12 The Global Spread of Lesson Study
Contextualization and Adaptations

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INTRODUCTION

Interest in lesson study has emerged as part of the worldwide interest in teacher quality, which has been identified as a significant feature of successful educational systems like Finland, Japan, and Singapore. Japan has had a long tradition of lesson study—more than a hundred years—and came to the attention of educators outside Japan when the Third International Mathematics and Science Study (TIMSS) and other research attributed the high quality of mathematics and science teaching to the regular use of lesson study by Japanese teachers (Lewis & Tsuchida, 1997; Stigler & Hiebert, 1999). The researchers hypothesized that using lesson study to build professional knowledge will improve teaching and learning.

Since the earliest English-language publications about lesson study, it has spread rapidly beyond the shores of Japan, to many countries around the world. This chapter explores how these countries have contextualized and adapted Japanese lesson study and the issues that arise. After providing a background on lesson study in Japan, this chapter will examine how lesson study has been implemented outside Japan. In particular, we will examine which elements of lesson study—research, professional learning, and policy implementation—have been noticed and enacted in other countries. Lesson study’s spread outside Japan will be analyzed through attendance at the World Association of Lesson Studies (WALS) annual conference, through analysis of worldwide English-language publications on lesson study, and through two cases of implementation outside Japan.

OVERVIEW OF LESSON STUDY IN JAPAN

Lesson study consists of cycles of collaborative inquiry in which teachers study the curriculum and plan, enact, observe, and analyze classroom instruction, as shown at the left of Figure 12.1. The live lessons at the heart of the lesson study cycle are called “research lessons” because educators articulate their hypotheses about effective instruction and how students learn and because educators observe the research lessons and collect data, using it to understand teaching and learning. As shown in Figure 12.1, lesson study is thought to improve instruction by simultaneously improving three basic inputs to instruction: teachers (for example, their knowledge, beliefs, and dispositions); teachers’ learning community (for example, norms of supporting one another’s improvement and routines of observing one another’s practice); and instructional materials (Lewis, Perry, & Hurd, 2009).

“Lesson study” is a translation of the Japanese term “jugyou kenkyuu.” Jugyou means live instruction (a single lesson or many lessons); kenkyuu means research or study. Lesson study
Lesson study in Japan.

**DISTRICT-BASED LESSON STUDY**

**LESSON STUDY BASED AT UNIVERSITY-ATTACHED LAB SCHOOLS**

**LESSON STUDY SPONSORED BY PROFESSIONAL ASSOCIATIONS**

**LOCAL SCHOOL-BASED LESSON STUDY**

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**CHANGES IN TEACHERS, TEACHERS’ COMMUNITY, AND INSTRUCTIONAL MATERIALS**

**Teachers**
- Knowledge of content, pedagogy, student thinking, curriculum, etc.
- Beliefs about instruction, student capacity, own capacity to improve, etc.
- Dispositions e.g. focus on student thinking

**Teachers’ Learning Community**
- Information Exchange within and between local and national sites about teaching-learning and about recent research and innovations and how they fare in practice
- Norms of continuous improvement, observing practice, supporting colleagues’ improvement, etc.

**Instructional Materials**
- Textbooks and other tools for student and teacher learning (e.g. instructional tasks, observation protocols)

**STUDENT LEARNING**

*Figure 12.1 Lesson study in Japan.*
originated in Japan and is practiced by nearly all elementary schools and more than 90 percent of junior high schools in Japan (National Education Policy Research Institute, 2011). Before examining the spread of lesson study globally, we provide an overview of lesson study as it functions to improve instruction in Japan.

FORMS OF LESSON STUDY IN JAPAN

As shown in Figure 12.1, four basic types of organizations sponsor lesson study in Japan: local schools, districts, university-attached laboratory schools, and professional associations (such as subject matter associations and other voluntary associations of educators). Lesson study shares certain commonalities across settings: it provides opportunities to observe teaching and learning, to analyze and discuss data collected during the research lesson, and to network with other educators and build a professional learning community. However, the focus and goals of the work often differ across the four settings. While lesson study at local public elementary schools focuses mainly on improving education for the particular students at that school, lesson study at the district level may address district issues (for example, how to improve the transition from preschool to elementary school), and lesson study conducted by university-attached lab schools and professional organizations may focus on innovations designed to improve curriculum and instruction across the country—for example, to build interdisciplinary learning or improve the curriculum and instruction of a particular discipline. What does each type of lesson study contribute to instructional improvement in Japan? To investigate this issue, we examine an example from Japan: the change in the Japanese national course of study to introduce solar energy as a topic of study in Japanese elementary schools.

When the topic of solar energy was newly added to the Japanese national curriculum in the 1990s, the National Course of Study specified only the basic objectives for student learning, not any teaching methods. Lab schools and professional associations had already been experimenting with the teaching of solar energy, using lesson study, and their work contributed to its addition to the National Course of Study. Once the change was announced, modest grants were available to local elementary schools that wanted to serve as “designated research schools” to try out implementation of solar energy before it was officially required (Lewis & Tsuchida, 1997). These schools conducted lesson study cycles on the teaching of solar energy, often using grant funds to consult with educators from lab schools or science education associations, who had easier access to worldwide research and curricula. After a year or so of experimentation with teaching solar energy, the “designated research schools” opened up their instruction in large public research lessons. The tens of thousands of educators, researchers, and policymakers who attended these public research lessons across Japan saw and discussed live instruction designed to enact the new content. They had the opportunity to question the instructors about the rationale for the instructional design, scrutinize the entire unit plan and records of student learning across the unit, find out what the educators had tried that had not worked, and offer their own ideas and critique.

As public research lessons were conducted across Japan, educators rapidly developed a shared knowledge base about how to teach solar energy. Educators shared practical knowledge from their research—for example, which solar toys were inexpensive and made important ideas visible—as well as knowledge about the kinds of student thinking to expect, how to handle it, and the subject matter itself. During the post-lesson discussion of a public research lesson, an elementary teacher asked about the significance of three different student ideas to increase the power of the solar cell: move the solar cell closer to the light source, add a second light source, and use a magnifying glass to “concentrate” light:
I want to know whether the three conditions the children described—“to put the solar cell closer to the light source,” “to make the light stronger,” and to “gather the light”—would all be considered the same thing by scientists. They don’t seem the same to me. But I want to ask the teachers who know science whether scientists would regard them as the same thing.

The teacher’s question, asked in a public forum with elementary through post-secondary science educators present, illustrates how Japanese educators build a shared knowledge base about instruction, student scientific thinking, and even subject matter itself through lesson study. It also illustrates the synergies among the different forms of lesson study in Japan. Although the lesson was conducted at a local school, educators had drawn on expertise and materials from university-affiliated lab schools and the national science teachers’ association as they conducted lesson study cycles leading up to the public lessons. Many district lesson study representatives from the surrounding region attended the public research lessons, and would bring the teaching-learning plans and lesson study reports back to their own district lesson study efforts. The term “teaching-learning plan” is used rather than “lesson plan” because it is a more accurate description of the plan, which anticipates student thinking as well as teacher actions. The original Japanese term (gakushushidouan) literally denotes a plan to guide learning. District, regional, and national administrators who attended the public research lessons could see firsthand how teachers and students were responding to the new curriculum requirement, and develop a shared vision, with classroom educators, of what the reform should actually look like in classrooms.

With the example of the rapid scale-up of the solar energy curriculum in mind, we can consider the bi-directional arrows in Figure 12.1 to think about the synergies among the four types of lesson study. The contribution of the national lab schools and professional associations is perhaps most obvious: their access to research and to university-based educators makes them important conduits for research-based innovations to flow out to schools and districts. Further, the advisors hired by designated research schools are often educators active in the professional associations or national lab schools. As they travel to school sites across Japan to advise lesson study groups or serve as commentators on research lessons, they spread information on how other sites are implementing reforms (Watanabe, 2002). Even if a school does not have funds as a designated research school, school funds typically allow a research lesson commentator to be hired once a year or so. Educators who are seen as providing useful lesson commentary that helps a school strengthen its improvement effort are highly sought after as commentators. On several occasions, we have heard university faculty introduced with accolades such as “he received 75 invitations from elementary schools last year to comment on research lessons.” Since schools control the funds to invite commentators, educators who do not provide useful feedback and encouragement are unlikely to be invited back.

District-based lesson study provides a place for teachers within a district who have a particular interest in, say, science to work together over many years, constantly bringing back what they learn at the district level to the ongoing school-based lesson study work at their own schools (Murata & Takahashi, 2002; Takahashi, Lewis, & Perry, 2013; Watanabe, 2002).

The contributions of school-based lesson study may be less obvious, but perhaps more crucial in widespread instructional improvement. Since elementary teachers are generalists, they may not have particular interest or expertise in, for example, science. However, school-based lesson study begins with a research theme developed by the whole faculty, based on close observation of students and on teachers’ shared aspirations for them. Even a teacher who does not have a strong interest in science is likely to have a strong interest in the shared school research theme he or she helped to develop, such as helping students “to value friendship, develop their own perspectives and ways of thinking, and enjoy learning” (Mills College Lesson Study Group, 2000). The human relationships within a school and routines such
as grade-level planning are likely to draw teachers into innovations introduced by school colleagues. This may be especially true in Japanese schools, where many researchers have noted the strong emphasis on collaboration among teachers. Teaching in Japan has been described as a “communal” activity where teachers together identify their long-term goals for student development, and together plan, observe, and reflect on both instructional and extra-curricular activities to achieve their shared vision of student development (Tsuneyoshi, 2001).

The arrows away from school-based and district-based lesson study in Figure 12.1 denote the powerful formative feedback from local implementers to the educators at lab schools and national subject matter associations, and to national policymakers, who can see how local educators are interpreting and bringing to life curricular and instructional approaches that may have originated in universities, lab schools, or even foreign countries.

Association-sponsored lesson study encompasses many different lesson study movements in Japan. For example, one prominent lesson study movement is Lesson Study for Learning Community (LSLC), which focuses on building both teacher and student learning community within schools; it has been the vehicle for turnaround of some high-truancy schools in Japan (Lewis, Akita, & Sato, 2010; Sato, 2008) and has spawned a school reform network in Asia that centers on lesson study as a way to build community both among teachers and among students (e.g., Saito, Harun, Kuboki, & Rachiban, 2006). LSLC emphasizes teachers’ frequent observation of each other’s lessons, and de-emphasizes the collaborative teaching-learning plan development that is typical of much lesson study.

Other prominent lesson study movements in Japan focus, for example, on teaching mathematics through problem-solving (Doig, Groves, & Fujii, 2011; Fujii, 2013; Isoda, Stephens, Ohara, & Miyakawa, 2007), on teachers’ development of shared methods for transcribing and analyzing lessons (Matoba, Crawford, & Sarkar Arani, 2006), and on myriad other goals related to specific disciplines (science, music, social studies, etc.), specific improvement methods (e.g., reflective journals, cooperative learning, teaching through problem-solving), or shared societal goals (e.g., equality of treatment for historically discriminated groups, environmental responsibility, civic participation).

In summary, educators in all four organizational settings—local schools, districts, university-based lab schools, and professional associations—use lesson study to discuss, enact, and study improvements to practice (Lewis & Tsuchida, 1997; Takahashi, 2014), both drawing on and building the knowledge base for teaching, often in conjunction with recent or proposed changes in the curriculum or standards. Lesson study thus encompasses three different functions—professional learning, research, and policy implementation—which are often conceived separately outside Japan as described in the case studies below. Lesson study is professional learning because teachers study content, teaching materials, standards, and related research (Isoda & Nakamura, 2010; Takahashi, 2015). Lesson study is research because teachers design and test intended improvements, using student responses to gauge the impact of their work (Fernandez & Yoshida, 2004; Isoda, 2015). Lesson study is also policy implementation because teachers seek to understand policies, such as recent changes in standards, and to enact and study them in actual classroom instruction (Lewis & Takahashi, 2013; Lewis & Tsuchida, 1997; Takahashi & McDougal, 2014). The next section examines the spread of lesson study outside Japan, and asks how the complex practice of lesson study—which embodies elements of professional learning, research, and policy implementation—has been interpreted outside Japan.

SPREAD OUTSIDE JAPAN

Lesson study has spread to many countries since the initial English-language publications “A lesson is like a swiftly flowing river” (Lewis & Tsuchida, 1998) and The Teaching Gap...
(Stigler & Hiebert, 1999) appeared, followed by the development of various English-language handbooks and video resources (e.g., Lewis, 2002; Lewis & Hurd, 2011; Mills College Lesson Study Group, 2000; Stepanek, Appel, Leong, Turner Mangan, & Mitchell, 2006; Wang-Iverson & Yoshida, 2005). Here, we investigate two indicators of lesson study spread: country of attendees at the World Association of Lesson Studies (WALS), and countries in which published research studies have been conducted.

Participation in WALS

WALS held its first conference in 2007 in Hong Kong and attracted participants from 15 countries, with educators from Hong Kong (168) and Singapore (172) forming the majority of participants, followed by Japan (18), Sweden (16), China (6), Canada (4), South Korea (3), Vietnam (3), the UK (3), the US (2), Turkey (2), Australia (1), Brunei (1), Taiwan (1), and Hungary (1). Between 2007 and 2014, WALS attendance grew to include more than 800 participants from 29 countries. Added countries include Israel, the Philippines, Spain, and Switzerland in 2008; France, Indonesia, and Thailand in 2009; Malaysia and the Slovak Republic in 2011; Bahrain, Ghana, Finland, the Netherlands, Norway, Russia, South Africa, and Uzbekistan in 2012; and Austria, Denmark, Germany, Ireland, and Kazakhstan in 2013, when the annual WALS conference moved from South East Asia to Europe for the first time. The WALS conference held in Bandung, Indonesia in 2014 attracted educators from additional African countries because of the involvement of the Japanese International Cooperation Agency (JICA, 2006), whose educational development projects introduced lesson study to a number of developing countries in Asia, Africa, and South America. Noting that the quality of teaching is one of the most critical factors in improving educational quality, JICA (2006) introduced lesson study as a collaborative professional activity in many foreign educational assistance programs. The spread of lesson study through JICA reached countries including Bangladesh, Cambodia, Indonesia, Laos, Mongolia, Myanmar, the Philippines, and Vietnam in Asia; Bolivia, Chile, Colombia, the Dominican Republic, El Salvador, Honduras, and Guatemala in South America; as well as Ghana, Mozambique and S. Africa in Africa.

Figures 12.2 and 12.3 show the geographical spread of lesson study over the eight years from 2007 to 2014 as reflected in WALS attendance.

A global survey conducted in 2011 (Lee, 2011) traced the introduction of lesson study to countries other than Japan. Lesson study was introduced to the US and Hong Kong in 1999, South Africa in 2000, Australia and the UK in 2001, Sweden and Thailand in 2002, Malaysia in 2004, Singapore in 2004, Vietnam and Indonesia in 2006, Brunei in 2008, and the Netherlands in 2009. Generally, university academic faculty members were the ones who brought lesson study to the attention of schools in these countries, but in some cases, like Brunei and Vietnam, it was introduced by the Ministry of Education. In Vietnam and South Africa, international educational consultants also played a leading role. Interestingly, it was a teacher-cum-doctoral student who brought lesson study to the Netherlands in 2009. In countries where there was support from the education ministry, the spread of lesson study within the country was more extensive, as occurred in Brunei, Hong Kong, Indonesia, and Singapore.

The large number of WALS participants from Hong Kong and Singapore in the initial WALS conference probably relates to projects sponsored by the national government in each case. Hong Kong Institute of Education had a large government grant to spread “learning study,” an adaptation of lesson study described in the next section. Singapore educators were beginning lesson study work in 2004, and national funding provided a fertile ground for intensive collaboration among researchers, teacher educators, and teachers through a research and development project on “Communities of Practice in Cooperative Learning through Lesson
Figure 12.2 Fifteen countries represented at the first WALS conference in 2007.
Figure 12.3 Growth of countries at WALS conferences (2008–14).
The Global Spread of Lesson Study

...in one primary school. A funded research project in another primary school, “Lesson Study and Instructional Improvement” from 2006 to 2007 (Fang & Lee, 2015), provided fertile ground for intensive collaboration among researchers, teacher educators, and teachers in planning, teaching, and observing research lessons through various lesson study cycles.

Publications are a second indicator of lesson study spread. A search of ERIC for 2002–15 published articles including the phrase “lesson study” yielded 109 publications. These articles report on lesson study taking place in nearly 30 different countries, located on every continent.

WHY HAS LESSON STUDY ATTRACTED INTEREST OUTSIDE JAPAN?

The interest in lesson study around the world suggests that it addresses a widely felt need. Educational researchers have noted the need for a cumulative, shareable, improvable knowledge base for teaching (Hiebert, Gallimore, & Stigler, 2002), the failure of traditional research-based knowledge to “scale up” broadly (Coburn & Stein, 2010), and the difficulty of using policy instruments to produce change in classroom instruction (Fullan, 2001).

The Teaching Gap (Stigler & Hiebert, 1999) sparked worldwide interest in lesson study by arguing it had allowed Japanese teachers to enact features of U.S. reforms that had eluded teachers in the U.S. for more than a decade. To educational researchers around the world, lesson study may seem to hold potential to realize changes advocated by educational theorists—for example, to transform schools into learning organizations, to mobilize teachers’ leadership for change, and to build teachers’ professional learning community (Eraut & Hirsh, 2007; Fullan, 2001; Grossman, Wineburg, & Woolworth, 2001; McLaughlin & Talbert, 2001; Resnick & Spillane, 2006).

HOW HAS LESSON STUDY BEEN INTERPRETED OUTSIDE JAPAN?

As noted earlier, lesson study in Japan is multifaceted, including facets of teacher professional learning, teacher research, and policy implementation. How have these different facets of lesson study been picked up around the world? We examine two cases, the case of “learning study,” an adaptation of lesson study by researchers in Hong Kong, and the case of lesson study in Singapore. We use these two cases to explore how lesson study has been contextualized and adapted as it has spread around the world, and to illuminate different interpretations of lesson study, as: (1) research that builds a replicable body of knowledge about teaching-learning; (2) professional learning for improvement of instruction; and (3) an instrument of policy implementation.

Case 1: Learning Study in Hong Kong

Learning study, developed in 1999 by a research team led by researchers from Sweden and Hong Kong, is a conscious adaptation of lesson study to include the use of variation theory (Lo & Marton, 2011). Lo and colleagues reformulated lesson study on the model of design experiments (Brown, 1992). Like design experiments, learning study aims to build accumulation of knowledge through careful deployment and documentation of variation. Within learning study, variation theory attends to three types of variation: variation in students’ ways of understanding the object of learning (V1); variation in teachers’ ways of dealing with the object of learning (V2); and the use of variation as a pedagogical tool to enhance students’ learning (V3) (Lo & Marton, 2011). Work in the learning study tradition often begins by identifying the
variation in students’ ways of seeing (i.e. V1) and typically includes pre-testing and post-testing of students to understand the impact of instruction.

Learning study research varies the critical aspect of an object of learning, while keeping other aspects unchanged (i.e., creating a pattern of variation), thus allowing for discernment of the varying critical aspect by the students (Ko, 2007; Lo, Chik, & Pang, 2006). More than 300 learning study cases have been produced in Hong Kong (Elliott & Yu, 2008; Lo, Chik, & Pong, 2005; Lo, 2009) and the approach has developed in some other parts of the world, notably Sweden (Holmqvist, Brante, & Tullgren, 2012), with some evidence that teachers can share knowledge products across countries (Runesson & Gustafsson, 2012). The knowledge product of a learning study identifies both critical features of a topic to be learned by students and also how variation brings out these critical features in the lesson to make them discernible (Holmqvist et al., 2012).

Accumulation of knowledge that is shareable through products such as publications is a strong focus of learning study (Elliott & Yu, 2008), while less is written about learning study as professional learning or policy implementation. For example, every “learning study” research article we reviewed focuses on students’ understanding of a specified object of learning (e.g., ratio or supply and demand) and draws conclusions about how the object of learning is best presented to maximize student learning. These articles do not allocate comparable attention to analyze, for example, how learning study shapes educators’ beliefs or their relationships with colleagues, or on learning study as way to study enactment of new policies, topics that are common in lesson study research (e.g., Lewis & Perry, 2015; Takahashi & McDougal, 2014). Therefore, learning study homes in on “what students should be able to do with the object of learning and the capability that can be developed as a result of learning it” (Lo, 2009), and like other research endeavors, seeks to accumulate and spread this knowledge through publications (Elliott & Yu, 2008).

**Case 2: Lesson Study in Singapore**

Like Hong Kong, Singapore has been a hub of lesson study activity, with the rapid spread of lesson study within Singapore since its introduction in 2004. A recent national survey of school principals found that 190 schools (52.4 percent) of all schools in Singapore were implementing lesson study in 2014 (Lim-Ratnam, Lee, & Sudarshan, 2015). Figure 12.4 shows the spread of lesson study within Singapore over a period of 10 years.

One strong impetus has been the MOE’s Professional Learning Communities’ (PLC) initiative for Singapore schools, which in 2010 recommended lesson study as one tool to develop

![Figure 12.4 Spread of lesson study in Singapore schools.](image-url)
The Global Spread of Lesson Study

PLCs, along with Learning Circle and Action Research (MOE, 2009). The national survey of school principals indicates that the majority of schools that have implemented lesson study plan to continue it. Even for surveyed schools not doing lesson study in 2014, a majority expect to implement it in the future. These rates likely reflect cognizance among Singapore school principals of MOE’s initiative to establish PLCs in every school and MOE’s provision of support, such as one hour per week of timetable time (or “white space”) for teachers to come together for professional conversations.

The dominant model of lesson study in Singapore is fashioned on the Plan-Do-See-Reflect lesson study cycle offered by early consultants, Catherine Lewis, Akihiko Takahashi, and Patsy Wang-Iverson, supported by faculty from the National Institute of Education (NIE), and the study of curriculum content and teaching materials is usually not emphasized (as in the left side of Figure 12.1).

The 2014 national survey (Lim-Ratnam, Lee, & Sudarshan, 2015) indicates that the appeal of lesson study for Singapore educators comes from its focus on student learning. This emphasis on improvement in students’ learning and outcomes is promoted in MOE’s concept of the three “big ideas of PLC”: 1) focusing on student learning; 2) building a culture of collaboration; and 3) being outcomes oriented (Academy of Singapore Teachers, Ministry of Education, 2010). The 2014 national survey results corroborate Guskey’s (2002) observation that educators tend to value professional development efforts that lead to “evidence of improvements in student learning” (p. 383).

In Singapore’s elementary school-based lesson study, all teachers are expected to be involved in lesson study teams and conduct at least one lesson study cycle in a year. These teams generally have on average five to eight planning meetings and two research lessons in a cycle. Lesson study is more widely spread at elementary school level—at least 25 percent of teachers engage in lesson study in 71.5 percent of all elementary schools compared to 59.2 percent of secondary schools (serving students aged 13 to 16) and 40 percent of senior high schools or junior colleges (students aged 17 to 18). At junior colleges, school principals generally give their teachers autonomy to decide whether they want to be involved in lesson study and it is thus less widespread. At elementary and secondary schools, school-based lesson study is more widespread.

Singapore teachers are generally positive about lesson study (81.9 percent agreed it was a productive use of time) and agree that there are benefits from being involved in lesson study in their respective schools. Teachers report that their understanding of student learning has increased as a result of the opportunity to learn from colleagues (43.6 percent), through discussion of student learning (34.1 percent), and through learning new pedagogical strategies (28 percent) as they visit each other’s classrooms. They also report that the teachers who taught research lessons are the ones who benefit the most from the experience. Teachers like observing classrooms (91 percent) and participating in post-lesson discussions (92 percent), but also find planning meetings tedious and time-consuming (15.3 percent) (Lim-Ratnam, Lee, & Sudarshan, 2015).

Additional forms of lesson study have more recently emerged in Singapore, including Lesson Study for Learning Community (LSLC) (Sato, 2008) which advocates very frequent observation of other teachers’ lessons. Professor Manabu Sato from University of Tokyo, the developer of ideas behind LSLC, was invited to give a keynote on LSLC at the Singapore Lesson Study Symposium 2011. Advocates of LSLC argue that the only way teachers can “interpret and respond to children’s learning and reaction to lessons” and “change the pedagogical process in actuality” is for them to “observe and reflect on as many lesson cases as possible” (Saito, 2012, p. 567). Thus co-observation of regular daily lessons, rather than co-planning or curriculum study, is emphasized.

A commonality of both the PDSA cycles and the LSLC models is their primary emphasis on lesson study as professional learning and development of a professional community, rather than primary emphasis on development and spread of knowledge resources (such as publications).
A second facet of lesson study in Singapore connects to policy implementation: curriculum specialists from MOE use lesson study as a way to work with teachers in schools in supporting the implementation of revised national curricula. A good example is project “En-ELT” (Enhancing English Language Learning and Teaching) which adapted lesson study to build teacher pedagogical capacity in implementing the revised national English language syllabus (curriculum guidelines) 2010 in seven lower secondary schools over two years. The revised syllabus focused on three English-language strategies—retelling, process writing, and reciprocal teaching—and formative assessment practices. Through the use of teacher surveys, school visit reports, observation checklists, and colloquium notes the project found that “across the three cycles, the lesson study teams moved from isolated to collaborative planning; from poor understanding and mechanical execution of the retelling strategy to a more sophisticated and skillful use of reciprocal teaching” (Tan-Chia, Fang, & Ang, 2013, p. 256). It provided strong evidence that “lesson study can enhance the building of subject matter and pedagogical knowledge by getting teachers to weave the teaching strategies with great intentionality into each research lesson” (p. 272).

In sum, lesson study is advocated as a form of teacher professional learning and is implemented in many schools in Singapore as part of MOE’s professional learning communities initiative. Schools are provided with timetabled time within the school curriculum so that teachers can meet each week in lesson study. Lesson study is also used by curriculum specialists from the Ministry of Education to support teachers in implementing revised national curriculum that integrates new educational policies (Lee & Lim-Ratnam, 2014).

While lesson study has grown rapidly in Singapore, the quality and sustainability have been raised as issues by local researchers (Lim, Lee, Saito, & Haron, 2011), and we summarize some of these challenges. First, schools typically do not formulate long-term goals of lesson study or develop research themes that integrate all lesson study efforts within the school. There tends to be a focus on designing one research lesson for implementation without consideration of how the lesson fits within a unit of work. Second, insufficient time is devoted to curriculum study (kyouzai kenkyuu). Some of these challenges may stem from the translation of the Japanese term “授業研究” (jugyou kenkyu) as “lesson study,” producing a simplistic view of what lesson study really is. The original Japanese term “jugyou” (translated as lesson) always denotes live instruction between teacher and students, not just a written plan for instruction that lays out teacher moves. “Kenkyuu” (translated as study) denotes research or investigation by teachers, not just mastery of prescribed approaches. Third, there is an inadequate pool of “knowledgeable others” to comment on instruction, which may keep some school groups from advancing beyond what they currently know. Fourth, there is a prevailing mindset that observation is about appraisal of the teacher—rather than about understanding how students are responding to instruction as well as scheduling research lessons. Finally, scheduling research lessons remains a problem in the crowded timetable of schools and teachers complain that their heavy workload does not allow them enough time for planning and reviewing literature related to the topic under study. In spite of these challenges, there remains a strong interest in lesson study as evidenced by high participation rates from Singapore at the annual WALS conferences each year.

LESSON STUDY OUTSIDE JAPAN: MOVING BEYOND ONE-DIMENSIONAL SPREAD

As noted in the previous section, lesson study has spread rapidly outside Japan, and each major facet of lesson study—as research, as professional learning, as policy implementation—has been
The new term “learning study” has been coined to capture an adaptation that uses variation theory to identify the circumstances that allow mastery of a particular object of learning. Learning study is well established in Hong Kong and Sweden, and emphasizes lesson study as research. In contrast, in Singapore’s research, emphases on lesson study as professional learning, development of teacher learning community, and policy implementation have been major threads.

Yet nowhere do we yet see a lesson study ecology that resembles that of Japan, where lesson study simultaneously produces sustained, ongoing professional learning, shareable research, and policy implementation. What might be the advantages of bringing together all three aspects within a society? In this final section, we speculate on why all three functions of lesson study may be important, and on the changes that are needed for lesson study to develop a sustainable, effective ecology of practices outside Japan.

**DIVERSE STAKEHOLDERS WITH MUTUAL SELF-INTEREST IN LESSON STUDY**

A striking feature of lesson study in Japan is the importance accorded to it by diverse stakeholders, including classroom teachers, school administrators, district officials, curriculum specialists, university-based researchers, textbook publishers, and national Ministry of Education officials. Participation is not required, but each of these groups finds something vital in the process. Classroom teachers are keen to learn to improve their teaching, and school and district administrators are keen to support this process and to understand current instruction, using the window provided by research lessons. Curriculum specialists, coaches, and university-based researchers are keen to see how actual instruction compares with their visions of exemplary instruction, and to have a chance to influence instruction, both during the planning phase of lesson study (when they may make suggestions about resources or provide feedback on the teaching-learning plan) and as final commentators at the research lesson, when they may connect episodes from the research lesson to a larger vision of teaching and learning of a particular subject matter. Textbook publishers and authors (many of whom are practicing teachers) attend research lessons to glean implications for future curriculum design, and they incorporate the knowledge generated by lesson study in future textbook editions. National officials responsible for educational policy are keen to see how innovations such as interdisciplinary learning and inquiry and new topics such as solar energy are faring in actual classrooms. For them, research lessons provide formative feedback on their policies.

To our knowledge, no country other than Japan has such ongoing involvement of diverse educational stakeholders who all see lesson study as an important way to accomplish their own goals—be those goals of redesigning the national course of study, revising textbooks, improving elements of subject matter teaching, teaching one’s own class, or working on school-wide or district-wide visions for students’ long-term development.

How could such a lesson study ecology—where diverse stakeholders actively support lesson study as a way to advance their own missions—be developed elsewhere? One key may lie in understanding the needs of all the key stakeholders, and managing the inherent tensions among them. Table 12.1 lays out some ideas about the mission, practical needs, and challenges of different lesson study stakeholders.

The differing needs of stakeholders bring inherent tensions. For example, the ideas advocated by researchers and policymakers may not address the most pressing problems of practice perceived by teachers. Pressure to implement new policies or research-based findings may exacerbate teachers’ already difficult job of juggling many goals within a limited school day, and reduce their sense of agency. Researchers may privilege creation of generalizable knowledge
Table 12.1 Mission, needs, and challenges of lesson study stakeholders.

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Mission, Practical Needs, and Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom Teachers</td>
<td>Mission: Nurturing the next generation</td>
</tr>
<tr>
<td></td>
<td>Practical Needs:</td>
</tr>
<tr>
<td></td>
<td>• Finding strategies to implement the required curriculum</td>
</tr>
<tr>
<td></td>
<td>• Solving the most pressing problems of daily practice</td>
</tr>
<tr>
<td></td>
<td>• Discerning what is working well and what is not</td>
</tr>
<tr>
<td></td>
<td>Challenges:</td>
</tr>
<tr>
<td></td>
<td>• Balancing many goals for student development (social, emotional, academic, physical, etc.) in limited time</td>
</tr>
<tr>
<td></td>
<td>• Maintaining connection to the intrinsic rewards of teaching to sustain the hard work of instructional improvement</td>
</tr>
<tr>
<td>School and District Administrators</td>
<td>Mission: Supporting teachers to teach well</td>
</tr>
<tr>
<td></td>
<td>Practical Needs:</td>
</tr>
<tr>
<td></td>
<td>• Understanding current instruction</td>
</tr>
<tr>
<td></td>
<td>• Getting teachers to adopt strategies that will improve instruction</td>
</tr>
<tr>
<td></td>
<td>Challenges:</td>
</tr>
<tr>
<td></td>
<td>• Superficial change and superficial compliance in response to change requests to teachers</td>
</tr>
<tr>
<td>University Researchers</td>
<td>Mission: Generate and test ideas designed to improve teaching and learning</td>
</tr>
<tr>
<td></td>
<td>Practical Needs:</td>
</tr>
<tr>
<td></td>
<td>• Classrooms to test and improve ideas</td>
</tr>
<tr>
<td></td>
<td>Challenges:</td>
</tr>
<tr>
<td></td>
<td>• Research may not prove useful or scalable</td>
</tr>
<tr>
<td>Textbook Publishers</td>
<td>Mission: Create effective textbooks</td>
</tr>
<tr>
<td></td>
<td>Practical Needs:</td>
</tr>
<tr>
<td></td>
<td>• Understand how textbooks are currently used</td>
</tr>
<tr>
<td></td>
<td>• Discern what is working well and what is not</td>
</tr>
<tr>
<td></td>
<td>Challenges:</td>
</tr>
<tr>
<td></td>
<td>• Developing ideas about how to improve textbooks</td>
</tr>
<tr>
<td>National Policymakers</td>
<td>Mission: Implement and improve national standards and curriculum</td>
</tr>
<tr>
<td></td>
<td>Practical Needs:</td>
</tr>
<tr>
<td></td>
<td>• Achieving implementation</td>
</tr>
<tr>
<td></td>
<td>• Discerning what is working well and what is not</td>
</tr>
<tr>
<td></td>
<td>• Identifying needed future steps</td>
</tr>
<tr>
<td></td>
<td>Challenges:</td>
</tr>
<tr>
<td></td>
<td>• Superficial change, superficial compliance</td>
</tr>
</tbody>
</table>

(for example, by use of control groups or systematic variation) while teachers privilege the learning of the students in front of them. Several features of lesson study ecology in Japan help Japanese educators manage these inherent tensions.

School-Based Lesson Study Builds and Maintains Teachers’ Agency

School-based lesson study is nearly universal in Japanese schools (National Education Policy Research Institute, 2011), and it begins with teachers developing a shared research theme that captures their goals for the student qualities that they want to nurture at their school. Typically, each grade level or grade band plans and conducts one or two research lessons per year, focused on the shared school-wide research theme, and observed and discussed by all the teachers and administrators in the school (Fernandez & Yoshida, 2004; Lewis & Hurd, 2011; Takahashi,
The school-wide research theme joins the teachers together in thinking about how their daily instruction might support their long-term goals for students. For example, teachers at the school filmed in the science lesson study cycle “Can you lift 100 kilograms?” (Mills College Lesson Study Group, 2000) chose as their school-wide research theme “For students to value friendship, develop their own perspectives and ways of thinking, and enjoy science” (Mills College Lesson Study Group, 2000). This theme guided innovations such as having students try to lift a 100-kilogram sack of sand (rather than a smaller object as shown in the textbook) and having students themselves devise a way to lift it and ask for the needed materials, rather than giving students a pole and fulcrum (as they had in prior years).

School-based lesson study is thus rooted in teachers’ core aspirations for their students. Ideas from research and policy provide potential tools to achieve these aspirations, not simply directives to be complied with. School-wide lesson study, centered on teachers’ aspirations for their students, has not yet taken root widely outside Japan. In its absence, lesson study may not connect well to teachers’ intrinsic motivation to learn and improve, but may instead be experienced as something done to fulfill a requirement or to advance someone else’s goals (the goals of an administrator or researcher).

Organizational Policies Support Lesson Study

In Japan, there are no formal requirements to do lesson study, yet it is ubiquitous. Advancement systems support lesson study; it is unthinkable that a teacher could become an instructional supervisor or principal without a strong track record of lesson study. School structures (such as the school research promotion committee) and district structures (e.g., early dismissal days when teachers engage in lesson study district-wide) also support lesson study, by creating structures and a year-long calendar that include lesson study (Murata & Takahashi, 2002; Takahashi, 2014; Wang-Iverson & Yoshida, 2005).

As noted, a system of small, short-term grants allows schools to apply as “designated research schools” (shitei kenkyuu kou) to investigate proposed curricular and instructional innovations, and to share their learning in public research lessons. Often their funds are used to hire well-known educators who advise on their lesson study work and comment on their research lessons. National elementary schools and secondary schools also conduct large public research lessons regularly (typically yearly) as a core part of their mission.

Knowledge from Lesson Study Feeds Back into Policy and Textbooks

Knowledge developed through lesson study is consequential in Japan. Policymakers attend large public research lessons and may use what they learn to reshape policy. For example, an elementary science unit in which students hatched chicks was quickly withdrawn from the required course of study when Ministry of Education officials were given an earful from teachers overwhelmed by baby chicks! Likewise, commercial textbook publishers rewrite textbooks in response to lesson study, replacing less effective activities with more effective ones, such as a toy that uses brightness or color to show the amount of energy, instead of one that shows just on or off (Lewis, Tsuchida, & Coleman, 2002). In addition, reports of lesson study activities are compiled and kept by schools, and can be obtained by request (Matsuzawara Elementary School, 2011). These reports include elements such as teaching-learning plans, records of student learning, teachers’ ideas about indicators of high-quality instruction, and photographs of student work. Research reports of this sort seem to be rare outside Japan, in that they represent a collaborative, actionable product that can be used by other educators who wish to work on the same topic or approach; these reports focus on helping teachers understand what was done, why, and how, and on what was learned about student responses.
Cultural and Human Resource Supports for Lesson Study

Further, the advisors hired by designated research schools are often educators active in the professional associations or national lab schools. As they travel to school sites across Japan to advise lesson study groups or serve as commentators on research lessons, they spread information on how other sites are implementing reforms (Watanabe, 2002). Even for a school that does not have funds as a designated research school, school funds typically allow a research lesson commentator to be hired once a year or so. Advisors who are seen as providing useful lesson commentary that helps a school strengthen its improvement efforts develop a reputation across Japan, and are highly sought after as commentators. We are not sure whether this dynamic—in which university-based educators gain status in part through how they are evaluated by school-based educators—has emerged elsewhere.

Though not required, lesson study is a core routine in most educational settings, including school districts (which typically offer special lesson study programs after five years and 10 years of employment, in addition to the regular district-wide lesson study), preservice programs (in which aspiring teachers work together in a lesson study group with a mentor teacher and rotate classroom teaching responsibility, rather than an extended solo teaching experience), and subject matter associations (Shimizu, 1999).

Finally, though less tangible than the institutional and policy supports just described, lesson study is supported by a set of assumptions about teaching and its improvement, such as the following.

- Collaboration among educators—not just in lesson study, but in the daily life of the school—is essential.
- Teachers’ learning is multifaceted, and includes development of knowledge, techniques, habits of mind, observation skill, beliefs, and habits of heart.
- Teachers’ learning is never done; there is no such thing as a “master” teacher, because teaching is never mastered, and can always be further improved.
- The most important qualities of students can only be achieved through the efforts of many teachers working together over many years.
- Egalitarian treatment of teachers promotes learning; teachers’ learning structures should assume that a first-year teacher has something valuable to contribute and that a 40th-year teacher has something important to learn.
- The students are never to blame.
- Instruction is the proving ground. The most carefully designed policies and curricula are just starting points, mere splotches of ink on paper, until teachers bring them to life in classrooms.

CONCLUDING THOUGHTS

In writing this chapter, we have been struck both by the rapid spread of lesson study around the world and by the complex ecology of lesson study in Japan that has yet to emerge elsewhere. Lesson study in Japan may gain its power from the synergies of work sponsored by local schools, districts, lab schools, and professional associations, and from the vital interest in lesson study shown by educators in all these venues. The resulting complex ecology allows lesson study to function as an activity valued as professional learning, as research, and as policy enactment and study. There is no reason to assume that other countries must develop the same ecology of lesson study as in Japan. Yet we think it is unlikely that effective, sustained lesson study will be developed outside Japan unless it meets most of the stakeholder needs laid out in
Table 12.1, ensuring that it is valuable to teachers and policymakers, uses research, builds networks within the teaching profession and across teaching, administrative, and research worlds, and feeds back into the curriculum and standards that shape schools.

NOTE

1. Brunei, Cambodia, China, Hong Kong, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Taiwan, Thailand, Vietnam in Asia; Australia; Austria, Denmark, Germany, Kazakhstan, Netherlands, Norway, Spain, Sweden, Switzerland, United Kingdom in Europe; Canada and the United States.

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