at the Annual Meeting of the Science Teacher Association of New York State.

Dotger, S., Bearkland, M., Hammond, K., Moquin, K., Osborne, S., Vaughn, K., & Walsh, D. (2012). *Using science notebooks to make student thinking visible*. Presented at the Chicago Lesson Study Conference, Chicago, IL: May 3.

Dotger, S., Moquin, F.K., & Sardella, J. (2011). *Lesson study: A model for improving teachers' instruction*. A presentation for the Annual TLQP Conference, Syracuse, NY, June 2.

### **SCHOLARSHIP WITH LOCAL SCHOOLS – LESSON STUDY OPEN RESEARCH LESSONS**

---

Dotger, S., Moquin, K., Guida, P., & Radford, R. (2013). Magnetic forces over a distance. 4th Grade Lesson, 29 attendees, March 29.

Dotger, S., Bearkland, M., Clancy, J., Hammond, K., Hunter, R., McCaffer, D., Moquin, K., Walsh, D. (2012). Seeds and germination. 4th Grade Lesson, 64 attendees, April 9.

Dotger, S., Hammond, K., McCaffer, D., & Moquin, K. (2011). Magnetism. 4th Grade Lesson, 21 attendees, March 3.

Dotger, S., Bidwell, J., Casey, D., Hall, C., Hammond, K., McCaffer, D., Moquin, K., Osborne, S., Sardella, J. Vaughn, K., & Walsh, D. (2011). Sound. 4th Grade Lesson, 104 attendees, May 19.

**HONORS AND AWARDS**

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Berj Harootunian Award for Outstanding Achievement and Meritorious Dissertation in the Field of Teacher Education, Syracuse University, School of Education	2018
Teaching Assistantship, Department of Teaching and Leadership, School of Education, Syracuse University	2015-2018
New York State Senator John DeFrancisco's Teacher Excellence Award	2015
Graduate Teaching Assistantship in the Department of Teaching and Leadership, School of Education, Syracuse University	2003-2004
Student Nomination, Heather M. Weeks Who's Who Among American Teachers	2002
New York State Teacher Fellowship for Graduate Study, New York Congress of Parents and Teachers	1990
Graduate Assistantship in the Cultural Foundations Department, School of Education, Syracuse University	1985-1986
State University of New York-Cortland, Bachelor of Science, Magna Cum Laude	1985

**PROFESSIONAL LICENSES**

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Public School Teacher Permanent Certificate, Nursery, Kindergarten, and Grades 1-6, The University of the State of New York and State Education Department	1990
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