



## Japanese Lesson Study in the United States

Looking back and looking ahead

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### **Abstract**

*Japanese lesson study continues to attract the attention of U.S. educators more than 15 years after its first introduction. Research supporting its effectiveness in terms of students' learning is beginning to emerge. When a practice that is successful in one culture is imported into another, however, there are usually some obstacles and challenges, and this has been the case with Japanese lesson study. As educators around the world attempt to implement Japanese lesson study in their own situations, it is important for us to consider what the essential design features of lesson study are. The purpose of this article is to reflect on the initial 15 years of Japanese lesson study in the United States and identify those factors that contributed to its successes and also those that may have prevented it from achieving its fullest potential. We will also discuss additional factors that may support successful implementation of Japanese lesson study outside of Japan.*

### **Lesson Study: Culture and History**

It has been over 15 years since Japanese lesson study (*jogyo kenkyuu*) was first introduced to the U.S. education community in the late 1990's. Since then, numerous teachers and educators have been involved in lesson study, and the interest in lesson study across the country appears to remain strong. There are reports suggesting lesson study positively impacts student learning (e.g., [Perry & Lewis, 2011](#); [Waterman, 2011](#)). In 2014, a report by the Institute of Education Sciences of the U.S. Department of Education found that the study by [Perry and Lewis \(2011\)](#), which examined the effects of lesson study on students' understanding of fractions, was one of two studies that found statistically significant positive effects on student learning while meeting the rigorous What Works Clearinghouse Evidence Standards.

In spite of the continued interest in lesson study and some evidence of its positive impact on student learning, lesson study in the United States has not developed into a system for

“the gradual improvement of teaching over time” (Stigler & Hiebert 1999, p. 130). Some of the early implementers of lesson study are no longer engaged in lesson study for a variety of reasons. Most lesson study in Japan is school-based, but only a few schools in the U.S. actually engage in school-wide lesson study. Moreover, the way lesson study gets implemented can be very different at some sites compared to others.

Because there is virtually no record of how lesson study became the central feature of teacher learning in Japan, those of us who are attempting to grow lesson study communities elsewhere cannot look to Japan for guidance. Therefore, it is imperative that we examine our efforts and examine what made some implementations more successful than others. The purpose of this article is to reflect on the first 15-plus years of lesson study in the United States and identify factors that contributed to or hindered the spread of lesson study. Based on our reflection, we will also propose some additional factors that may aid efforts to engage in lesson study more effectively in the U.S., and perhaps elsewhere.

### ***Early Days of Lesson Study in the United States***

Japanese lesson study was introduced to the United States by Yoshida (1999), Stigler & Hiebert (1999), and Lewis & Tsuchida (1998). Yoshida's (1999) doctoral dissertation, which was later published as Fernandez & Yoshida (2004), was an ethnographic study that examined school-based lesson study at a public elementary school in Japan. It became the basis for the chapter discussing systematic improvement of teaching in Stigler & Hiebert (1999), who described lesson study as consisting of the following eight steps:

1. Defining the problem
2. Planning the lesson
3. Teaching the lesson
4. Evaluating the lesson and reflecting on its effect
5. Revising the lesson
6. Teaching the revised lesson
7. Evaluating and reflecting, again
8. Sharing the results

In their description, the central feature of Japanese lesson study is “the lesson.” Lewis & Tsuchida's (1998) article focused on this most visible component of lesson study, the research lesson, which is the carefully designed and publicly observed lesson along with the discussion that follows it. They discuss how Japanese teachers develop their teaching capacity through observing and discussing research lessons. Beyond that however, there was little discussion of the process of lesson study leading up to the research lesson.

These researchers were personally involved with early implementations of lesson study in the U.S. Working with Yoshida and the Greenwich Japanese School, Paterson (New Jersey) Public School Number 2 conducted a public research lesson open house in 1999. Lewis worked with a group at San Mateo-Foster City (California) school district and hosted a lesson study summer institute in 2001 where several public research lessons and

post lesson discussions took place. However, for many early U.S. implementers of lesson study who did not have an opportunity to work directly with these scholars, the primary resources were [Stigler & Hiebert \(1999\)](#) and [Lewis \(2002\)](#) (which provided a more detailed discussion on the lesson study process than in [Lewis & Tsuchida](#)).

In November 2002, the first lesson study conference was held in Connecticut, with participants coming from throughout the United States. The papers from this conference and the second conference held in 2003 were later published in [Wang-Iverson & Yoshida \(2005\)](#). This edited book included chapters on topics that were not clearly articulated in earlier publications, such as *kyozaiikenkyu* and the role of knowledgeable others, and it became another important resource for lesson study teams in the United States. Other early publications on lesson study that were widely available include [Watanabe \(2002\)](#), [Lewis, Perry & Hurd \(2004\)](#) and [Takahashi & Yoshida \(2004\)](#).

### ***Why Lesson Study? A Perfect Storm***

Several factors made lesson study attractive to U.S. educators, particularly mathematics educators. At the time lesson study was introduced in the United States, there was a strong consensus both that professional development is essential for improving mathematics education and that the traditional format – i.e., one day workshops conducted by experts – is not effective. [Loucks-Horsley, Hewson, Love & Stiles \(1998\)](#) proposed a research-based framework for designing a professional development program. Their four stages of professional development (Set Goals → Plan → Do → Reflect) are very much in alignment with the four stages of lesson study cycle presented in [Lewis \(2002\)](#) (Goal-setting and planning → Research lesson → Lesson discussion → Consolidation of learning). Lesson study also possesses many features that have been identified as critical for effective professional development for mathematics teachers: it is based in teachers' practice, focuses on students' learning, is grounded in mathematics, and makes use of teacher collaboration ([Smith, 2001](#)).

Another important factor that influenced the popularity of lesson study was the release of results from the Third International Mathematics and Science Study (TIMSS, now called the Trends in International Mathematics and Science Study), and in particular the Video Study. [Stigler & Hiebert \(1999\)](#) was based on the 1995 TIMSS Video Study, which investigated 8th grade mathematics lessons from Germany, Japan and the United States. Researchers noted that teaching is a cultural activity, and there are distinct patterns in teaching across the three countries even though there are some variations within each country. [Stigler & Hiebert \(1999\)](#) characterized Japanese mathematics teaching as “structured problem solving” (p. 27). The Japanese lessons tended to focus on a few mathematically challenging problems, and Japanese teachers generally did not demonstrate how to solve those problems first. Students were often asked to present their own, and often varied, solution strategies. The classroom discourse in Japanese lessons then focused on students' reasoning. In many ways, Stigler and Hiebert remarked, Japanese mathematics lessons exemplified many of the visions of US mathematics education reform efforts.

Although the complete set of videos used for the study were not released, 2 lessons from each country were made publicly available. Thus, U.S. mathematics educators were presented with concrete images, though limited, of Japanese mathematics teaching instead of just written descriptions. These concrete images combined with [Stigler & Hiebert's \(1999\)](#) argument that lesson study was the primary mechanism that transformed Japanese mathematics teaching piqued U.S. mathematics educators' interest in lesson study.

The standards-based mathematics education reform efforts that began with the NCTM *Standards* (NCTM 1989, 1991, 1993, and 2000), also played an important role in attracting U.S. mathematics educators' interests in lesson study. The vision of mathematics teaching presented in the NCTM documents, as well as the more recent Common Core State Standards (Common Core State Standards Initiative, 2010), was different from what was typically observed in US mathematics classrooms. Transforming mathematics instruction in U.S. classrooms to match that vision posed a significant challenge to mathematics educators. Lesson study, which enabled the transformation of Japanese mathematics teaching into what was shown in the 1995 TIMSS Video Study, was seen by many as a potential solution to that challenge.

## Factors contributing to mixed results in the USA

As noted earlier, [Perry and Lewis \(2011\)](#) demonstrated that lesson study as a teacher professional development program can impact students' learning positively. However, it is also true that many lesson study groups, including some of the early implementers, are no longer actively engaged in lesson study. In this section, we will discuss some of the factors that might have contributed to the mixed results of lesson study in the United States.

### ***Lesson study process***

As discussed above, of the initial documents that introduced lesson study to the United States, only [Stigler & Hiebert \(1999\)](#) included a brief discussion of the process of lesson study. [Yoshida \(1999\)](#) clearly included many more details but, being a doctoral dissertation, was not widely available. Thus, for many lesson study groups, the relatively short description of the lesson study process in [Stigler & Hiebert \(1999\)](#) guided their activity. Unfortunately, this limited information created many misunderstandings and misinterpretations of lesson study. For example, [Chokshi & Fernandez \(2004\)](#) discussed four misconceptions to avoid:

1. Lesson study is about creating a unique, original, or never-seen-before lesson.
2. There will be no benefit from just a few lesson study lessons; it's important to conduct lesson study for as many lessons as possible.
3. Lesson study is about perfecting a single lesson.
4. Lesson study is about producing a library of tried-and-tested lessons for others to use.

It is understandable why these misconceptions arose given the limited information that was available about the process of lesson study. We have encountered others. Some lesson study groups will choose the teacher who teaches the research lesson at the last minute, which means that the teacher of the lesson may not be the regular teacher of the students. This idea resulted in part from the emphasis on a collaboratively developed research lesson plan. Because the plan is developed, and owned, by the team, the post-lesson discussion is supposed to focus on the design of the lesson, not on the teacher. In Japan, however, virtually all school-based research lessons are taught by the classroom teacher because lesson study provides teachers opportunities to examine teaching and learning in the natural setting of a classroom, and the relationship between the classroom teacher and his or her students is an important component of that natural setting.

Another adaptation of lesson study that would astonish a Japanese educator is shortening the lesson study cycle to fit within a single day ([Takahashi & McDougal, 2016](#)). A team meets in the morning to plan a lesson, observe the lesson being taught, and discuss it. After the post-lesson discussion, the team revises the lesson, and the revised lesson is taught and discussed in the afternoon. While such an implementation does go through the lesson study cycle described in [Stigler & Hiebert \(1999\)](#), it omits an important component of lesson study that was overlooked in the early lesson study literature, namely *kyozaikenkyu* ([Takahashi, Watanabe & Yoshida, 2005](#); [Watanabe, Takahashi & Yoshida, 2008](#)).

*Kyozaikenkyu* (sometimes spelled as *kyozai kenkyuu*) literally means *study of instructional materials*. When Japanese teachers begin planning a research lesson, they first engage in *kyozaikenkyu*. They say that *kyozaikenkyu* is the central activity in teachers' everyday practice. However, during lesson study, they engage in *kyozaikenkyu* much more intentionally and intensively. In *kyozaikenkyu*, teachers examine the content, instructional tools, and existing literature on teaching and learning of the specific content. See [Takahashi et al. \(2005\)](#) and [Watanabe et al. \(2008\)](#) for more detailed discussions on *kyozaikenkyu*. In the early literature on lesson study, the process of *kyozaikenkyu* was obscured in lesson planning. Because lesson planning is such a natural part of teachers' practices in Japan and in the United States, U.S. teachers simply engaged in their version of lesson planning without recognizing this critical cultural difference in the practice.

### ***Resources and leadership***

Time was recognized early on as a challenge in implementing lesson study in the U.S. (e.g., [Chokshi & Fernandez, 2004](#)). While Japanese teachers are contractually bound to be at schools even after students go home, U.S. teachers' official workday typically ends when the students' day does. Thus, U.S. lesson study teams often meet during a common planning period during a school day, if there is one, or outside of their official contractual time. Then, in order for the team members and others to observe a research lesson and participate in the post-lesson discussion, they must be able to leave their classrooms during the school day. Some groups obtain substitute teachers, but this is an additional cost, and parents, administrators, and sometimes teachers themselves wonder whether

the learning time students lose by having substitutes is worthwhile. Sometimes principals are able to creatively free up teachers engaged in lesson study without using outside resources ([Liptak, 2005](#)), but not all principals are willing or able to do so.

The leadership provided by administrators is in fact a critical factor. Many groups thrived under supportive administrators, only to fall apart when there was a change in administration, either at the building level or district level. Unlike in Japan where administrators are knowledgeable about lesson study and have themselves participated in lesson study during their teaching career, many US administrators lack a clear understanding of lesson study and do not value it. The lack of experience with lesson study also applies to many facilitators of U.S. lesson study teams, who typically learned about lesson study by reading publications or watching videos. Because lesson study is a new form of professional development in the United States, there are only limited opportunities for interested educators to participate in observing and discussing a research lesson themselves, let alone actually planning and teaching one.

Although lesson study is a teacher-led and teacher-driven professional development activity, there are important roles for persons outside the classroom teachers on a planning team. These people are generally called “knowledgeable others,” and they may provide guidance to a team during planning or give final comments at the end of a post-lesson discussion that help participants learn from the lesson. Final commentators were mentioned in early publications about lesson study, but their roles and significance were not clearly understood. During the Lesson Study Conferences held in 2002 and 2003, the participants grappled with the question, “What are the essential features of lesson study?” and the participants did not reach a conclusion as to whether or not a final commentator is essential. Although [Watanabe & Wang-Iverson \(2005\)](#), described the role of these knowledgeable others, there was not much discussion about their roles elsewhere. Furthermore, [Takahashi's \(2014\)](#) analyses of the contributions from three experienced Japanese final commentators revealed that [Watanabe & Wang-Iverson's \(2005\)](#) discussion was incomplete. In any case, many early research lessons in the United States did not include a final commentator, which probably limited what teachers learned from those lessons.

### ***Lesson study nuances***

As noted earlier, lesson study described in [Yoshida \(1999\)](#) and [Stigler & Hiebert \(1999\)](#) was school-based lesson study. Some of the research lessons [Lewis & Tsuchida \(1998\)](#) described may have been school-based research lessons while others may have been conducted at regional or even national meetings. There are three major forms of lesson study in Japan ([APEC Human Resources Development Working Group, n.d.](#)): School-based lesson study, Cross-school lesson study, and Cross-district lesson study. [Table 1](#) illustrates how the purposes and participants of these forms of lesson study also vary.

**Table 1 Three major forms of lesson study (adapted from APEC HRDWG web page)**

<b>Example of Lesson Study Groups</b>	<b>Description</b>	<b>Main Purpose</b>
School-Based Lesson Study	<ul style="list-style-type: none"> <li>• Usually all teachers from a school participate</li> <li>• Address a school Lesson</li> <li>• Several subgroups each engage in a lesson study cycle</li> </ul>	<ul style="list-style-type: none"> <li>• Achieving systematic and consistent instructional and learning improvement in the school as a whole</li> <li>• Developing a common vision of education at the school through teacher collaboration</li> </ul>
Cross-School Lesson Study (District-wide)	<ul style="list-style-type: none"> <li>• Organized as an inter-school Lesson Study group</li> <li>• Usually subject-oriented groups (e.g., math teachers from each school in the district gather to conduct lesson study)</li> <li>• Meet once or twice a month</li> </ul>	<ul style="list-style-type: none"> <li>• Developing communication among the schools in the district</li> <li>• Exchanging ideas between the schools</li> <li>• Improving instruction and learning in the district as a whole</li> </ul>
Cross-District Lesson Study (Regional or Nation-wide)	<ul style="list-style-type: none"> <li>• Usually a voluntarily organized group</li> <li>• Group of enthusiastic practitioners with purpose of improving teaching and learning or curriculum in a certain subject</li> <li>• Meet once or twice after school on off-school days</li> </ul>	<ul style="list-style-type: none"> <li>• Developing new ideas for teaching chosen topics</li> <li>• Investigating curriculum sequences and contents</li> <li>• Developing curriculum</li> </ul>

When U.S. teachers began implementing lesson study, it was usually by groups of volunteer teachers. Sometimes all of the teachers were from the same school, but often teachers from different schools formed teams. Moreover, in many cases, only teachers in the lesson study groups observed the research lessons. This still appears to be the case

with most of the U.S. lesson study groups. Thus, U.S. lesson study groups are organized somewhat like the cross-school or cross-district lesson study groups in Japan. Their goals are also a mixture of goals from the different types of lesson study in Japan. Perhaps the mixing of organizations and purposes may be a part of the reasons that lesson study has not developed into a mechanism for “the gradual improvement of teaching over time” ([Stigler & Hiebert, 1999](#), p. 130).

When a mathematics research lesson is conducted in Japan, it usually takes the form of a lesson that centers around a single main task – what [Stigler & Hiebert \(1999\)](#) called a structured problem solving lesson. Although one of the reasons lesson study attracted U.S. mathematics educators’ attention was the mathematics teaching seen in the TIMSS videos, lesson study as a professional development activity and the Japanese problem-solving based mathematics teaching were considered separately. However, recently, [Fujii \(2015\)](#) discussed how lesson study and the Japanese problem-solving based mathematics teaching actually go hand in hand. Some components and potential outcomes of lesson study are meaningful for that particular form of mathematics teaching. However, such an approach to teaching mathematics is not familiar to most U.S. mathematics teachers. As a result, U.S. lesson study practitioners are trying to make sense of two new ideas simultaneously, lesson study and the Japanese problem-solving based mathematics teaching. These dual challenges may have also caused some US teams to move away from lesson study.

## Looking ahead

Despite the factors discussed in the previous sections that may have prevented US mathematics educators from taking full advantage of lesson study as a professional learning mechanism, there has been evidence that lesson study does improve the quality of mathematics teaching and learning (e.g. [Lewis et al., 2012](#); [Waterman, 2011](#)). In this section, we will discuss the outlook for lesson study in the United States, and perhaps in other countries.

As discussed in the previous section, a major challenge faced by the early implementers of lesson study in the United States was the limited knowledge of lesson study and its nuances. There are now many more resources that articulate various components of lesson study such as *kyozaikenkyu* (e.g., [Fujii, 2016](#); [Takahashi et al. 2005](#); [Watanabe et al., 2008](#)) and the role of knowledgeable others (e.g., [Takahashi, 2014](#)). In addition, results from various lesson study groups are beginning to be more widely shared. A recent call for manuscripts for a practitioner journal published by the National Council of Teachers of Mathematics includes articles that discuss a lesson study cycle. Furthermore, since 2012, a number of US mathematics educators have participated in the Lesson Study Immersion Program organized by Project IMPULS of Tokyo Gakugei University. Those participants had the opportunity to observe how lesson study is practiced in Japan first hand. Thus, the number of U.S. mathematics educators with first-hand knowledge of Japanese lesson study has increased.

[Takahashi & McDougal \(2016\)](#) examined school-based lesson study in Japan, which is the driving force behind the gradual improvement of mathematics teaching in Japan, as well

as five cases of school based lesson study in a U.S. urban school district. Based on their analysis, they propose a form of lesson study called collaborative lesson research (CLR) as a potentially powerful structure for the improvement of mathematics teaching. They define CLR as including the following six components:

1. A clear research purpose
2. *Kyozaikenkyuu*
3. A written research proposal
4. A live research lesson and discussion
5. Knowledgeable others
6. Sharing of results

[Takahashi and McDougal \(2016\)](#) also provide a 3-phase implementation process for school-based CLR. There are on-going efforts to implement school-based CLR. With the increased knowledge base of the lesson study process, the future of lesson study in the United States looks bright, although there are still some obstacles.

One of the challenges is building leadership capacity. [Takahashi and McDougal \(2016\)](#) argue that a supportive school administrator who clearly understands lesson study, with an additional person to advocate for lesson study, are two important catalysts for a successful school-based CLR. Unlike in Japan, most U.S. administrators are not familiar with lesson study, and even fewer have experienced lesson study themselves. As more US teachers experience lesson study, it is possible that some of them will eventually move into those leadership positions. However, that will take many more years.

Another leadership capacity issue is the development of knowledgeable others, particularly those who provide the final comments after the post-lesson discussion. [Takahashi \(2014\)](#) makes it clear that final commentators provide a critical role in lesson study. However, even in Japan, no formal program exists to prepare knowledgeable others. The three experienced knowledgeable others [Takahashi \(2014\)](#) studied agreed that the best way to understand the role of knowledgeable others is through practicing lesson study with others. Thus, developing the capacity of knowledgeable others with limited first-hand experience of lesson study remains a challenge in the US and elsewhere.

As discussed in this article, the importance of *kyozaikenkyu* in lesson study is now widely recognized. However, materials that support lesson study practitioners' *kyozaikenkyu* are still rather limited. In Japan, teachers often start their *kyozaikenkyu* by examining the textbook series and accompanying teacher's manuals. [Liping Ma \(1999\)](#) discussed how Chinese practicing teachers developed the profound understanding of mathematics they teach in part through examining textbooks. In contrast, [Ball \(1996\)](#) wondered whether or not US curriculum materials were written with teacher learning in mind. Unfortunately, the situation with curriculum materials may not have changed significantly. We may need more teacher support resources such as the "tool kits" used in [Perry & Lewis' \(2011\)](#) study.

## Closing comments

It has been over 15 years since lesson study was first introduced to the United States. Although the initial enthusiasm may have subsided, the interest in lesson study in the United States, and perhaps throughout the world, remains strong. Our knowledge of lesson study has certainly deepened over the last 15 years. Even in Japan, fueled by the interest in lesson study outside of Japan, Japanese educators are now examining lesson study as a form of professional development activity. This growing knowledge base will definitely assist new lesson study implementation efforts.

However, I want to close this article by sharing what I believe to be one of the reasons why lesson study has been so productive in Japan. Over the years, I have had opportunities to interact with Japanese mathematics educators and classroom teachers. Through those interactions, I realized that Japanese educators consider teaching to be research. This perspective is different from “teacher as researcher.” For Japanese educators, teaching *is* research and therefore teachers *are* researchers. Thus, classroom teachers often talk about their own “research agendas,” and mathematics teacher educators will say that the main objective of student teaching is for teacher candidates to identify and sharpen their “research agendas.” From this perspective, it is very natural for Japanese teachers to engage in lesson study. The Japanese phrase for lesson study is *jogyo kenkyu*. The second word, *kenkyu*, was translated as “study” but it can also be translated as research. Thus, teachers are researchers of lessons. They engage in this research every day, individually in their own classrooms and collaboratively through lesson study. Their individual and collaborative research then informs each other. I have discussed various factors that may support lesson study in the United States (and elsewhere) in this article. However, perhaps one of the key factors for lesson study to be productive anywhere is for teachers to view teaching as research and to develop their own identities as researchers.

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