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Japanese Lesson Study: Teacher Professional Development through Communities of Inquiry

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Japanese Lesson Study has come under increasing attention from educators in the West and throughout South-East Asia since it was revealed outside Japan through the release of the TIMSS Video Study. In this paper we argue that Japanese Lesson Study provides a model for large scale, sustainable professional development. In particular, we draw on our own experience of Japanese Lesson Study and the research literature to describe its characteristic features and examine some of the cultural assumptions that underpin its implementation.

> Exploring mathematics with groups of people is inherently a cultural practice (Kazemi, Elliott, Hubbard, Carroll, & Mumme, 2007, p. 797).

Japanese Lesson Study has come under increasing attention from educators in the West and throughout South-East Asia since it was revealed outside Japan through the release of the TIMSS Video Study (Stigler, Gonzalez, Kawanaka, Knoll, & Serrano, 1999) and Yoshida's doctoral dissertation (Yoshida, 1999; for a description of the study in English, see Fernandez & Yoshida, 2004). Unlike many Western initiatives, richly funded and mandated, Lesson Study in Japan is neither funded nor mandatory. Essentially school-based and organised by teachers themselves, it pervades primary school education – and to a lesser extent secondary school education – across the country, with teachers researching their own practice in school-based communities of inquiry.

This form of professional development is no longer restricted to Japan: mathematics Lesson Study groups have been forming in the United States for over ten years and now number more than eight hundred. In the United Kingdom there has been growing interest in, and government support for, Lesson Study as a powerful form of professional development (see, for example, Department for Children, Schools and Families, 2008). Lesson Study has also been introduced in South-East Asian countries such as Indonesia and Malaysia (see, for example, White & Lim, 2008), as well as South America, South Africa (Ono & Ferreira, 2010), and Australia (for example, Hollingsworth & Oliver, 2005). China too has a long history of improving teaching and learning through school-based professional learning communities named Teacher Research Groups (see, for example, Yang, 2009).

While Lesson Study takes place across all curriculum areas in Japan, it is perhaps most commonly practised in mathematics, and this has tended to be the case in other countries too.

Why has this form of professional development generated such widespread interest? Is it because it encourages teachers to develop their own communities

of inquiry into their own teaching practices? Is it because it develops effective teaching approaches? Or is it purely a cultural artefact?

In this paper, we argue that Japanese Lesson Study provides a model for large-scale, sustainable professional development. In particular, we draw on our own experience of Japanese Lesson Study and the research literature to describe its characteristic features and examine some of the cultural assumptions that underpin its implementation.

Teacher Professional Development

Teacher professional development is driven by the need to both extend and renew teacher practice, skills and beliefs. Stimuli for such needs may be curriculum change, new classroom technology, advances in pedagogy, or all of these. However, the underlying endeavour is to improve outcomes for students, whether they be focussed on understandings, skills, attitudes, or engagement.

Unfortunately, however, research evidence suggests that, despite the money, time, and effort put into professional development for teachers, the outcomes are not always as hoped. For example, Ingvarson, Beavis, Bishop, Peck, and Elsworth (2004), reporting on findings from a large-scale study of secondary mathematics teachers, found that the literature reviewed indicated that, "much professional development appears to be ineffective" (p. 71). Reporting on a decade-long local systemic change initiative based on teacher enhancement, Banilower, Boyd, Pasley, and Weiss (2006) noted that "professional development sessions designed to deepen content knowledge and support teachers' content needs during implementation sometimes failed to delve into the very content they were designed to address, due to more pressing teacher concerns such as materials management or pedagogy" (p. 87). Further, Darling-Hammond, Wei, Andree, Richardson, and Orphanos (2009, p. 22) suggest that, "relatively few U.S. teachers engage in intensive professional collaboration around curriculum planning".

It is not surprising then, that international attention has turned to less familiar, but apparently more successful, professional development practices, such as Japanese Lesson Study.

In searching for features of successful teacher professional development, Ingvarson et al. (2004) suggest that the relationship between student outcomes and teachers' development is reciprocal in that "the more successfully students learn, the more likely it is that the teacher will adopt practices that encourage further successful learning" (p. 23). In a similar vein, Royce (2010, p. 6) argues that, "what we know to be true for students also applies in this [professional development] situation to adults. That is, that teachers learn best by doing [teaching mathematics] and building their own understandings rather than being told". This resonates strongly with Guskey's (2002) re-iteration of his *Model of Teacher Change* where he states that, "improvements typically result from changes teachers have made in their classroom practices—a new instructional approach, the use of new materials or curricula, or simply a modification in teaching procedures or classroom format" (p. 383). Thus opportunities to

experiment with classroom practice and analyse it in detail—an important feature of Japanese Lesson Study—is likely to be a fruitful path to take in teacher professional development.

Moreover, Hattie (2009), when looking for the characteristics of teachers who students claimed were the best, quotes Pehkonen (1992) as saying that these characteristics include "teachers who helped students to have different and better strategies or processes to learn the subject" (p. 108), thus indicating that professional development that provides teachers with these skills would be of benefit to students. As discussed later in this paper, Japanese Lesson Study in mathematics is based around a structured problem-solving research lesson, in which a major part of the lesson consists of students sharing, polishing and refining their solution strategies.

Loucks-Horsley, Stiles, and Hewson (1996), describing the results of the *Professional Development Project* of the National Institute for Science Education, which looked at the mathematics, science, and professional development communities' understandings of what was effective professional learning, found a large amount of consensus. For example, it was agreed, inter alia, that good professional development programs:

- are driven by a clear, well-defined image of effective classroom learning and teaching;
- provide teachers with opportunities to develop knowledge and skills and broaden their teaching approaches, so they can create better learning opportunities for students; and
- build or strengthen the learning community of science and mathematics teachers.

In this paper, we argue that Japanese Lesson Study demonstrates these features.

Japanese Lesson Study

> Even more basic is the whole idea of instruction as something that can and should be improved through consultation with colleagues, trial in the classroom and critique. (Lewis, 2000, pp. 32–33)

To the casual observer, Japanese Lesson Study may seem like a simple idea. Teachers with a common focus meet and plan lessons together. These lessons may have a focus on building skills or understanding, and are known as "research lessons", which are taught by one, and observed by not only all of the teachers who are doing the planning, but also by observers who, at one end of the spectrum, may come only from the teachers' own school, or, at the other end, may come from all over Japan (see, for example, Lewis & Tsuchida, 1998). A debriefing session follows the lesson, where the lesson is discussed at some length, with modifications often suggested by the observers, who frequently include an invited academic or "veteran teacher".

Lewis (2002) describes the *Lesson Study Cycle* as having four phases:

- goal-setting and planning – including the development of the Lesson Plan;
- teaching the research lesson – enabling the lesson observation;

- the post-lesson discussion; and
- the resulting consolidation of learning, which has many far-reaching consequences (see Lewis & Tsuchida, 1998, for teachers' comments on the impact of research lessons on their understandings about science teaching).

While these points are stated simply, a great deal of unpacking of each is needed to fully understand the concepts and processes of Japanese Lesson Study in practice.

Goal Setting and Planning

Goal setting and planning are the critical underpinning of Japanese Lesson Study – we use the metaphor of an iceberg to represent the extent of the "underwater" support needed for planning the lesson.

Establishing Long-term Goals

Long-term goals in Japanese Lesson Study may be about behaviour, attitude or learning. For example, Takahashi and Yoshida (2004) give the example of a Lesson Study group in the United States wishing "to investigate how to improve the teaching and learning of measurement" (p. 439), while T. Fujii (personal communication, August 26, 2010) gave the example of a school whose long-term goal was to improve children's curiosity.

Research themes should address the "biggest gap" between the qualities students have and ideals espoused by their teachers. Selecting such a theme or goal is seen to be at the heart of successful Lesson Study and can lead to a research focus that can be maintained over several years (Lewis, 2000). This aspect of Lesson Study is often overlooked when it is adopted in other countries.

Planning the Research Lesson

In Japan, Lesson Study takes place across all curriculum areas, as well as in non-curriculum areas such as class meetings, although it is probably more common in mathematics and science than some other areas.

In mathematics, the research lesson, at least at the primary school level, usually follows the typical lesson pattern for a Japanese *structured problem-solving lesson*. According to Stigler and Hiebert (1999), such lessons can be described as having the following stages:

- Reviewing the previous lesson
- Presenting the problems for the day
- Students working individually or in groups
- Discussing solution methods
- Highlighting and summarizing the main point (pp. 79-80).

According to Takahashi (2006), a "Japanese mathematics lesson is designed around solving a single problem to achieve a single objective in a topic" (p. 4). This single thought-provoking question or problem with which the students

engage is referred to as the hatsumon. As we have argued elsewhere, the role of this single task is critical to the lesson success (Doig, Groves, & Fujii, 2011). Thus, to select an appropriate task, there needs to be a great deal of research into the mathematics involved – for example, the position of the mathematical content of the lesson within the overall curriculum – as well as the students' expected responses to the task, in order to find the best materials to assist students' learning.

This extensive research process is termed *kyozaikenkyu*. It involves the investigation of a large range of instructional materials, including textbooks, curriculum materials, lesson plans and reports from other lesson studies, as well as a study of students' prior understandings, which makes it possible for teachers to anticipate students' reactions and solutions to the problems during the lessons. While the literal meaning of *kyozaikenkyu* is the study or investigation (*kenkyu*) of instructional materials (*kyozai*), the word kyozai means much more than textbooks or curriculum materials and needs to involve learning goals. Thus, according to Watanabe, Takahashi and Yoshida (2008), "*kyozaikenkyu*, is the process to help teachers gain a deeper understanding of *kyozai*" (p. 135). Moreover, it is important to distinguish between the content to be learned in a lesson and the tasks, as it is possible to explore the same subject matter with different *kyozai*, or investigate different subject matter with the same *kyozai* (p. 133).

The extent of the research and the detail that goes into the preparation of the lesson plans for research lessons are illustrated in Figure 1, (following page) where different sections of the typically five or six page lesson plans are identified. While all teachers need to engage in *kyozaikenkyu* as part of their lesson planning, Lesson Study requires teachers to engage in it in much more depth.

In a similar sense, Ma (1999) speaks of Chinese teachers' "profound understanding of fundamental mathematics" and how this is developed through "studying teaching materials intensively" (p. 130). In contrast, when we conducted an abbreviated Lesson Study cycle, in a three-day workshop at an international conference (Doig, Groves, & Machácková, 2009), it became apparent that many participants had little in-depth knowledge relating to the content of the lesson (fractions) or experience in studying teaching materials in depth. There were clear differences among participants, apparently based on country of origin. This experience, with an international group of mathematics educators, highlights the lack of opportunity for and disposition towards detailed study of mathematical content in many countries, including Australia.

Teaching and Observing the Research Lesson

Teaching the research lesson forms the core of Japanese Lesson Study, providing both the opportunity to test the lesson plan in the classroom and an opportunity for observation and reflection.

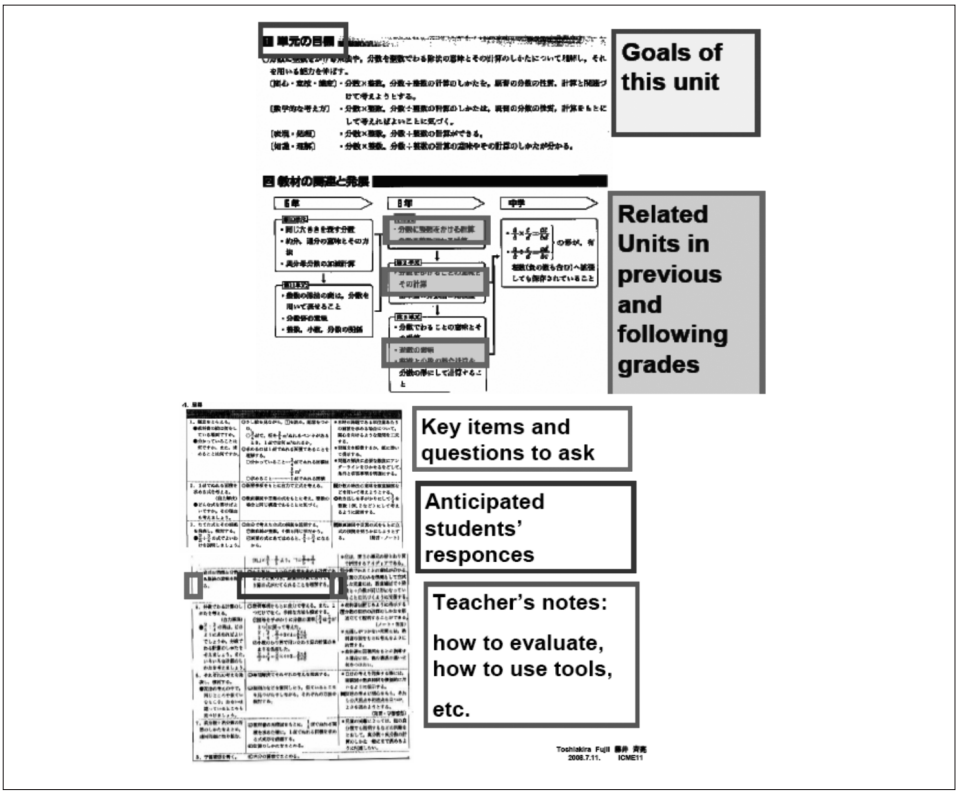

Figure 1. Sections of a lesson plan for a Research Lesson (Fujii, 2008)

Teaching the Research Lesson

After being presented with the *hatsumon* or problem, students work individually or in groups on the problem while the teacher engages in *kikan-shido* – sometimes referred to as "between desks walking", but perhaps more accurately as "purposeful scanning". The teacher of the research lesson takes careful notes of which students are using which strategy to solve the lesson problem (see Figure 2) and knows, from the Lesson Study group's research, expected solution strategies. The teacher's notes allow the teacher not only to monitor students' strategies but also to orchestrate their reports on their solutions in the crucial whole class discussion that follows the students' working time – the *neriage* phase of the lesson, which often occupies the majority of time in a research lesson.

As Takahashi (2006) puts it, "Because the goal of the structured problem-solving approach is to develop students' understanding of mathematical concepts and skills, a teacher is expected to facilitate mathematical discussion for students to achieve this goal" (p. 6). The term *neriage*, used for this discussion part of the lesson, indicates a kneading of student ideas, allowing them to compare, polish and refine these solutions through the teacher's orchestration and probing.

Figure 2. A teacher using a seating plan to record his Year 3 students' solutions

Because of the extensive *koyzaikenkyu*, the teacher has an understanding of likely student responses and strategies to the lesson task, including more efficient strategies, as well as common student misunderstandings. Detailed observation of actual student responses while students work allows the teacher to carefully orchestrate the order of solutions to be shared.

The discussion of solutions is followed by the *matome* – the summing up and careful review of the discussion aimed at guiding students to higher levels of mathematical sophistication (Shimizu, 1999). In the conclusion to the lesson, students – even very young children – are often asked to reflect in writing on what they have learned during the lesson.

A surprising aspect of Japanese classrooms is the lack of modern equipment, such as over-head projectors, computers, and electronic white-boards. While schools in countries such as Australia are adopting the use of these technological products at a great rate, the countries that manufacture them, China and Japan, appear to eschew them. In Japan, the blackboard is used extensively in lessons:

- To keep a record of the lesson;
- To help students remember what they need to do and to think about;
- To help students see the connection between different parts of the lesson and the progression of the lesson;
- To compare, contrast, and discuss ideas that students present;
- To help to organize student thinking and discovery of new ideas; and
- To foster organized student note-taking skills by modelling good organization (Takahashi, 2006, pp. 6–7).

The importance of the blackboard is shown by the fact that a special term, *bansho*, is used to denote its use. At the end of a research lesson, Japanese observers frequently take photographs of the blackboard, as it reveals to students and teachers alike the progress of the lesson, and the students' responses. This helps to organise student

Figure 3. Photograph of the blackboard at the end of a Year 3 lesson on division

thinking and model good organisation of notes. Figure 3 shows one of the author's photographs of a blackboard at the end of a Grade 3 lesson on division.

Observing the Research Lesson

The teaching phase of a research lesson is conducted with many observers in attendance. These observers may include only teachers from the same school, teachers from other local schools, or teachers and academics from an extended range of schools, with some research lessons being open to teachers from all over Japan. While "in-school" Lesson Study is the most common, national schools and attached schools of universities often hold Lesson Study days across the curriculum, as do professional associations in their own curriculum areas. One Lesson Study "day" observed by one of the authors saw approximately 2000 people converge on a single Tokyo elementary school on a Saturday to observe a series of mathematics lessons. Observers, often with video cameras, crowded into the classrooms, leant in through windows along a verandah, and peered in through the doors. We have also observed Lesson Study as part of mathematics education conferences both in Japan and in Mexico at the eleventh International Congress on Mathematical Education (ICME 11).

Regardless of the type of Lesson Study, all observers are provided with a copy of the detailed lesson plan, and take comprehensive notes of the lesson, often as well as video and photographic records (see Figure 4). The main focus of the observations is student thinking and learning, with observers, like the teacher, making detailed notes of students' solution strategies. Sometimes observers choose to focus on just one or two students for the entire lesson. Observers do not interact with nor "help" the students or the teacher during the lesson, as the purpose is to observe the implementation of the lesson as planned.

Figure 4. Observers taking detailed notes in a local school research lesson

The Post-lesson Discussion

Finally, after the children have completed the lesson, the research lesson is discussed by the teacher and all of the observers. The focus of the discussion is not personal, but is about the research lesson itself, and in particular about the learning that has taken place and the ways in which the lesson might be improved.

Typically, the discussion is chaired by the principal or some other member of the school, with an "outsider", often an academic from the local university, being invited to comment at the end of the discussion. The teacher is given the first opportunity to speak, to explain their intentions for the lesson, as well as their impressions of what was successful and what was less successful in the lesson. Other members of the planning team then explain the rationale behind the lesson and how the lesson furthers the research theme. After this, there are comments from other observers, based on their detailed notes of the lesson, and the invited commentator who pulls the discussion together and draws out implications relating to the particular lesson and learning and teaching more generally. These discussions often last up to two hours, and are, at the local level anyway, often followed by a convivial meal at a local restaurant. We have attended post-lesson discussions of forty observers, each with comments about the lesson, how it might be improved, or what its highlights were (see Figure 5).

Figure 5. The post-lesson discussion at a local school

Japanese Lesson Study as Professional Development

> Lesson Study makes various types of knowledge more visible, such as colleagues' ideas about pedagogy and students' mathematical thinking, thereby enabling teachers to encounter new or different ideas, and to refine their knowledge. (Lewis, Perry, & Hurd, 2009, p. 286)

Research lessons are not about perfecting one lesson, but rather focus on developing teachers' ideas and experiences of different approaches to teaching. Research lessons make participants and observers think quite profoundly about specific and general aspects of teaching.

Lewis and Tsuchida (1998) and Lewis (2000) identify a number of ways in which Lesson Study contributes to the improvement of Japanese education. One teacher interviewed described the impact of Lesson Study this way:

> Research lessons help you see your teaching from various points of view …. A lesson is like a swiftly flowing river; when you're teaching you must make judgments instantly. When you do a research lesson, your colleagues write down your words and the students' words. Your real profile as a teacher is revealed to you for the first time. (Teacher cited in Lewis & Tsuchida, 1998, p. 15)

Other teachers spoke of Lesson Study offering them the opportunity to "learn to see children" (Lewis, 2000, p. 14) through the systematic data gathering facilitated by the lesson plans suggesting what to look for in the research lesson and all participants pooling their data.

Lesson Study was also seen by Lewis and Tsuchida (1998) as an important way to spread ideas about new content and approaches – especially at times when there were changes in the national curriculum, with teachers not only having the opportunity to watch new content being taught but also being able to

discuss the reasons behind changes. Other ways in which they saw Lesson Study having an impact was through: connecting classroom practice to broader school and community goals; creating demand for improvement of practice through viewing best practice and comparing it with their own; shaping national policy; and honouring the role of classroom teachers. But perhaps the most interesting observation is that Lesson Study provides the opportunity for teachers to explore conflicting ideas, by giving "teachers a chance to bring up, discuss, and perhaps reconcile competing goals or visions of education (p. 16).

Communities of Inquiry

> In Japan, Lesson Study is a model for a community of practitioner-teachers to follow as they study student thinking for the purpose of improving instructional practices in their own classrooms. (Yarema, 2010, p. 5)

In a review of past thinking and future prospects for mathematics teacher professional development, Zaslavsky, Chapman, and Lieken (2001) argue that past professional development programs mirrored the teaching of mathematics: that is to say, "transmitting information, providing ideas and providing training in skills and techniques" (p. 878). They go on to say that this has been supplanted, more recently, in many cases, with programs that require teachers to play an active role in their own professional development. As a consequence, professional development programs adopt a constructivist perspective that "teacher's knowledge [is] developing socially within communities of practice" (p. 878). For example, in examining an action research-based professional development program, the following characteristics were noted: collaborative planning of group activities and individual lessons; lessons taught by the program leader and observed by the participants, and *vice versa*; co-teaching by the leader and participants; and post-lesson de-briefing by everyone in the program.

Many, but not all, of these characteristics are also to be found in Japanese Lesson Study practice. These include collaborative lesson planning, lesson observation, and post-lesson de-briefing. Further, Stein, Smith, Henningsen, and Silver (2000) hold the view that once teachers see their own students' task responses as examples in a more general pattern, they could then reflect on their own practice from a cognitive demand perspective, the perspective that Japanese Lesson Study employs, as one of its enabling aspects, lesson task selection and implementation. Zaslavsky et al. (2001) also note that lesson tasks have a dual role: they are both lesson content that drives student learning and are also the basis for indirect learning by the teacher.

Lewis et al. (2009) propose a theoretical model for the way in which Lesson Study produces instructional improvement. The model proposes that not only does Lesson Study make various types of knowledge more visible (see earlier quote), and improve resources available to teachers, but that "lesson study enables teachers to strengthen professional community, and to build the norms". They add that, "these might include norms of inquiry and accountability and shared language and frameworks for analysis of practice" (p. 286).

These norms and practices resonate with Splitter's (2009) definition of a *community of inquiry as*:

> a particular kind of … environment or culture, in which students engage together in various forms of inquiry, where the latter is understood to be any mode of thinking that is motivated by, and directed toward, clarifying, solving or resolving something which is regarded as both problematic and worthy of attention. (p. 171)

Moreover, Perry and Lewis (2009), in a description of what they call an "existence proof" that Lesson Study can be successfully adapted in the USA, regard the development of a professional community as one of the key conditions for supporting successful Lesson Study.

Adapting Japanese Lesson Study

> The graveyards of U.S. educational reform are littered with once-promising innovations that were poorly understood, superficially implemented, and consequently pronounced ineffective. (Lewis, 2000, p. 33)

As Stigler and Hiebert (1999) point out, our efforts at improving teaching often ignore the fact that teaching is a cultural activity. The phenomenal growth of Lesson Study as a vehicle for professional development, primarily in the USA, but also elsewhere, has highlighted some of the cultural assumptions underlying Japanese Lesson Study and raised questions about the extent to which it can be replicated elsewhere.

Japan has a century-old history of Lesson Study. Unlike Australia, where teaching is seen very much as a private activity, teaching in Japan is seen as a public activity, with teachers' classroom performances open to collegial scrutiny and comment. The relatively high status afforded to teaching in Japan results in a stable teaching population, with teaching being seen as a life-long profession. Lesson Study requires a long-term commitment, which is also difficult when, as in Australia, models of teacher professional development are constantly changing.

Another cultural factor that distinguishes Japan and Australia is the focus on the classroom as a community of learners as opposed to a focus on individual differences. Community is built in elementary school classrooms through a range of strategies, including the thoughtful, deliberate creation and maintenance of ongoing small groups that form the underlying structure for lessons as well as for out of class activities such as eating lunch, playing games, and cleaning the school. This sense of community is in evidence in the ways in which students engage in the structured problem-solving lessons that form the basis for Lesson Study in mathematics.

The school context is also a powerful influence. In Japan, while the preparation for Lesson Study takes place outside school hours, the long-standing tradition of Lesson Study allows flexible arrangements to be made for conducting the observed lessons and the post-lesson debriefing discussions. In

Australia, a major constraint to such activity is the fact that most schools would need to employ casual teachers to take the place of teachers observing lessons in other classes or schools. For a more detailed discussion of some of these factors, see Groves and Doig (2010).

Lewis and Tsuchida (1998, pp. 50–51) identify what they regard as four major conditions that support Japanese Lesson Study: a shared frugal curriculum; collaboration among teachers; critical self-reflection – *hansei* – which is highly valued within the wider Japanese culture; and stability in educational policy.

While many of the factors identified above that impose constraints on the adoption of Japanese Lesson Study relate to the process, others, which may in fact constitute greater barriers, relate to the nature of the Japanese structured problem-solving lesson. In contrast to the crowded Australian curriculum, the "frugal" Japanese mathematics curriculum affords both opportunities for, and dispositions towards, a detailed study of mathematical content. It provides time for a longer-term, deeper study of a more limited number of mathematical topics, which leads to more understanding of concepts, greater skill development, and overall better achievement by all students in the class.

Moreover, as Perry and Lewis (2009) point out, Lesson Study assumes that:

> teachers would begin to understand student thinking primarily through observing students during lessons. However, not all lessons include "thought-revealing tasks" … that enable observers to study student thinking; Japanese mathematics lessons elicit student thinking more reliably than do US mathematics lessons. (pp. 376–377)

Nevertheless, Perry and Lewis (2009), in their "existence proof" case of a USA school district with a four-year successful history of Lesson Study, found significant changes that resulted in the "evolution of a more balanced, coherent model of lesson study that emphasized practitioner learning as well as lesson planning" (p. 372). Among these was teachers' increased use of reflection, which enabled them to "capture their own learning" (p. 374).

Another important support for change was the use of outside experts, with an example being given of one Japanese expert pressing teachers to include students' anticipated solutions in their lesson plans, to consider how many such solutions were likely, to think about how they would treat incorrect solutions (Perry & Lewis, 2009). Our own experience at the international conference referred to earlier (Doig et al., 2009) showed that participants were themselves only able to find a couple of possible solutions and were sceptical that the grade 3 students would be able to come up with different solutions to the problem of dividing three pizzas equally between four people. The five children who participated the following day in fact found 16 mostly different solutions.

This example also relates to the fourth major factor identified by Perry and Lewis (2009) as contributing to the shift in participants' view of Lesson Study – an increased focus on mathematical thinking, with a corresponding change in emphasis from superficial aspects to collecting detailed data on which to base

substantive conversations about pedagogy and content. One teacher was reported as saying:

> A couple of the Japanese men had documented minute by minute what [students] were doing … It made me realize as an observer how you can just get warm feelings about some things, but it's really important to be detailed in your observation and really be critically thinking. (p. 377)

In Mainland China, Teaching Research Groups have existed in all schools for over half a century (Yang, 2009). These groups, which are mandated by the government, conduct a number of different activities, some of which closely resemble (or are even sometimes seen as being identical to) Japanese Lesson Study. Typically, research lessons are taught at least twice – in fact when the authors were in China recently they saw one lesson dramatically changed as the result of the post-lesson discussion and re-taught within the space of a couple of hours.

While one possible outcome from Japanese Lesson Study is a polished, and perhaps even published, lesson on a particular topic, it is a mistake to assume that this is the main goal or, as it is common in the USA, that the same lesson is even taught again as part of the Lesson Study (Lewis et al., 2009). As Lewis (2000, p. 5) points out, "The research lesson is not a finished product that is expected to be used *in toto* elsewhere, but an example of a goal or vision of education in action".

In a similar vein, Perry and Lewis (2009) conclude that in their USA case "Lesson study evolved from an activity focused on creation of polished lessons to a comprehensive system for teacher learning from practice and external knowledge sources" (p. 383), and this might present a clue as to how Lesson Study can be adapted to better suit the Australian context.

Sustaining Professional Development

> Of all aspects of professional development, sustaining change is perhaps the most neglected. It is clear that, to be successful, professional development must be seen as a process, not an event (Guskey, 2002, p. 388)

There are a number of reasons why Lesson Study offers the potential for sustained professional development. First, it offers teachers the opportunity to develop professional communities of inquiry, with ownership of the improvement effort, a commitment to inquiry, shared goals, and a sense of responsibility to their colleagues and students (Lewis et al., 2009).

Secondly, while progress is often slow at the start, the process can evolve over time with teachers beginning by weaving "some of the simpler components of lesson study (such as collaborative lesson planning) in with their existing practices, and only later … [grasping] the significance of other ideas such as developing a lesson rationale and documenting their own learning" (Perry & Lewis, 2009, p. 388).

Thirdly, Lesson Study enables teachers to build on their efforts and refine their understandings. In the case reported by Lewis et al. (2009), teachers on their own initiative decided to continue to meet to further revise their lesson to allow colleagues to observe the research lesson and collect data. This is not an uncommon occurrence in Lesson Study.

Lastly, as Perry and Lewis (2009) comment:

> Lesson study may stand a better chance of survival than specific instructional reforms because it is a means for bringing practice into line with goals that can be used flexibly to support various reform ideas. (p. 387)

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