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5. TRAVELING TEACHER PROFESSIONAL DEVELOPMENT MODEL

Local Interpretation and Adaptation of Lesson Study in Florida

INTRODUCTION

Lesson study is a process of instructional improvement in which a group of teachers collaborate to set a goal, study, observe, and discuss teaching and student learning (Lewis & Hurd, 2011). Lesson study originates in Japan and has been practiced by Japanese teachers for over a century (Fernandez & Yoshida, 2004; Makinae, 2010). It has spread globally since the late 1990s when lesson study was introduced as a system that supports Japanese teachers to practice high quality instruction in a book, *the Teaching Gap* by Stigler and Hiebert (1999) based on the Trends in International Mathematics and Science Study (TIMSS) video study.

The global circulation of lesson study has led to the establishment of the World Association of Lesson Studies (WALS) in 2006 with seven founding member countries and council members representing 12 countries around the world.¹ The number of countries represented in the WALS conference presenters has grown from 13 in 2007 to 28 in 2014, indicating an increasing practice of lesson study as an emerging global model of teacher professional development.

This mixed-method comparative study examined lesson study in Japan as the original model, and interpretation and adaption of lesson study as an emerging new model of teacher professional development in Florida, the United States. Previous studies of teacher-related global reforms focused on developing countries and only a few studies focused on how developed countries voluntarily import global ideas for teacher policy and practice and how these global ideas are interpreted and adapted into the local contexts (Akiba & Shimizu, 2012; Sacilotto-Vasylenko, 2013). Furthermore, despite the global circulation of teacher professional development models such as lesson study and Professional Learning Community (PLC) for improving teaching and student learning, few studies have examined how these global models are interpreted and adapted to fit into the local organizational contexts of teachers in the U.S. or other countries. Examining the organizational contexts of teachers—how the teachers' work is shaped and supported by organizational structure and routines—in the countries that imported a global reform model will help us understand why a global reform model is interpreted and adapted in

a certain way, leading to diverse implementations and impacts on teachers and students around the globe.

Using a sense-making perspective in organizational context as a theoretical framework, this study investigated the process with which a global model of lesson study interacts with local contexts focusing on the organizational contexts surrounding teachers' professional development in Florida, the U.S. This study was conducted from 2011 to 2014 to address the following questions:

1. What characterize the practice of lesson study in Japan and how do organizational contexts of Japanese teachers support lesson study?
2. How was the model of lesson study interpreted and adapted by the state and district-level leaders in Florida and what organizational contexts influenced their interpretation and adaptation?

The study found that lesson study has been interpreted through the lens of organizational structures and routines of teacher professional development in Florida and the U.S. in general, and the model was adapted to fit into the existing organizational contexts. The chapter discusses the underlying views of teacher professional development and the teaching profession in the U.S. that played an important role in the adaptation process of lesson study.

BACKGROUND

Globalization and Teacher Reforms

Over the past two decades, an increasing number of countries around the world have developed and implemented large-scale teacher reforms in an effort to improve teaching and student learning nationwide. International student assessment rankings (e.g., PISA, TIMSS) and international agencies such as the Organization for Economic Cooperation and Development (OECD) are among the global forces that instigated these reforms to improve teacher quality as the driving force for improving student learning (Meyer & Benavot, 2013; Robertson, 2012; Sellar & Lingard, 2013). Previous comparative studies have also shown that many of these teacher reforms implemented around the globe are influenced by neoliberal principles promoting accountability and standardization (Akiba & LeTendre, 2009; Paine & Zeichner, 2012; Tatto, 2007).

While empirical data regarding the development and implementation of large-scale teacher reforms around the world are slowly emerging (Akiba, 2013; Darling-Hammond & Lieberman, 2012; Paine & Zeichner, 2012), few studies have focused on the role of organizational contexts in shaping the local interpretation and adaptation. For example, Anderson-Levitt and Diallo (2003) examined the state's and teachers' responses to teacher professional autonomy promoted by international consultants in Guinea. They found that the Ministry of Education promoted limited autonomy of teachers who were encouraged to be creative in teaching the given

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textbook and topics, instead of broader autonomy to determine topics and develop their own lesson plans. Teachers also asked for a scripted teacher's guide and practiced limited autonomy because of a lack of encouragement from the Ministry of Education, a lack of training and confidence in creating their own lessons, and a community pressure to teach by the book.

Most of the other studies focused on student-centered instruction—a global reform that has been implemented in many countries including Botswana (Tabulawa, 2003), China (Carney, 2009), Tanzania (Vavrus & Bartlett, 2012), Mongolia (Steiner-Khamisi & Stolpe, 2006), and South Africa (Chisholm, 2012). These studies have revealed that, despite the similarity in the reform focus across these countries, the interpretation and practice of student-centered instruction diverged because of the different social contexts and beliefs about teaching and learning. However, most of these studies did not focus on the influence of the organizational contexts—how the teachers' work is shaped and supported by organizational structure and routines—on the practice of student-centered instruction.

The only exception is the study conducted by Vavrus and Barlett (2012) that paid attention to the material conditions of the teachers along with the teacher view of knowledge in Tanzania. They found that pedagogical change for practicing learner-centered pedagogy (LCP) is constrained by the working conditions of teaching including hierarchical structure of authority, large number of students in small classrooms, and limited instructional resources. Through interviews and observations, they found that the teachers were concerned that LCP interferes with their authority and with the respects from students and parents. By posing open-ended questions to students, the teachers wondered if students and parents question their mastery of the subject area as it departs from the organizational routine of teachers delivering the content and answers to students. In addition, they feared that they may lose respects from students and parents by falling behind in the curriculum due to the time-consuming preparation and a slow pace of LCP. The large class size and a lack of basic materials (e.g., textbooks, papers) made it even more difficult for teachers to prepare for hands-on learning activities in LCP.

The current study focuses on the local interpretation and adaptation of an emerging global model of teacher professional development—lesson study in the state of Florida, the U.S. Previous comparative studies have identified major differences in how teachers' professional learning activities are supported between Japan and the U.S. (Akiba & LeTendre, 2009; LeTendre, Baker, Akiba, Goesling, & Wiseman, 2001; Shimahara & Sakai, 1995). When lesson study is imported to the U.S. or any other countries with different organizational contexts surrounding teachers' professional development, lesson study is naturally interpreted through the lens of the common approach to professional development and adapted to fit into the existing organizational contexts. Examining the organizational contexts supporting lesson study in Japan in comparison to the organizational contexts in the U.S. will help us better understand how and why lesson study is interpreted and adapted in a certain way.

Lesson Study Traveling from Japan to the U.S.

Previous case studies of lesson study conducted in Japan revealed the process and characteristics of lesson study (Fernandez & Yoshida, 2004). In a cycle of lesson study, a team of 3–6 teachers goes through four specific stages—Stage 1: study the content of a chosen unit and student understanding of the unit content, and develop a student learning goal aligned with the content standards and school goals, Stage 2: develop a lesson plan for an experimental lesson called the “research lesson,” Stage 3: one team member teaches the research lesson in an actual classroom with students and other team members observe the lesson to collect student data, and Stage 4: discuss the effectiveness of the lesson based on the collected student data and discuss how to improve the lesson and teaching approaches to achieve the learning goal (Fernandez & Yoshida, 2004; Lewis, 2002; Lewis & Hurd, 2011; Lewis, Perry, & Hurd, 2009; Stepanek, Appel, Leong, Mangan, & Mitchell, 2007). Researchers in the U.S. have documented that lesson study embodies content-focused, coherent, continuous, and collaborative teacher learning activities (Perry & Lewis, 2009)—the characteristics of professional development identified to be associated with improved instruction and student learning in the U.S. (Desimone, 2009; Hawley & Valli, 1999; Loucks-Horsley, Hewson, Love, & Stiles, 1998; Wilson & Berne, 1999).

While lesson study became widely known to researchers in the U.S., we have limited knowledge about the learning opportunities lesson study provides to Japanese teachers on a large scale and the organizational contexts that allow such system-wide learning opportunities in Japan. The only large-scale study available to date gathered survey data from school principals (Chichibu & Kihara, 2013), thus little is known about the characteristics of learning opportunities Japanese teachers receive through participating in lesson study.

Lesson study was imported to the U.S. in the late 1990s after an international video study revealed that in comparison to U.S. mathematics lessons that focus on lower-level mathematics skills, Japanese mathematics lessons focus on promoting students’ conceptual understanding (Stigler & Hiebert, 1999). This study, published in a book, *the Teaching Gap*, found lesson study to be the driving force that enabled Japanese teachers to practice student-centered, problem-solving approaches in mathematics lessons for promoting students’ conceptual understanding. Since then, lesson study has been practiced across the U.S., mainly by voluntary groups of teachers (Lewis, Perry, & Murata, 2006) and teacher educators (Hart, Alston, & Murata, 2011). However, the practice of lesson study remained regional as no state or district has systematically promoted lesson study until the late 2000s.

The Florida Department of Education (FLDOE) chose lesson study, following the lead of the Chancellor of Public Schools who visited Japan in 2008, as one of the innovative plans to improve the teacher workforce for the federal Race to the Top (RTTT) program released in 2010—a 4.3 billion competitive grant program. When FLDOE won 700 million RTTT funds, it became the first state to promote

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lesson study in the U.S. Since then, FLDOE and school districts across the state have developed policies and allocated funding to promote lesson study. In 2012, lesson study was acknowledged as one of the six international innovations imported to the U.S. along with Singapore Math, Reading Recovery, International Baccalaureate, Montessori Schools, and School Inspections in the Quality Counts report by Education Week (Editorial Projects in Education, 2012). The report also introduced Florida's statewide implementation of lesson study using the RTTT funds.

Thus, Florida is an ideal site for examining how organizational contexts influence the sense-making process of lesson study for a large-scale implementation. Florida is the fourth largest state with a population of 20 million, located in the southeast corner of the North America. The student population is diverse with 57% of the students identifying themselves as ethnic minorities, compared to the national average of 48% (NCES, n.d.). While Florida is a larger and more diverse state compared to the national average, the findings from Florida regarding the organizational contexts surrounding the teaching profession will likely apply to the other states because of the similarity in the state's and districts' organizational contexts across the country.

THEORETICAL FRAMEWORK: SENSE-MAKING PERSPECTIVE IN ORGANIZATIONAL CONTEXT

Sense-making perspective posits that, when a new idea for policy or practice is introduced, policymakers, administrators, and educators go through a sense-making process of the new idea through the lens of their preexisting beliefs and knowledge, interpreting and adapting the idea through interactions with others (Coburn, 2001; Jennings, 1996; Spillane, Reiser, & Reimer, 2002). Previous studies identified that the existing organizational contexts play an important role in the sense-making process by influencing the understanding of the new idea that is feasible within the organizational structure and routines (Coburn, 2005; Spillane, 1998, 2000).

When the idea for policy or practice is radically different from what is familiar to them, which is applicable to many imported ideas from overseas, there is a greater chance that the idea is modified to fit within the existing organizational contexts. This is likely the case for lesson study which came from the organizational contexts that are distinctly different from those of the United States. Previous comparative studies between Japan and the U.S. have shown that U.S. teachers have a heavier instructional workload, teach more grade levels and subject areas, and receive fewer supports for mentoring, induction, and professional development than Japanese teachers do (Akiba & LeTendre, 2009; LeTendre et al., 2001; Shimahara, 2002; Shimahara & Sakai, 1995), yet experienced teachers in the U.S. receive lower salary than the Japanese counterparts (Akiba, Chiu, Shimizu, & Liang, 2012).

There is a need to fully understand the organizational contexts supporting Japanese teachers to practice lesson study, and examine how the differences in the organizational contexts between Japan and the U.S. may influence the sense-making process—interpretation and adaptation of lesson study in the U.S.

METHODS

This mixed-method comparative study gathered data from Ibaraki, Japan and Florida, the U.S. from 2011 to 2014. Table 1 lists the types of data gathered in these two sites along with the research questions these data addressed. To address the first research question on the characteristics of the lesson study practice in Japan and organizational contexts that support the practice, a survey of lesson study and interviews were conducted in 2011. The data collections focused on middle school mathematics teachers so that the researcher can conduct an in-depth analysis of subject-specific learning processes at specific grade levels through lesson study. Middle school teachers (grades 7, 8, and 9) were the focus of the study because the achievement gap between low-achieving and high-achieving students widens as they prepare themselves for the high school entrance examinations that sort students into different tracks of high schools (i.e., vocational, academic), and teachers' professional development activities for providing high quality instruction are critical for providing equal learning opportunities for students in Japan.

Table 1: Data collection in the comparative mixed-method study in Japan and U.S.

Research questions	Sites	Data collection
1. What characterize the practice of lesson study in Japan and how do organizational contexts of Japanese teachers support lesson study?	Ibaraki, Japan Population: 2.9 million	Data collected in 2011 a. Statewide survey of 373 middle school mathematics teachers (61% response rate) b. Interviews with 6 administrators and 16 mathematics teachers in 4 middle schools
2. How was the model of lesson study interpreted and adapted by the state and district-level leaders in Florida and what organizational contexts influenced their interpretation and adaptation?	Florida, the U.S. Population: 20 million	Data collected from 2012 to 2014 a. State and district policy and resource documents on lesson study b. Interviews with one state education representative and 5 lesson study trainers and organizers c. Statewide survey of 41 district professional development coordinators (79% response rate) d. Interviews of 15 district leaders in 7 districts

The survey was conducted in Ibaraki prefecture located in a central region of Japan in spring 2011. This prefecture has a population of 2.9 million, similar to the average population of 2.7 million across 47 prefectures in Japan (Statistics Bureau, 2013). A paper-and-pencil survey was mailed to the population of 611 middle school mathematics teachers from February to March 2011 based on the list obtained from the Prefecture Board of Education. A total of 373 teachers returned a complete survey

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with a response rate of 61%. The survey asked the teachers to report how many cycle of lesson study they have participated in during the previous 12 months as: (1) a part of a lesson study group, (2) as an observer of a research lesson conducted by another lesson study group in the same school, and (3) as an observer of a research lesson conducted by another lesson study group in a different school, and what was the length of each lesson study cycle they participated.

After completing the survey, the researcher conducted semi-structured interviews with 22 individuals (six administrators and 16 mathematics teachers) in four middle schools from late spring to summer 2011. These schools were chosen considering the variation in the school location (one rural, two suburban, and one urban) and the principal's approval to conduct the interviews. All the mathematics teachers were invited and agreed to participate in the interview. The interviews asked the teachers to explain the detailed characteristics and processes of lesson study practiced and what supports they receive for their engagement in lesson study. Each interview lasted from 30 to 45 minutes and all the interviews were transcribed verbatim in Japanese and then translated into English.

To address the second research question on the interpretation and adaptation of lesson study in Florida and the organizational contexts that influenced them, the researcher gathered four types of data in the state of Florida from 2012 to 2014: (1) policy and resource documents on lesson study, (2) interviews with state-level leaders and trainers promoting lesson study, (3) a statewide survey of professional development coordinators, and (4) interviews of district leaders in seven districts. First, all the policy and resource documents produced by the FLDOE and district offices about lesson study including a lesson study guide, memos, PowerPoint slides used during lesson study training, letters to teachers were gathered and carefully reviewed. Second, the researcher interviewed a state education representative who was involved in developing the state policy on lesson study and five lesson study trainers and organizers from five different organizations (three higher education institutions, one regional center, and one non-profit organization) which received funding from FLDOE to disseminate lesson study through trainings. The interviews asked them about the policy background, the specific nature of the RTTT requirements on lesson study, the process for ensuring compliance, funding use, the characteristics of training or workshops on lesson study and participants, and their perceived responses of the training or workshop participants.

After analyzing the state-level data, the researcher conducted an online survey of district professional development coordinators who were in charge of facilitating lesson study between May and August, 2013. A link to a Qualtrics online survey called Lesson Study District Survey was sent to 52 districts that participated in the Race to the Top Program to receive funding for promoting lesson study. The survey asked about the district policies and practices during the 2012–2013 academic year with five survey sections: (1) district requirements on lesson study, (2) funding, (3) district support and training on lesson study, (4) other professional development programs

implemented, and (5) open-ended comments on experiences with facilitating lesson study. The survey participants received a \$25 online gift card of a major retailer upon completion. A total of 41 out of 52 districts completed the survey with a response rate of 79%.

Finally, after completing and analyzing the district survey data in spring 2014, the researcher followed up with seven districts across the state with various background characteristics during summer 2014. Two districts are large districts enrolling over 100,000 students, two districts are mid-size districts with an enrollment of 40,000 to 60,000 students, and three districts are small districts enrolling less than 5,000 students. Two districts are high-achieving with a letter grade of A based on the state assessment results, four are low-achieving with a letter grade of C, and the other two districts received a letter grade of B in 2013. The researcher purposely chose these districts with various background characteristics in order to identify the overall themes and commonalities in the experience of district leaders who facilitate the implementation of lesson study.

The number of interview participants ranged from one to four per district, with a total of 15 individuals interviewed. These 15 interview participants included seven professional development coordinators, seven instructional coaches, and one administrator who are all involved in facilitating lesson study in their districts. The researcher asked the professional development coordinators about the history of lesson study practice in the district, the characteristics of training and ongoing support provided to school administrators and teachers, other professional development programs and their alignment with lesson study, and successes and challenges they experienced with facilitating lesson study. The interviews lasted from 1 to 2 hours and all the interviews were audio-recorded and transcribed verbatim.

All the data collected in Japan and the U.S. were analyzed based on the two research questions. In analyzing the survey and interview data collected in Japan, the researcher focused on the identification of various types of learning opportunities teacher received through lesson study and the organizational contexts that support these learning opportunities. In analyzing the content of the policy, survey, and interview data collected in the U.S., the researcher paid attention to the assumptions and premises underlying these state and district approaches and analyzed how existing organizational structures and routines surrounding professional development influenced their approaches to lesson study implementation. Descriptive statistics were used to analyze the survey data gathered from middle school teachers in Ibaraki and district professional development coordinators in Florida. The interview data from middle school teachers and administrators in Japan and from district leaders in Florida were coded openly first to identify the general themes about the organizational contexts in Japan and the U.S., and after the major themes were identified, all the interviewer responses were coded using the major themes that are presented in the result section.

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RESULTS

Lesson Study and Organizational Contexts of Teacher Learning in Japan

Multiple learning opportunities through lesson study. The survey data collected from 373 middle school mathematics teachers in Ibaraki prefecture summarized in Table 2 show that three types of participation in lesson study are common in Japan: (1) participating in a lesson study group as a group member by going through the four stages of lesson study, (2) observing a research lesson and a debriefing session conducted by another lesson study group in the same school, and (3) observing a research lesson and a debriefing session conducted by another lesson study group in a different school.

The frequency of participating in these three types of lesson study opportunities ranged from 1 to 21 with the average of 5.2 times a year. On average, Japanese middle school teachers participated in a lesson study group 2.1 times a year with each cycle of lesson study lasting 2–3 months, observed a research lesson conducted by another group in the same school 1.9 times a year, and observed a research lesson conducted by another group in a different school 1.2 times a year.

This shows that Japanese teachers not only engage in lesson study as part of a lesson study group, they also benefit from observing a research lesson and participating in a debriefing session conducted by other groups inside and outside their own schools. All of these three types of participation in lesson study involve an observation of a research lesson and a participation in a debriefing session where participants discuss the collected data on student learning as evidence of effectiveness of the research lesson for achieving the student learning goal. All the middle school mathematics teachers who participated in the survey reported that they participated in at least one of these three learning activities through lesson study during the previous 12 months, indicating the universal practice of lesson study across the teaching profession and the institutionalized process of lesson study in Japan.

The interviews with teachers also confirmed that lesson study is the dominant form of professional development among teachers and the learning opportunities that teachers value the most in comparison to other forms of professional development including seminars offered by district-level instructional directors or university professors. Ms. Suzuki, a math teacher with 15 years of experience explained,

The seminars are useful for learning new topics and approaches, but lesson study is the process in which you experiment these new ideas to see how our students respond. The research lesson allows us test a new idea and informs us whether it is worth integrating it in our daily practice.

In order to examine the organizational contexts that enable teachers to continuously engage in three types of lesson study participation, I asked teachers and school administrators to provide a detailed account of how lesson study is practiced and what conditions and supports allow all the teachers to engage in lesson study.

Table 2. Lesson study practice in Ibaraki, Japan

<i>Lesson study participation</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Being part of a lesson study group	373	2.1	1.7	0	10
Observing a research lesson by another group in the same school	373	1.9	1.7	0	10
Observing a research lesson by another group in a different school	373	1.2	1.1	0	7
TOTAL	373	5.2	3.2	1	21

Organizational contexts of teacher learning. The interviews revealed that two aspects of the organizational contexts support Japanese teachers' continuous engagement in lesson study: (1) teacher leadership and collective ownership of research-based professional learning processes supported by shared curriculum, instructional resources, and profession-wide networks and (2) teacher learning embedded into teachers' work schedule.

First, teachers exercise leadership in organizing lesson study and facilitating its research process by examining the curriculum, teaching approaches, and student thinking processes. This practice is not mandated by any policymakers or administrators, but teachers hold each other accountable to engage in a continuous process of lesson study with shared instructional and educational goals. Many teachers described lesson study as "critical opportunity to develop as a teacher" which they see as an integral part of the teaching profession. Mr. Tanaka, a beginning teacher expressed,

I learned many theories and ideas in my teacher education program, but I did not know until I went through the process of lesson study with my veteran colleagues how complex teaching is and how important it is to continuously engage in the study of curriculum and student understanding to grow as a teacher. When I see my colleagues staying until late to research instructional materials and share it with the other teachers, I feel encouraged and motivated to do so as well because I want to improve my teaching and help my students understand better.

This teacher-driven process of lesson study is supported by shared curriculum and instructional resources according to the teachers I interviewed. Teachers commonly explained the national standards and teachers' manuals aligned with these standards to be the starting place for lesson planning. Teachers' manuals include various examples of problem solving approaches and anticipated student responses and common misconceptions (Watanabe, 2001, 2007; Watanabe, Takahashi, & Yoshida, 2008), thus teachers have shared foundational knowledge and vocabularies to start the lesson planning process. Teachers bring in additional resources including

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research articles and instructional materials to the lesson study group for discussion to develop a lesson plan for a research lesson.

In addition, teacher practice of lesson study is supported by profession-wide networks that develop and share practice-based knowledge directly applicable to everyday practice by various dissemination processes including district-, state-, and nation-wide public research lessons and publications of the research results including a lesson plan and a summary of discussion (Fernandez & Yoshida, 2004; Lewis, 2015). Mr. Inoue with 25 years of experience shared,

We grow as teachers when we come together to discuss public research lessons and share lesson plans and instructional materials. I can't think of a better way to deepen my knowledge than being part of a group of teachers who are all committed to helping our students learn better.

These teacher networks are developed by teacher-led professional associations including subject-specific research associations (e.g., math research association, social studies research association), teachers' unions, and study groups. The teachers explained that these networks support their practice of lesson study in two ways: (1) by providing numerous examples of lessons taught in various school contexts across the country and (2) by offering opportunities to share their lesson study practices by conducting public research lessons which teachers from various schools attend and share their experience and ideas on teaching and student learning. These collective learning processes via lesson study contribute to the development of shared knowledge around effective teaching and learning.

Second, lesson study practice is embedded into teachers' work schedule. A principal that I interviewed said, "Teacher professional development is both the right and responsibility of the teaching profession." There is a belief among Japanese educators that professional development is an integral part of the teaching profession—a belief supported by the organizational structure of teachers' work that allows sufficient time for professional development. Japanese teachers have lighter instructional workload of 17.7 hours per week compared to U.S. teachers who spend 26.8 hours a week for instruction on average at lower secondary level according to the 2013 Teaching and Learning International Survey (TALIS) data (OECD, 2014). Yet most teachers I interviewed stay in school from 8am to 6pm every day.

This lighter instructional load and longer work hours allows them to engage in other activities including lesson study, lesson preparation, and stepping in to teach another classroom. Ms. Takano, a mathematics teacher with 5 years of experience explained,

I have two planning periods a day, so I often step in to teach another classroom when the teacher needs to attend a public research lesson outside. For lesson study, we usually meet after school from 3 to 4pm weekly or biweekly and

then most teachers stay for another few hours for lesson planning, researching instructional materials and approaches, or supervising student club activities.

The interviews revealed that the school administrators (principals, assistant principals, academic chair) also often step in to teach in order to support teachers to travel for observing public research lessons and participating in debriefing sessions to discuss teaching and student learning.

These organizational structures and routines that support teacher leadership and ownership of professional learning process and embed learning processes into teachers' work schedule enable teachers to collectively engage in lesson study as an institutionalized process of professional learning and development in Japan.

Interpretation and Adaptation of Lesson Study in Florida

The analysis of policy and resource documents, survey, and interview data in Florida revealed that lesson study was interpreted and promoted by the state and district-level leaders as: (1) one of the many district-driven professional development programs, and (2) a simplified and short-term process.

Lesson study as one of district-driven professional development models. One distinct characteristic of lesson study promoted in Florida that is drastically different from lesson study in Japan is that it is considered to be one of many district-driven professional development models. As shown in the survey data presented earlier, lesson study is practiced by every teacher in Japan as the dominant form of professional development process led by teacher leaders, and district-driven workshops and seminars are supplemental to lesson study. In Florida, lesson study was introduced as an addition to the large number of existing district-driven professional development programs. For example, In “A guide to implementing lesson study” (Haithcock, 2010), FLDOE explained that “Lesson study enhances successful strategies currently included in many initiatives, such as Florida’s Continuous Improvement Model (FCIM), Professional Learning Communities (PLCs), Problem-Solving and Response to Intervention (PS/RtI), Data-Driven Instruction, and Instructional Coaching Cycles” (p. 5).

District survey data revealed that the number of separate professional development programs districts coordinated including lesson study during the 2012–2013 academic year ranged from 1 to 14 programs with an average of 4.8 programs per district. This indicates that lesson study is typically promoted as one of the five professional development programs they are facilitating, which is consistent with the traditional “cafeteria” approach districts use for professional development without a clear coordination or integration of teacher learning opportunities (Elmore, 2004; Little, 1993, 1999; Spillane, 2002).

Pressed with limited time available for lesson study, Ms. Connor, a professional development coordinator of a large district commented,

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While the (lesson study) model is very valuable and we would like to implement it, we are constrained by a lack of time resources, funding resources for substitutes, and coach positions/resources to support and facilitate lesson study. It is an excellent model for professional development, but until the state's funding formula supports a teacher work schedule that builds in time for teacher collaboration and work such as lesson study, rather than just funding the time teachers spend with students, lesson study will continue to be implemented in a random fashion across the state.

The survey and interview data showed that lesson study became a simple addition to the many district-driven professional developments where teachers follow the lead of the district instructional coaches to learn the instructional approaches. This district-driven approach to lesson study also has a negative consequence. Because the district human and material resources are limited, their time and funding are stretched to support many professional development programs. As a result, the interviews with the state and district leaders showed that lesson study was adapted as a simplified and short-term process.

Simplified and short-term process of lesson study. In order to promote lesson study statewide, the FLDOE decided to subcontract training on lesson study to external professional development providers and provide a competitive grant to higher education institutions or private organizations. This is a common state approach for bringing resources to implement statewide reforms and initiatives (Russell, Meredith, Childs, Stein, & Prine, 2014). Thus, the researcher interviewed the representatives from five organizations (three higher education institutions, one regional center, and one non-profit organization) which received funding from FLDOE to disseminate lesson study.

The interviews revealed that lesson study was promoted as a two- or four-day process. For example, one of the three projects funded by FLDOE requires teachers to complete one lesson study cycle in four days during a fall semester after completing an eight-day summer institute on major science domains. Another funded project pays for teachers' time for two days to implement lesson study after completing a four-day workshop on how to develop a perfect inquiry lesson and introducing the benefits and process of lesson study. In these projects, lesson study is an add-on to the traditional institutes where teachers learn the content and pedagogical approaches from professional development providers. A coordinator of one of these projects explained to the researcher that "lesson study is just a process, so we need to cover the content through the summer institute first." This coordinator's comment reveals the belief about teacher professional development to be teaching the subject content to the teachers, instead of teachers engaging in a research process to guide their own learning process.

When asked why the lesson study cycle is shortened, the trainer from the non-profit organization explained, "We started out with a five-day model, but many

districts told us that a two-day model is more feasible considering the limited funding and time.” The lesson study facilitator kit developed by this organization include pre-existing lesson plans, which would be used for the first three cycles of lesson study without engaging teachers in the study of curriculum or student thinking so that “teachers can focus on learning the data collection and analysis,” according to the manual included in the facilitator kit. Included in the packet are a series of templates that guide data collection including “behavior scan 1” and “behaviors scan 2” in which teachers are expected to make tally marks next to each behavior they observed, “time sweep: who is talking and when?” to record the time when the instructor and students speak during the research lesson, and “word-for-word record” to write down the instructor’s questions and student responses verbatim.

This shortened and simplified process of lesson study with pre-fixed lesson plans and templates does not allow the continuous research process of lesson study—examining the curriculum and instructional materials and their own students’ thinking process and understanding of the chosen content. The research process is continuous and long-term as teachers need to understand the complex nature of student thinking and the effective approaches to promote student understanding, and it is not possible to complete in 2 to 4 days. The interviews with the district leaders clarified that they were introduced to this simplified and short-term process of lesson study by these FLDOE-funded organizations. This process also seemed to have made sense to the district leaders as a feasible model as they were introduced to lesson study as an addition to many district-driven professional development programs.

Organizational Contexts and Beliefs about Teacher Professional Development

What explains the interpretation and adaptation of lesson study as one of many district-driven professional development models and a simplified and short-term process? The analysis of policy documents, survey data, and interview data showed that two organizational characteristics—(1) the organizational routine of offering multiple professional development programs aligned with various reform initiatives, and (2) organizational structure of teachers’ work schedule that does not allow time for ongoing professional learning activities—likely explain the modified lesson study process. These organizational routine and structure are supported by the common beliefs about teacher professional development in the U.S., which influenced the interpretation and adaptation of lesson study through the organizational contexts. Table 3 summarizes these beliefs supporting the organizational contexts.

Multiple professional development programs. The main reason why lesson study was interpreted as one of many district-driven professional development programs is that it is the organizational routine for districts to provide many professional development activities in Florida and the U.S. in general. The districts offer an average of five professional development programs simultaneously, and this organizational routine is supported by the belief about teacher professional development as a tool

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Table 3: Organizational contexts and beliefs about teacher professional development in the U.S.

<i>Modified lesson study process</i>	<i>Organizational structure and routine</i>	<i>Underlying beliefs about teacher professional development</i>
1 Lesson study as one of many district-driven professional development programs	District offering of multiple professional development programs aligned with various reform initiatives	Professional development as a tool for implementing a new policy, curriculum, or a program, instead of a process of teachers' career-long learning
2 Simplified and short-term process of lesson study	Teachers' work schedule that does not allow time for ongoing professional learning activities	Professional development as supplemental to the teachers' core responsibilities, instead of as an integral part of the teaching profession

for implementing a new policy, curriculum, or a program, instead of a process of teachers' career-long learning.

Because policymakers at the federal and state levels in the U.S. introduce many reforms and initiatives that come and go in a short-time period, the districts need to offer many professional development programs that introduce teachers how to implement the reform or the initiative. The FLDOE was promoting five professional development programs when it decided to promote lesson study, and this list has changed every year since then along with the changes in the reform priorities. The districts also change the list of professional development programs they offer each year based on their understanding of the changing reform priorities.

Lesson study was introduced as a tool to implement the Common Core State Standards (CCSS) by the FLDOE in its RTTT proposal in 2010. Since then, the state decided not to implement the CCSS in 2013 and instead developed its own state standards, the Florida Standards to be implemented from the 2014–2015 academic year. The policy document on lesson study was revised, and all the other professional development programs on the CCSS disappeared or renamed. Lesson study continued along with other programs now as a tool to implement the Florida Standards. This belief about teacher professional development as a tool to implement the top-down reforms and initiatives rationalizes the district-driven process of lesson study.

Teachers' work schedule. The simplified and short-term process of lesson study lasting from 2 to 4 days was rationalized by the fact that many districts saw the long-term process of lesson study as infeasible given the limited funding and time. Almost all district leaders I interviewed raised the limited funding and time as a major challenge for practicing lesson study. The main reason for the lack of time

comes from the fact that teachers' work schedule is filled with instructional hours and does not allow room for engaging in lesson study. As stated above, the teachers in the U.S. spend an average of 26.8 hours for instruction compared to Japanese teachers who spend 17.7 hours on average (OECD, 2014). In order for teachers to observe a research lesson, the districts or schools need to pay for substitute teachers to cover their classes. In addition, teachers need to meet outside the regular contract hours (i.e., after school, before school, or on weekend) for the ongoing research process of studying instructional approaches and student learning and preparing for a research lesson if they follow the long-term teacher-driven process of lesson study. This requires payment for teachers and sufficient district funding to cover the payment. The modified short-term process is cost effective because it requires only the funding for covering 2–4 days of substitutes, not teachers' time.

Underlying this organizational structure for teachers' work schedule is the belief that professional development is not part of the core responsibilities of the teachers. A district professional development coordinator expressed,

I sometimes admire teachers who engage in lesson study because they are doing this voluntarily on top of all the other things they are required to do as teachers. They are sacrificing their personal time by meeting after school just because they want to improve their teaching even if their efforts are not always acknowledged or appreciated.

Because professional development was never integrated into teachers' work schedule, only a small number of teachers take an initiative to engage in an ongoing learning process based on their own questions emerged from their daily teaching practice and interactions with their students. The expectation from the districts is to attend professional development programs during professional development days and district-wide early release or late start days which may be organized by the districts or school administrators. As a tool for implementing the standards, lesson study was never seen as an integral part of the teaching profession unlike in Japan and hence modified as a simplified and short-term process in order to make it feasible within the teachers' work schedule.

CONCLUSIONS AND DISCUSSION

This study examined the local interpretation and adaptation of lesson study—an emerging global model of teacher professional development in the state of Florida. Lesson study has been practiced in the U.S. since the late 1990s by a small number of voluntary groups of teachers, yet no district or state had taken a systematic approach to promote lesson study before. Florida is the first state in the U.S. to promote lesson study using the federal RTTT funds as a tool for implementing the CCSS, and later the Florida Standards. Florida is an ideal case to examine how a large-scale implementation of a global professional development model is influenced by the organizational contexts surrounding teacher professional development in the U.S.

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and uncover the sense-making process of the state and district leaders to interpret and adapt a foreign model to fit into the existing organizational contexts.

In order to examine how lesson study has been interpreted and adapted in Florida, the study first looked into the characteristics of teacher learning opportunities through lesson study experienced by Japanese teachers and the organizational contexts that support these opportunities. The survey and interview data revealed that lesson study provide teachers with multiple opportunities to observe teaching and student learning within and beyond their schools, and lesson study is a dominant form of professional learning practiced by every teacher. This institutionalized process of lesson study across the country is supported by teacher leadership and collective ownership of research-based professional learning processes and the work schedule that embeds lesson study as part of the core work responsibilities.

The characteristic of lesson study as a teacher-driven research process that led to the high quality instruction practiced by Japanese teachers (Stigler & Hiebert, 1999) seems to have disappeared in the adapted model of lesson study in Florida which was promoted as a district-driven, short-term, and simplified process. Despite the fact that the original process of lesson study is well documented and the resource materials about lesson study for practitioners (e.g., Lewis, 2002; Lewis & Hurd, 2011; Stepanek et al., 2007) are available in the U.S., the state and district leaders did not rely on these documents or work with national experts of lesson study. Instead, they interpreted lesson study through a lens of existing professional development models and adapted the process to fit into the existing organizational contexts.

The organizational routine of offering multiple district-driven professional development programs and the structure of teachers' work schedule seem to have influenced how the state and district leaders—specifically the lesson study organizers and trainers who were contracted by the state. These organizers and trainers who introduced lesson study to district leaders modified the process of lesson study over time through interactions with district leaders regarding what is feasible and acceptable within the existing organizational contexts. The state leaders also communicated lesson study as a process that is aligned with the existing district-driven professional development models, promoting lesson study as another model to be added to the list.

It is important to note that the adaptation of lesson study was not intentional on the part of the state and district leaders. In the absence of organizational contexts that would support a teacher-driven research process of lesson study, it is natural for them to interpret lesson study through their own understanding of what teacher professional development looks like and how they can be promoted within the organizational contexts familiar to them. The differences in the organizational contexts surrounding teacher professional development between Japan and the U.S. naturally led to the interpretation of lesson study as one of multiple district-driven professional development models that are short-term and simple enough to be implemented within limited time and funding of the districts.

The reform context of the Race to the Top (RTTT) Program also shaped how lesson study was promoted in Florida. As one of the 13 projects the state proposed to implement during the four-year funding period from 2010 to 2014, the Florida Department of Education was held accountable for scaling up lesson study across the state using part of \$700 million RTTT funds they received. To scale up a foreign model of teacher professional development like lesson study that is new to most district leaders and meet the federal requirements attached to the RTTT funding, the state decided to require low-achieving schools to practice lesson study, the requirement that was later expanded at the district level (Akiba & Wilkinson, 2016). When lesson study is required, the district leaders need to take the responsibility to lead lesson study which also promoted the district-driven, simplified and short-term process of lesson study.

This case of local interpretation and adaptation of lesson study in Florida has important implications for other countries that practice lesson study. Lesson study is being practiced in an increasing number of countries around the globe that have diverse organizational contexts surrounding teachers' professional development and the teaching profession in general. As the organizational contexts in Japan that support teacher-driven research process of lesson study are not common in many countries outside Japan, it is likely that lesson study is interpreted and adapted through a lens of existing organizational contexts in each country.

While this process of interpretation and adaptation is a natural part of integrating something new to an existing system smoothly, there is a need to carefully examine the process when the core benefits of the original idea is lost through the adaptation process. Despite the two decades of research in the U.S. showing that a short-term district-driven process of teacher professional development is not effective (e.g., Desimone, 2009; Loucks-Horsley, Hewson, Love, & Stiles, 1998; Wilson & Berne, 1999), the organizational contexts of teacher professional development at the district and school levels have not changed much over the years and continue to shape the idea of what teacher professional development looks like and how it should be promoted. These contexts—specifically the offering of multiple professional development programs as tools for implementing new policy, curriculum, or a program, and teachers' work schedule that does not allow time for ongoing professional development activities—are so pervasive that any new approach to teacher professional development is likely to be adapted to fit into these contexts.

These organizational contexts are supported by the underlying beliefs about teacher professional development and the teaching profession in general. While teachers' engagement in career-long learning process through lesson study is supported and expected and well integrated into the teachers' work schedule in Japan, teacher professional development in the U.S. appears to be simply a tool for implementing a new policy, curriculum, or programs and never been a core responsibility of the teachers (Elmore, 2004; Little, 1993, 1999; Spillane, 2002). These differences in the organizational structure and routines and underlying beliefs about teacher

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professional development between Japan and the U.S. help us understand the local interpretation and adaptation of lesson study in the U.S.

Future studies of local adaptation of global teacher reform ideas and models would benefit from looking closely into the organizational contexts surrounding the teaching profession. With an increasing global focus on reforming the teaching profession, teachers' work lives are impacted by the national, state, and local policies that promote various global ideas and models including teacher professional development (i.e., lesson study, PLC), student-centered instruction, and teacher evaluation. Emerging studies show that these reform ideas and models are implemented in diverse ways around the world (Akiba, 2013; Paine & Zeichner, 2012), yet we know little about how these global models are interpreted through a sense-making process and how organizational contexts influence the sense-making process. Uncovering the sense-making process influenced by the organizational contexts will allow us to understand the experience of globalization from the perspectives of the local policymakers, administrators and teachers and the possible impacts the globalization could have on the professional lives of teachers and the quality of teaching and student learning.

NOTE

- ¹ Seven founding member countries are Australia, China, Japan, Singapore, Sweden, United Kingdom and the United States. The 12 council member countries are Austria, Brunei, China, Indonesia, Japan, Singapore, Spain, Sweden, Switzerland, Thailand, United Kingdom, and the United States.

REFERENCES

- Akiba, M. (2013). *Teacher reforms around the world: Implementations and outcomes* Bingley, UK: Emerald Publishing.
- Akiba, M., & LeTendre, G. K. (2009). *Improving teacher quality: The U.S. teaching force in global context*. New York, NY: Teachers College Press.
- Akiba, M., & Shimizu, K. (2012). Teacher license renewal system: Global and local influences on teacher accountability policy in Japan. In G. Steiner-Khamsi & F. Waldow (Eds.), *World yearbook of education 2012: Policy borrowing and lending* (pp. 246–263). Oxon, OX: Taylor & Francis.
- Akiba, M., & Wilkinson, B. (2016). Adopting an international innovation for teacher professional development: State and district approaches to lesson study in Florida. *Journal of Teacher Education*, 67(1), 74–93.
- Akiba, M., Chiu, Y.-L., Shimizu, K., & Liang, G. (2012). Teacher salary and national achievement: A cross-national analysis of 30 countries. *International Journal of Educational Research*, 53, 171–181.
- Anderson-Levitt, K., & Diallo, B. B. (2003). Teaching by the book in Guinea. In K. Anderson-Levitt (Ed.), *Local meanings, global schooling: Anthropology and world culture theory* (pp. 75–91). New York, NY: Palgrave Macmillan.
- Carney, S. (2009). Negotiating policy in an age of globalization: Exploring educational ‘policyscapes’ in Denmark, Nepal, and China. *Comparative Education Review*, 53(1), 63–88.
- Chichibu, T., & Kihara, T. (2013). How Japanese schools build a professional learning community by lesson study. *International Journal for Lesson and Learning Studies*, 2(1), 12–25.
- Chisholm, L. (2012). Education policy borrowing across African borders: Histories of learner-centered education in Botswana and South Africa. In G. Steiner-Khamsi & F. Waldow (Eds.), *Policy borrowing and lending in education* (pp. 206–225). London & New York, NY: Routledge.

- Coburn, C. E. (2001). Collective sensemaking about reading: How teachers mediate reading policy in their professional communities. *Educational Evaluation and Policy Analysis*, 23(2), 145–170.
- Coburn, C. E. (2005). Shaping teacher sensemaking: School leaders and the enactment of reading policy. *Educational Policy*, 19(3), 476–509.
- Darling-Hammond, L., & Lieberman, A. (2012). *Teacher education around the world: Changing policies and practices*. London & New York, NY: Routledge.
- Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher*, 38(3), 181–199.
- Editorial Projects in Education. (2012). *Education week quality counts: The global challenge: Education in a competitive world*. Bethesda, MD: Author.
- Fernandez, C., & Yoshida, M. (2004). *Lesson study: A Japanese approach to improving mathematics teaching and learning*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Haithcock, F. (2010). *A guide to implementing lesson study for district and school leadership teams in differentiated accountability schools*. Tallahassee, FL: Florida Department of Education.
- Hawley, W. D., & Valli, L. (1999). The essentials of effective professional development: A new consensus. In L. Darling-Hammond & G. Sykes (Eds.), *Teaching as the learning profession: Handbook of policy and practice*. San Francisco, CA: Jossey-Bass.
- Jennings, N. E. (1996). *Interpreting policy in real classrooms: Case studies of state reform and teacher practice*. New York, NY: Teachers College Press.
- LeTendre, G. K., Baker, D. P., Akiba, M., Goesling, B., & Wiseman, A. (2001). Teachers' work: Institutional isomorphism and cultural variation in the U.S., Germany, and Japan. *Educational Researcher*, 30(6), 3–15.
- Lewis, C. (2002). *Lesson study: A handbook for teacher-led instructional change*. Philadelphia, PA: Research for Better Schools, Inc.
- Lewis, C. (2015). What is improvement science? Do we need it in education? *Educational Researcher*, 44(1), 54–61.
- Lewis, C., & Hurd, J. (2011). *Lesson study step by step: How teacher learning communities improve instruction*. Portsmouth, NH: Heinemann.
- Lewis, C., & Tsuchida, I. (1997). Planned educational change in Japan: The shift to student-centered elementary science. *Journal of Education Policy*, 12(5), 313–331.
- Lewis, C., Perry, R. R., & Hurd, J. (2009). Improving mathematics instruction through lesson study: A theoretical model and North American case. *Journal of Mathematics Teacher Education*, 12(4), 285–304.
- Loucks-Horsley, S., Hewson, P. W., Love, N., & Stiles, K. E. (1998). *Designing professional development for teachers of science and mathematics*. Thousand Oaks, CA: Corwin Press, INC.
- Meyer, H.-D., & Benavot, A. (2013). *PISA, power, and policy: The emergence of global educational governance*. Oxford, UK: Symposium Books.
- NCES, National Center for Education Statistics (n.d.). *Common core of data: Build a table*. Retrieved from: <https://nces.ed.gov/ccd/bat/>
- OECD. (2014). *TALIS 2013 results: An international perspective on teaching and learning*. Paris: Author.
- Paine, L., & Zeichner, K. (2012). Special Issue on the local and the global in reforming teaching and teacher education. *Comparative Education Review*, 56(4), 569–583.
- Perry, R. R., & Lewis, C. C. (2009). What is successful adaptation of lesson study in the US? *Journal of Educational Change*, 10, 365–391.
- Robertson, S. L. (2012). Placing teachers in global governance agendas. *Comparative Education Review*, 56(4), 584–607.
- Russell, J. L., Meredith, J., Childs, J., Stein, M. K., & Prine, D. W. (2014). Designing inter-organizational networks to implement education reform: An analysis of state race to the top applications. *Educational Evaluation and Policy Analysis*, 37(1), 92–112. doi:10.3102/0162373714527341
- Sacilotto-Vasylenko, M. (2013). Bologna process and initial teacher education reform in France. In M. Akiba (Ed.), *Teacher reforms around the world: Implementations and outcomes*. Bingley, UK: Emerald Books.

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- Sellar, S., & Lingard, B. (2013). Looking East: Shanghai, PISA 2009 and the reconstitution of reference societies in the global education policy field. *Comparative Education*, 49(4), 464–485.
- Shimahara, N. K. (2002). Teacher professional development in Japan. In G. DeCoker (Ed.), *National standards and school reform in Japan and the United States* (pp. 107–120). New York, NY: Teachers College Press.
- Shimahara, N. K., & Sakai, A. (1995). *Learning to teach in two cultures: Japan and United States*. New York, NY & London: Garland Publishing, Inc.
- Spillane, J. P. (1998). A cognitive perspective on the role of the local educational agency in implementing instructional policy: Accounting for local variability. *Educational Administration Quarterly*, 34(1), 31–57.
- Spillane, J. P. (2000). Cognition and policy implementation: District policymakers and the reform of mathematics education. *Cognition and Instruction*, 18(2), 141–179.
- Spillane, J. P., Reiser, B., & Reimer, T. (2002). Policy implementation and cognition: Reframing and refocusing implementation research. *Review of Educational Research*, 72, 387–431.
- Statistics Bureau, Ministry of Internal Affairs and Communications. (2013). *National population survey*. Tokyo: Author.
- Steiner-Khamisi, G., & Stolpe, I. (2006). *Educational import: Local encounters with global forces in Mongolia*. New York, NY: Macmillan.
- Stepanek, J., Appel, G., Leong, M., Mangan, M. T., & Mitchell, M. (2007). *Leading lesson study: A practical guide for teachers and facilitators*. Thousand Oaks, CA: Corwin Press.
- Stigler, J. W., & Hiebert, J. (1999). *The teaching gap: Best ideas from the world's teachers for improving education in the classroom*. New York, NY: The Free Press, A Division of Simon & Schuster Inc.
- Tabulawa, R. (2003). International aid agencies, learner-centred pedagogy, and political democratization: A critique. *Comparative Education*, 39(1), 7–26.
- Tatto, M. T. (2007). *Reforming teaching globally*. Oxford, UK: Sumposium Books.
- Vavrus, F., & Bartlett, L. (2012). Comparative pedagogies and epistemological diversity: Social and materials contexts of teaching in Tanzania. *Comparative Education Review*, 56(4), 634–658.
- Watanabe, T. (2001). Content and organization of teacher's manuals: An analysis of Japanese elementarymathematics teacher's manuals. *School Science and Mathematics*, 101(4), 194–205.
- Watanabe, T. (2007). In pursuit of a focused and coherence school mathematics curriculum. *The Mathematics Educator*, 17(1), 2–6.
- Watanabe, T., Takahashi, A., & Yoshida, M. (2008). Kyozaikenkyu: A critical step for conducting effective lesson study and beyond. In F. Arbaugh & P. M. Taylor (Eds.), *Inquiry into mathematics teacher education* (Vol. 5, pp. 131–142). San Diego, CA: Association of Mathematics Teacher Educators.
- Wilson, S. M., & Berne, J. (1999). Teacher learning and the acquisition of professional knowledge: An examination of research on contemporary professional development. *Review of Research in Education*, 24, 173–209.

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