

Collaborative, Reflective, and Iterative Japanese Lesson Study in an Initial Teacher Education Program: Benefits and Challenges

Caroline Chassels
Ontario Institute for Studies in Education,
University of Toronto

Wayne Melville
Lakehead University

To investigate benefits and challenges to engage teacher candidates in Japanese lesson study, defined as a collaborative, reflective, and iterative teacher development process, we analyzed reflective papers submitted by 60 teacher candidates studying at an Ontario faculty of education, engaged 20 practicum associate teachers in a group discussion, and considered the reflective notes of the course instructor (first author). Findings suggest that Japanese lesson study provides opportunities for teacher candidates to build professional learning communities, to deepen understanding of curriculum and pedagogy, and to develop habits of critical observation, analysis, and reflection. Although benefits of lesson study are numerous and significant, our research identified implementation challenges related to time, practicum placements, and the professional development of associate teachers.

Key Words: professional learning communities, reflective practice, teacher collaboration

En vue d'analyser les avantages et les défis reliés à l'étude de leçon japonaise, une méthode de formation à l'enseignement axée sur la collaboration, la réflexion et l'itération, les auteurs ont (1) analysé les réflexions écrites de 60 candidats à l'enseignement étudiant dans une Faculté d'éducation en Ontario, (2) réuni 20 enseignants associés pour une discussion en groupe et (3) analysé les notes de l'instructeur du cours. Les observations ainsi colligées donnent à penser que l'étude de leçons japonaises permet aux futurs enseignants de créer des communautés d'apprentissage professionnelles, de mieux comprendre le curriculum et la pédagogie et de développer des habitudes d'observation, d'analyse et de réflexion critiques. Bien que les avantages de l'étude de leçon soient nombreux et importants, cette recherche met en lumière les difficultés que pose sa mise en œuvre, notamment le temps requis, les endroits à trouver pour les stages et le perfectionnement professionnel des enseignants associés.

Mots clés : communautés d'apprentissage professionnelles, pratique réflexive, collaboration du personnel enseignant.

*"The Japanese say that lesson study develops the eyes to see children."
(Richardson, 2000)*

To prepare teachers for the twenty-first century is to prepare them to be leaders, role models, and active participants in a rapidly changing world, influenced by what scholars have characterized as a learning age (Lee, 1997; Matheson & Matheson, 2000; Methven & Hansen, 1997). Scientific advancements that are changing every aspect of human activity require individuals to develop habits of inquiry and lifelong learning in their professional and personal lives. Like their colleagues before them, teachers in the twenty-first century will be required to engage in continuous professional learning and to consider their interactions with students as dynamic and dialogical instances of mutual learning (Pan, 1997). Because learning is a fundamentally social phenomenon occurring through intentional and active engagement in communities of practice (Lave & Wenger, 1991; Wenger, 1998), teachers, as adult learners, require opportunities to form professional learning communities to provide occasions to validate, share, and extend prior experience and knowledge (Seng & Hwee, 1997). The challenge for teacher educators is to provide opportunities for teacher candidates to develop habits of continuous professional learning and to foster and generate change in educational cultures that

have been historically resistant to change despite rapid changes in the world.

Lesson study is a school-based, collaborative, professional development process by which Japanese teachers seek to improve the teaching and learning that occurs in their classrooms (Stigler & Hiebert, 1999). It is credited with the marked changes and ongoing teacher development that have occurred in Japanese classrooms over the past five decades (Lewis & Tsuchida, 1997), a situation that contrasts with the apparent lack of change in many Western classrooms (Stigler & Hiebert, 1999). Our research investigates the benefits and challenges of lesson study as an activity to promote the development of professional learning communities and reflective practice within an elementary teacher education program practicum in Ontario. We examine lesson study in an elementary, initial, teacher education program as a means to foster an inquiry stance within professional learning communities among teacher candidates and we concurrently build “theory about how it works” (Lewis, Perry & Murata, 2006, p. 7). By considering the insights and observations of teacher candidates, associate teachers, and the primary author, Caroline, who, as a teacher educator, initiated the lesson study activity, we examine lesson study as a means to encourage and sustain new teachers as collaborative and reflective professionals committed to ongoing inquiry and learning.

CONCEPTUAL FRAMEWORK

Lesson study relies on the “observation of live classroom lessons by a group of teachers who collect data on teaching and learning and collaboratively analyze it” (Lewis et al., 2006, p. 3). Through an iterative process of collaborative observation and analysis, teachers work through various stages:

- (Step 1) to formulate long-term goals for student learning;
- (Step 2) to develop, plan, conduct, and observe a research lesson to address these goals;
- (Step 3) to observe and record student response data during delivery of the research lesson.

(Step 4) During subsequent debriefing sessions, the lesson study team shares student response data and other observations of lesson effectiveness recorded during the research lesson delivery.

(Step 5) Teachers discuss and analyze the data to inform lesson revisions, to refine classroom teaching and learning, and to deepen their understanding of the content of the curriculum.

Documentation of this process allows for critical reflection on teacher professional learning and development in the next iteration.

LITERATURE REVIEW

Lewis et al. (2006) have stated a need for research into the iterative processes through which innovations can be simultaneously “honed” and more fully theorized. They predicate this need on the necessity to understand the subtle nuances of an innovation before subjecting it to summative research. As Lewis et al. argue, “ideally, a strong theoretical base as well as extensive descriptive information are in place to provide the intellectual foundation for understanding causal relationships” (p. 8). In this section we outline our understanding of the importance of introducing and developing lesson study in initial teacher education as one strategy to equip teacher candidates to enter the profession with an inquiry stance that will allow them to approach their work as research in action and negotiate their own career learning (Hiebert, Morris, Berk, & Jansen, 2007).

The development of professional learning communities is widely viewed as important for ongoing teacher learning. Through a culture of collaboration, teachers in professional learning communities work together to set goals, plan lessons, and use results-focused data to reflect on and improve their teaching practice as part of their commitment to optimal student learning (Eaker, DuFour, & Burnette, 2002). Such a culture stresses the importance of both the individual and the social context of learning. As Billett (2001) states, descriptions of work-based learning must acknowledge the “independence of individuals acting within the interdependence of the social practice of work” (p.22).

Although teachers in North America have a long history of professional collaboration, the notion of observing student learning in a colleague’s classroom and engaging in reflective dialogue with partner

teachers is not common. Indeed, the teaching culture in North America is typically described as isolating because the majority of teachers spend their days in their own classroom, often with the door closed (Stigler & Hiebert, 1999). In comparing the teaching cultures of the United States with Japan, Stevenson and Nerison-Low (2002) comment that: "[t]eaching in the United States is conducted in an individualistic, isolated fashion. . . . In contrast, becoming a teacher in Japan is to engage in extensive interaction with other teachers throughout the teacher's career" (p. 139). Teacher professional learning is not just a case of adding new information to an individual's existing knowledge base; it is an ongoing task in which "teachers need to restructure their knowledge and beliefs, and, on the basis of teaching experiences, integrate the new information in their practical knowledge" (van Driel, Beijaard & Verloop, 2001, p. 140). For Hiebert et al. (2007), "teaching expertise . . . includes planning to learn from teaching (one's own teaching and the teaching of others) and revising practice based on the data collected" (pp. 47-50). Cochran-Smith and Lytle (1999) reiterate the role of both the individual and the community in which they work in the development of an inquiry stance towards professional knowledge. They write, "through inquiry, teachers . . . make problematic their own knowledge and practice as well as the knowledge and practice of others" (p. 273).

We believe that the incorporation of lesson study into pre-service teacher education allows beginning teachers to engage meaningfully with inquiry into teaching. Takahashi and Yoshida (2004), describing the stages of lesson study, highlight many of the inquiry features that Hiebert et al. (2007) discuss:

- (1) formulate long-term goals for student learning and development;
- (2) plan, conduct, and observe a research lesson designed to bring these long-term goals to life, as well as to teach particular academic content;
- (3) carefully observe student learning, engagement, and behaviour while a colleague delivers the research lesson; and
- (4) discuss and revise the research lesson and the approach to instruction based on observations.

However, we also understand that lesson study is in a nascent stage of its North American journey, and that many of the "specific processes

that make lesson study work . . . are only beginning to be understood" (Lewis et al., 2006, p. 9).

Initially implemented in the United States on the strength of only two Japanese elementary school examples in mathematics and science (Fernandez & Yoshida, 2004; Lewis, 2002; Lewis et al., 2006), lesson study has grown rapidly over the past 10 years. In the period from 1999 to 2003, "lesson study emerged at more than 335 U.S. schools across 32 states and became the focus of dozens of conferences, reports, and published articles" (Lewis et al., 2006, p. 3). This rapid growth, often without a deep understanding of lesson study's nature or process, has led to concern that lesson study may come to be seen as another fad, potentially "sending it to the graveyard that holds so many once-promising educational innovations, many of which were never fully understood or implemented" (Lewis et al., 2006, p. 8).

As a structured collaborative process for teacher development that is new both to school-based and university-based educators, researchers are beginning to consider lesson study in the North American context (Fernandez & Chokshi, 2002; Lewis, 2003; Taylor, Anderson, Meyer, Wagner, & West, 2005). However, given the concern for the thoughtful utilization of lesson study as a strategy to improve teaching and learning, Lewis et al. (2006) have proposed that three types of research into lesson study are needed: the "development of a descriptive knowledge base; explication of the innovation's mechanism; and iterative cycles of improvement research" (p. 3). Within this third research area, we locate this research because to date there have been few studies that have examined lesson study in North American initial teacher education. Specifically, we investigate the potential for lesson study to be utilized in initial teacher education, while concurrently "building theory about how it works" (Lewis et al., 2006, p. 7).

METHOD, DATA COLLECTION, LESSON STUDY PROCESS, AND RESEARCH ISSUES

Method

We base this article on data drawn from research conducted with three related groups of participants. The first group was 60 teacher candidates enrolled at a metropolitan Canadian university in a nine-month, full-

time, consecutive, elementary Bachelor of Education program during the 2005-2006 academic year. The second group consisted of 20 field practicum associate teachers representing 20 different field placement schools in the city in which the university was located. The third perspective is that of Caroline (the pre-service instructor and first author). Our use of multiple data sources provides opportunities to integrate the emergent themes in the data from a variety of perspectives, an important consideration in qualitative research (Patton, 2002).

For this article we draw on the responses of all three groups of participants: reflective papers submitted by the teacher candidates, notes compiled as a result of a group discussion with the associate teachers, and the first author's own reflective notes recorded throughout the duration of the activity. We analyzed these data for themes relevant to the primary research objective.

Data Collection

For this research, we employed a range of data sources. We asked each teacher candidate to submit a 4-6 page reflection at the completion of his or her first four-week practicum of the academic year detailing their lesson study experience. Their reflections emphasized the benefits and challenges of the activity, the changes they recommended to the assignment if it were assigned for future groups of teacher candidates, and their overall assessment of the activity as an (in)appropriate or (un)helpful activity as part of an initial teacher education program. Although this assignment (see Appendix A) was a requirement of the program, it was recorded only as complete/incomplete and was not graded. In accordance with the university's ethical review process, the students volunteered to have their reflection papers considered as data for research purposes and indicated their consent for this use at the conclusion of the course. Twenty-six teacher candidates submitted their reflective papers as data for this study.

After the first, four-week practicum during which the teacher candidates engaged in lesson study, Caroline (the first author), met with 20 practicum associate teachers in a group discussion of the assignment. Like the teacher candidates, the associate teachers were asked to discuss their experience with an emphasis on

- (1) the perceived benefits and challenges of lesson study,
- (2) their overall assessment of the process,
- (3) recommendations for changes to the assignment, and
- (4) the appropriateness and helpfulness of the activity as part of the practicum experience and the initial teacher education program.

We did not audio-tape the group discussion because the space, available equipment, and number of participants did not lend themselves to a clear recording. Caroline took notes during this conversation to capture the general thoughts, suggestions, and input of the associate teachers.

Throughout the process, and as the instructor assigning the lesson study activity, Caroline maintained a written record of her reflections relating to the assignment, noting challenges and successes in the early discussions of lesson study and the assignment with teacher candidates and associate teachers. She also made ongoing notes of the benefits and challenges observed during the planning and implementation of the lesson study activity.

Lesson Study Process

As part of their first four-week practicum placement, and as part of the pre-service mathematics curriculum course, Caroline asked 60 elementary teacher candidates assigned to teach grades 1 to 8 in elementary schools to engage in groups of two to four in a lesson study activity situated around a shared mathematics lesson (Appendix A). At the commencement of the course, the teacher candidates were required to read *The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom* (Stigler & Hiebert, 1999). Using this text, the teacher candidates discussed the process of lesson study and considered its benefits and challenges. Based on these conversations, the teacher candidates organized their own lesson study groups (groups of two to four) according to their teaching assignments and practicum school locations. Caroline instructed the teacher candidates to follow a lesson study process that revolved around the shared planning, teaching/observation, and reflection of two research lessons. This arrangement meant that each group of teacher candidates worked together to design a research lesson. One teacher candidate then delivered the lesson to a class of students

while the other group members observed and made note of student learning resulting from the lesson. The group met after the delivery of the research lesson to share their observation data and to discuss lesson revisions to improve student learning during the next iteration of the lesson. Another teacher candidate then delivered the revised research lesson to a new group of students and the process of observation, data collection, reflection, and group discussion to revise the lesson was repeated.

Research Issues

We feel it is important to briefly address two issues relating to lesson study research in North America. Lewis et al. (2006) raised these issues: first, those related to data collection and, second, the lack of a clear causal warrant. The collection of data for lesson study research tends to be “fine-grained and collected from very small samples and without formal attention to inter-observer reliability” (Lewis et al., 2006, p. 7). Relying on the personal reflection of the teacher candidates, the group discussion of the practising teachers, and Caroline’s field notes, we acknowledge this concern in our research. However, we believe that focusing our research on the benefits and challenges of lesson study as an assigned activity within an initial, elementary teacher education program has allowed us to use a “combination of theory, empirical study, and logical analysis to establish the validity of the measure [while simultaneously] building theory about how it works” (Lewis et al., 2006, p. 7).

The second issue is the lack of a clear causal warrant, through which an innovation may work in a local context without a precise understanding (if indeed such is possible) of the causal relationships between the innovation and the local context. Despite this lack of understanding, the innovation may become practice for others outside that local context “if other individuals have opportunities to see it in action and are persuaded by what they see” (Lewis et al., 2006, p. 8). We understand that many factors will impinge on the perceptions of the participants whom we have recorded, such as the level of trust between teacher candidates and their associate teachers. However, in seeking the perceptions of different groups of participants, we have sought deeper engagement with diverse understandings of the benefits and challenges of lesson study.

ANALYSIS AND DISCUSSION

Despite the increasing interest in North America in lesson study, scholars have conducted little research into the potential use of lesson study in initial teacher education programs. This article has considered lesson study as a means to foster an inquiry stance and professional learning community among teacher candidates while concurrently “building theory about how it works” (Lewis et al., 2006, p. 7). Our data indicate that substantial benefits can be gained, and significant challenges addressed, if faculties of education use lesson study as an educative strategy. These benefits and challenges are similar to those that have been identified when lesson study has been used in the context of in-service teachers’ professional development (Gill, 2003; Lewis et al., 2006; Richardson, 2000; Taylor et al., 2005).

Engagement in a process as nuanced as lesson study brings with it many potential pitfalls, even for experienced practitioners (Chokshi & Fernandez, 2004). For inexperienced practitioners, such as the teacher candidate participants in this study, there is the real danger that the reported professional learning may be “incidental learning knowledge picked up as a by-product of the lesson study process” rather than the “purposeful” learning of more experienced practitioners (Chokshi & Fernandez, p. 523). With these caveats in mind, analysis of our data supports much of the existing research on lesson study among in-service teachers, while also offering new insights into its utility for teacher candidates. Our conclusion is important because the elucidation of emergent links between the processes of lesson study and professional learning can further the “conversation about the essential features of lesson study, . . . make the innovation mechanism more visible, focus data collection and illuminate zones of wishful thinking” (Lewis et al., 2006, p. 5). This research also allows us, as teacher educators, to critically appraise the process through which lesson study was introduced to the participants in the study, and allows us, over time, to move closer to the realization of the conjecture that lesson study “strengthens three pathways to instructional improvement: teachers’ knowledge, teachers’ commitment and community, and learning resources” (Lewis et al., 2006, p. 5).

The analysis and discussion is structured to give voice to the three groups involved in the research: teacher candidates, practising teachers, and the course instructor. We consider their experiences in three areas. First, we look at their perceptions of the process as a whole. Second, we examine their perceptions of the benefits of lesson study in an initial teacher education program. Third, we discuss the challenges they experienced during their engagement with lesson study. Drawing from these analyses and discussions, we provide recommendations for change and the application of the process in initial teacher education.

The Process of Lesson Study in an Initial Teacher Education Program

The participants in this study described planning and organizing lesson study activities before and during the first practicum as challenging, yet very rewarding. In terms of the process, the teacher candidates, course instructor, and associate teachers identified several factors as challenges: (a) time, (b) scheduling and administrative issues in schools and in the program, (c) the persistent individualistic culture of teaching, (d) the content of the lessons, and (e) some associate teachers' lack of familiarity with the concept of lesson study.

A common concern of teacher candidates was the perception of insufficient time to collaborate and debrief during a busy school day. The busy schedules and external commitments that impinge on teacher candidates constricted the amount of time available for collaboration outside the school day.

Outside the control of teacher candidates were the administrative structures of the schools in which they worked. For example, the timetables in some schools were not conducive to shared observation of the research lesson and some associate teachers were not willing to adjust their schedules to accommodate shared observation. This unwillingness to change may be a reflection of the individualistic nature of North American teaching, discussed by Stevenson and Nerison-Low (2002). Further, very few school placements allowed teacher candidates to be placed in the same grade within the school. Consequently, most lesson study groups found themselves planning two or three lessons, all for different grade levels, some spanning from grade 1 to grade 8, and few teacher candidates had the opportunity to deliver a revised lesson plan.

For some teacher candidates, dissimilar teaching assignments among lesson study group members fragmented the process and detracted from the aims of lesson study. As one teacher candidate noted:

I think the original intent of the lesson plan was defeated by obstacles that presented themselves during the process, such as not having a partner from the same grade in the same school to work with. My experience was that this process turned into simply creating a lesson plan on my own and having a partner from a different grade come in to observe it. (teacher candidate, MK)

Some teacher candidates indicated that they preferred to work alone and were uncomfortable working in groups. For these teacher candidates, the collaborative nature of lesson study was difficult:

In terms of the planning and implementation process, it becomes almost an inconvenience to plan a lesson with a colleague . . . Also, certain teacher candidates may find it difficult to work with other teacher candidates whose philosophy on teaching and teaching methods differ with theirs. (teacher candidate, SN)

Other organizational issues included the content of the lessons to be taught. The assignment asked teacher candidates to plan a mathematics lesson, but for a few teacher candidates, this task was not possible because their schedules did not include mathematics, or the associate teacher did not permit the teacher candidate to teach mathematics. Finally, some teacher candidates suggested that their associate teacher's insufficient understanding and support of lesson study posed challenges to their experience with the process. As one teacher candidate observed:

For me, there seemed to be a disconnect between teacher candidates and the process. We were carrying out the task for the sake of completion and not doing the process justice. For some, the essence and meaning of lesson study were lost. Better coordination between teacher candidates and more support from our associate teachers would definitely improve this learning experience. (teacher candidate, MCH)

For Caroline, the instructor, who was assigning lesson study for the first time, flexibility in terms of project requirements and maintaining focus on the process of lesson study were essential. It was important for the assignment to be evaluated as complete or incomplete so the teacher

candidates could focus on both their learning and their students' learning throughout the process, and avoid anxiety over grade consequences when the school setting and practicum circumstances were not ideally suited to lesson study. It was also important to be flexible in terms of the subject taught for the purpose of the research lesson because not all teacher candidates had an opportunity to deliver a lesson in mathematics. Furthermore, she noted that some associate teachers were reluctant to support the project by providing time for their teacher candidates to observe student learning in another classroom during the delivery of the research lesson. Some associate teachers contacted the instructor for clarification about the assignment. All associate teachers received a copy of the assignment outline (Appendix A) and a letter describing the process (Appendix B)) and most who participated in the group discussion following the practicum indicated that once they saw what the teacher candidates were doing, they were more supportive of the idea and saw lesson study as beneficial for teacher candidates in spite of the time involved:

I like that lesson study allows teacher candidates to become teachers with a strong sense of the importance of team work. Most of us work in our own rooms and don't make time to share with colleagues, or to learn from them. New teachers have a great opportunity to set new standards for working together and continually learning as teachers. (associate teacher, NK)

Benefits of Lesson Study in an Initial Teacher Education Program

All participants in the lesson study projects found the experience beneficial in terms of the professional development of the teacher candidates and the quality of student learning that resulted from the well-constructed plans developed for the research lesson. Both teacher candidates and associate teachers reported that the lesson study process gave them greater insights into the needs of their students, the curriculum, teaching strategies, and the benefits of genuine collaboration among teachers. In addition to these understandings, some associate teachers appreciated the opportunity for their own professional development relevant to lesson study because most were not familiar with lesson study prior to their engagement with this assignment. For Caroline, the course instructor, the major benefit was the capacity of lesson study to

establish and maintain professional learning communities among teacher candidates and between teacher candidates and their associate teachers.

The many benefits of lesson study that both the teacher candidates and their associate teachers identified are similar to the benefits that research in lesson study among experienced teachers has identified:

- (1) deeper understanding of curriculum content,
- (2) rich discussion of teaching strategies with a focus on student needs,
- (3) professional collegiality and appreciation of the insights shared by colleagues,
- (4) increased capacity for meaningful observation of teaching and learning,
- (5) increased confidence that a lesson is well-planned,
- (6) strengthening “weaknesses,” and,
- (7) extended benefits of collaboration outside the lesson study process (Lewis, 2003).

Although improved lesson design and capacity to observe teaching and learning are significant at all points of a teacher’s career, for teacher candidates who are beginning their careers, the lesson study experience heightened their understanding of the need to know their students:

The process, as I experienced it, is immensely beneficial to teacher candidates. Coming face to face with the value of knowing your students, knowing your class dynamic and knowing your colleague is an important lesson for us to take with us into our teaching careers. (teacher candidate, MW)

The assignment also provided opportunities for teacher candidates to experience and reflect on the benefits of teacher collaboration. Their reflection ranged from reduced feelings of isolation and heightened confidence to increased capacity to accommodate the diverse needs of students:

At times, teachers may feel alone and helpless, especially novice teachers like me who have limited teaching experience. Working together can minimize anxiety and boost confidence in teaching. (teacher candidate, MD)

The collaboration, assessment, and reflection that are part of lesson study allowed [my partner] and I to create a lesson that accomplished the curriculum goals, incorporated relevant models and activities, engaged the class, and reached many of the different intelligences in the class. (teacher candidate, AV)

A deeper understanding of both the conceptual and perceptual knowledge needed to teach reform-based mathematics, as discussed by Stigler and Hiebert (1999), helped to facilitate an increased openness to different teaching and learning approaches among teacher candidates. One teacher candidate explained:

I accept that initially it was difficult for me to let go of treating the math learning process as being a teacher focused, rote formulaic learning enterprise, as had been my experience as a child. I found the experience rewarding and challenging at the same time. The students appeared to gain confidence in their abilities because they had obtained a better understanding of math concepts by being involved in problem solving activities which emphasized different ways of arriving at a solution. Based on my experiences I am committed to the lesson study process, as I believe that this approach will make me a more effective math teacher by exposing me to a wider variety of perspectives. (teacher candidate, AF)

For teacher candidates, to undertake such reflection is important. LaBoskey (1994) states that:

the fundamental goal of teacher education is to teach novices to temper their judgments, to replace unsubstantiated opinion with . . . grounded belief that is constantly in flux and open to revision . . . good teaching requires thoughtful, caring decision making wherein educators are able to move beyond the tendencies of their own biographies and the apparent mandates of their current circumstances to envision and consider alternative interpretations and possibilities. (p.9)

In addition to these fundamentally individual reflections, the teacher candidates also described three key principles of teacher professional learning that Wilson and Berne (1999) have summarized as “opportunities to talk about subject matter, opportunities to talk about teaching and learning, and opportunities to talk about teaching” (p. 117). Actively involving teachers in learning communities that are refining their practices

through a commitment to critical collegiality supports these principles of professional learning.

In terms of redefining practice, teacher candidates valued the observations of their lessons and the comments that flowed from sharing those observations:

The debriefing that followed lesson delivery was very informative. Tanya's [teacher candidate lesson study partner] observations and my observations of the lesson were very different. Discussions with Tanya revealed how every aspect of a lesson can determine student outcome. I realised that decisions that I originally thought were insignificant such as using chart paper or the blackboard, number selection, and wording such as 'division' compared to 'groups of' can have a significant impact on student understanding, group performance, and student outcome. (teacher candidate, AV)

We noted that teacher candidates also saw the role of colleagues to provide observations as crucial to identify areas for improvement. The observations became a catalyst for further reflection and learning:

I found working with colleagues a great collaborative experience. . . . We could discuss each of our ideas and come up with one that was probably better than our individual ideas. . . . The sharing of resources was extremely useful. During the debriefing we were able to share ideas and examine the lesson critically to improve the lesson and student learning. (teacher candidate, JY)

Several teacher candidates discussed professional discourse in great detail. In particular, they saw the capacity to both give and receive feedback as a powerful method to examine and improve practice:

I learned how extremely beneficial it is for teachers to work together, share ideas, and collaborate with one another. Not only does it help you improve as a teacher, but it also brings the teachers closer together, so there is a sense of community. (teacher candidate, TT)

Receiving feedback/ constructive criticism from my [associate teacher] is something I welcomed because I knew she has a wealth of knowledge with 30 years of experience. In this case, I was worried that I would become defensive when I heard Mamie's suggestions/feedback. However the complete opposite occurred. All of Mamie's suggestions were valid and insightful. The manner in which she delivered critical feedback was very profes-

sional. She always started with a positive and then suggested a variation or modification to the task. (teacher candidate, AM)

Following the observation, my colleague and I discussed her lesson and how she may improve it in the future. At first I felt very nervous and cautious about my input. What right did I have to give advice? This is a question that ran through my mind as I was picking apart what I thought was a pretty successful lesson in the first place. Contrary to my thoughts, I was taken aback to see that my comments were well appreciated and highly respected. I believe I underestimated her openness to criticism. By this point, I felt very excited and open to having my colleague attend my class and put her input into my lesson design in order to maximize success. (teacher candidate, MD)

Caroline, as course instructor, found the required reading and discussion of *The Teaching Gap* (Stigler & Hiebert, 1999) during the first week of classes and the subsequent collaboration most beneficial for teacher candidates. The discussion centred on teaching and learning as culturally constructed activities that differ internationally. Teacher candidates in our study with education experiences outside North America were able to elaborate on significant cultural differences. Learning about the Japanese emphasis on professional collaboration, lesson research, and reflection that attributed to the academic success of students in Japan, the teacher candidates were motivated in their commitment to develop a professional learning community.

The lesson study assignment focused teacher candidate discussions on curriculum, pedagogy, inclusive programming, and accommodating student needs. Throughout the planning phases, the teacher candidates shared curriculum knowledge, reminded colleagues of concepts outlined in readings, and recalled constructivist pedagogy, and their own learning with regard to lesson planning. Further, they discussed the specific needs and accommodations needed to support the learning of students in their classes.

In addition to their commitment to professional collaboration, and thorough, informed, and inclusive lesson planning, the teacher candidates developed a sense of professional responsibility to engage in on-going and focused observation of student learning to determine the effectiveness of their teaching. Teacher candidates articulated in their reflective papers that they had developed an understanding that student

learning, assessed through thoughtful and sustained observation, is the best measure of their effectiveness as teachers and that through ongoing assessment and reflection, they could best determine a future course of learning for their students.

Additionally, teacher candidates, who developed critical skills to provide constructive feedback in a professional and supportive manner, also became more skilled in giving and receiving feedback, an ability that will be essential in their professional lives, not just with their colleagues, but with students and parents as well.

Caroline, the instructor, identified many benefits of lesson study as a teacher preparation activity. She required teacher candidates to engage in discussions related to their practice and provided a supportive context for such conversations, a practice that contributed to the normalization of rich professional dialogue among teacher candidates. That collaboration and dialogue had become a valued aspect of their practice became evident as teacher candidates took initiatives to create their own professional learning communities beyond the expectations of the lesson study assignment to support each other in activities ranging from ongoing lesson planning, unit planning, preparation for employment interviews, and class presentations. What distinguished these ad hoc professional learning communities from other groups that might have formed regardless of the assignment experience was the explicit focus on receiving feedback from colleagues. These were not groups formed for the mere purpose of supportive sharing. These groups were formed as opportunities to invite critical feedback and suggestions for improvement.

Challenges of Lesson Study in an Initial Teacher Education Program

Teacher candidates in this study identified time as a significant challenge to the lesson study process. Busy in their practicum classrooms, they often spent their preparation periods collaborating with and being mentored by their associate teachers. Teacher candidates also found it difficult to meet before or after school because so many of their group members had outside commitments. The associate teachers also found time challenges significant, and all research participants questioned whether current timetabling and funding in Ontario schools could provide the

time required for authentic and meaningful participation in lesson study. A teacher candidate faced stark reality:

The current school system does not seem to support the amount of time and rescheduling that would be necessary for teachers to participate in lesson study. . . . I do not anticipate a huge jump in the regulated amount of appointed prep time, so it seems that lesson study will be added to a long list of extra work that teachers are already faced with. (teacher candidate, TD)

Not surprisingly, concern regarding a shortage of time for authentic and meaningful collaboration is echoed in studies of lesson study groups among practising and experienced teachers in the field (Lewis, Perry, & Hurd, 2003). Working within a school culture that does not support collaboration is another challenge that participants in this study identified as did teachers in other lesson study research (Taylor et al., 2005).

Some challenges identified in this study are particular to the context of teacher education and as such make a significant contribution to the growing body of literature examining lesson study in North America. In particular, issues related to the associate teacher and teacher candidate relationship are significant, especially with regard to the need among associate teachers for professional development in lesson study, and the need to build flexibility in the field not only to enhance the learning of teacher candidates during their practicum, but also to develop a sense among associate teachers that, although the primary location of learning during practicum is the classroom, numerous other sites exist for learning within the school, and other associated schools. This study also reinforces the observations of Gill (2003) regarding the need for a greater commitment to, and support for, the benefits of authentic and meaningful collaboration among teachers to improve teaching and learning.

Some teacher candidates experienced tension with their associate teachers in relation to the assignment during practicum. Although all associate teachers had little knowledge of, or experience with lesson study, some responded favourably to the assignment, but others were less enthusiastic about an academic assignment during practicum that required teacher candidates to observe teaching and learning in other classrooms for two periods/lessons during the four-week practicum. Additionally, the instructor fielded many concerns from teacher candi-

dates who were unable to receive direction from their associate teachers regarding a lesson that they could plan as part of the lesson study project. Although most lesson study groups established their lesson foci and began developing lesson plans approximately two weeks prior to practicum, several teacher candidates were not given an indication from their associate teacher of curriculum progress and options for a lesson focus until well into the practicum, thus limiting the time for focused planning among the lesson study group.

Inter-personal tensions among group members also challenged the process. Some teacher candidates found it difficult to work collaboratively and preferred to work alone. It might be argued that collaborative tasks during the teacher education program are essential for teacher candidates who prefer to work independently, especially in light of current school improvement initiatives that are founded on the creation of collaborative learning communities in schools.

A small number of teacher candidates, who did not embrace the dialogical and collaborative process of lesson study, argued for efficiency and the delegation of activities over the shared journey of authentic collaboration. Others found that coming together in a respectful, professional, and friendly manner was essential. A teacher candidate described the importance of collaboration in lesson study:

*The disadvantages of the process are conditional. The experience can be negative if the relationship with your partner (or group) is simply professional and respectful. Teachers who are working together mustn't be strangers. They must know each other. This will eliminate nervousness and trepidation when trying to express one's ideas and concerns (there will **always** be concerns [emphasis in original transcript]). It also alleviates the perception of personal attacks when an idea comes under scrutiny. (teacher candidate, MW)*

Some teacher candidates argued that their lesson study activities were hampered by their insufficient knowledge of the students in their classes. The teacher candidates had six days of observation and interaction with the students in their classroom prior to practicum:

This was an intense and fascinating experience once I became aware of how I was thinking. It demanded an intimate knowledge of each student and the dynamics of the group –

not easy for a Teacher Candidate with only a few days with the group. The experience can be negative if [emphasis in original transcript] the teachers are not very familiar with their students. I'm positive our lesson could have been stronger and more effective if we'd spent as much time with our students as our Associate Teachers had since September. (teacher candidate, MW)

SUMMARY

We argue that the benefits and challenges of lesson study are similar in both initial teacher education and in in-service education when used as a professional development strategy with teachers. The benefits include the development of teacher candidates' new insights into the needs of students, an increased awareness of different teaching strategies, and the importance of collaboration. The challenges are mainly focused on the issue of time and school administrative structures that impede teacher collaboration.

The teacher candidates were enthusiastic about the concept and even those who were uncomfortable with collaboration stated that they benefited from lesson study in terms of their professional development and the quality of the research lesson that resulted.

Our recommendations for future iterations centre around:

- (a) increasing associate teacher knowledge of lesson study,
- (b) providing direction to associate teachers regarding their pivotal role in identifying a lesson focus for the research lesson that 'fits' with the students' current learning goals, and
- (c) finding ways to address time constraints.

One of the teacher candidates who taught for three years in Japan and had experience with lesson study in Japan suggested that students might have a larger role to play in the lesson study process than is typically provided in traditional Japanese lesson study models. Specifically, this teacher candidate argued that teachers could benefit from the inclusion of students during the debriefing stage:

Once I had completed my lesson, I realized my students were fundamental in any future lesson study. As closure, I gave my students five minutes to voice their opinion about the

lesson. I was really impressed with their comments and suggestions. They told me things that worked and how I could change certain aspects of the lesson. As expected, some comments were silly, but in general, they gave me a lot of constructive feedback, more than my associate teachers and colleagues. This was the surprise. Since they were the focus and the main participants, they would be one of the best sources of feedback. I don't remember the Teaching Gap recommending a time or place for student involvement, and similarly in Japan, I also don't remember Japanese students actively participating in lesson study discussions. I think students should be given an opportunity to criticize or praise a lesson since we are trying to improve our teaching for their benefit. In my case, the closure was a wonderful experience and I learned a lot in such a short time. (teacher candidate, MCH)

The instructor, Caroline, decided that flexibility in the assignment was paramount because teacher candidates found themselves in diverse classroom settings and encountered challenges that influenced their ability to engage in lesson study during practicum. If lesson study becomes a required component of an initial teacher education program, we recommend that it be ungraded to minimize the anxiety of teacher candidates when their experience is less than ideal. The emphasis will remain on the reflective nature of the journey and the learning that takes place along the way. None of the participants in this study argued that lesson study did not have merit and many argued that it should be expanded within the school system.

The assignment was very rewarding for teacher candidates. Discussion of *The Teaching Gap* (Stigler & Hiebert, 1999) at the beginning of the program set a dialogical tone around notions of teaching and learning as culturally constructed and laid the groundwork for professional collaboration among the teacher candidates. The lesson study assignment provided a framework for teacher candidates to engage in focused discussion of curriculum, pedagogy, inclusive programming, the accommodation of diverse student needs, and lesson effectiveness. In addition, the assignment provided opportunities for teacher candidates to develop skills in giving and receiving constructive feedback to improve their practice. Furthermore, if the statements of teacher candidates are an indication of their future action as teachers, graduates of this program will enter the field with a strong sense of commitment to ongoing professional learning and development that includes collaborative relationships

with colleagues and ongoing reflection of teaching effectiveness as measured through student learning.

CONCLUSIONS AND IMPLICATIONS

The benefits and challenges of lesson study have been considered in the context of the need to understand the “iterative cycles of improvement research” (Lewis et al., 2006, p. 3). Lesson study is an emerging trend in North American teacher development and, although some researchers have examined the impact of lesson study on the practice of teachers in the field, few studies have considered the implications of lesson study to support the development of teacher candidates in a teacher education program. This study provides significant evidence that lesson study as part of a teacher education program offers many benefits that could contribute to an enhanced culture of purposeful professional collaboration in schools that maintains a focus on the continuous improvement of teaching and learning required for active participation in the rapidly changing world of the twenty-first century.

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Caroline Chassels is a Doctoral Candidate, Sessional Lecturer, and Supervisor of Student and Personal Support Services at the Ontario Institute for Studies in Education at the University of Toronto. Before joining the faculty at OISE, she was an elementary school teacher and administrator in Toronto. Caroline's research interests include strategies to build and sustain professional learning communities among teachers and organizational responses to diversity in higher education.

Wayne Melville is an Associate Professor in Science Education. Before migrating to Canada in 2005, he taught secondary school science and mathematics in Australia for seventeen years. His major research interests are school science departments as sites for teacher professional learning and the teaching of science as inquiry.

Contact: Caroline Chassels (caroline.chassels@utoronto.ca)

APPENDIX A**LESSON STUDY ASSIGNMENT
2005-2006**

In partnership with at least one colleague during your practicum placement, you will design a lesson study activity that includes shared planning of the research lesson, reciprocal observation of research lesson delivery, reciprocal questioning of students to measure lesson effectiveness, and shared dialogue and reflection for next steps and future changes to the lesson design. In addition to one copy of the collaboratively designed research lesson plan, you will prepare and submit a 2-3 page reflection of your lesson study experience. The lesson reflection should include discussion of the collaborative nature of the activity, the benefits/challenges of this form of planning, and the ways in which the lesson study activity informed your teaching practice.

Draft of lesson study plan prepared in class October 20, 2005 (can be submitted for formative feedback)

Reflection and lesson drafts/revisions due December 1, 2005

Note: One set of lesson plans showing revisions is required from each lesson study team. Each TC is to submit an individual reflection.

LESSON STUDY CHECKLIST:

- Work with at least one colleague to plan the lesson. Exemplar lessons from the Ministry of Education are recommended as the basis for the lesson study.
- The lesson plan should include questions for the observing TC(s) to ask students in order to determine the effectiveness of the lesson by observing student outcomes
- As with other lesson plans, submit one copy of the lesson plan to your AT for feedback.
- During the practicum, one TC delivers the research lesson while the other observes student learning.
- Following first delivery of the research lesson, the lesson study team meets to debrief their observations of student learning and to suggest changes to the plan for delivery by the next team member.
- The remaining lesson study team member(s) delivers the lesson and the student learning is observed.

- Meet once more to debrief the experience.
- Use the guidelines provided above to prepare a reflection on the lesson study process. This reflection will be graded complete/incomplete and is due December 1, 2005.

(NOTE: If you do not have a partner at your school to plan with, you may plan with someone from another school, but partner with someone at your school for the observation and sharing component. ALSO, if the recommended math strand exemplar lesson does not fit with your AT's plans for your practicum, you may plan a lesson in another subject area that is more suited to the expectations of your AT. In some situations you may not be able to have a planning partner. In this case, you may plan the lesson on your own, but share the lesson with an in-school observation partner.)

APPENDIX B

October 3, 2005.

Dear Associate Teachers and Liaisons,

Thank you once again for your commitment to supporting our teacher candidates! I'm writing to provide you with some information about a new practicum assignment that we have introduced to our teacher candidates (TCs).

As you are probably aware, several schools and school districts have been working with the Japanese lesson study model as an approach to building professional learning communities among teachers and as a way to enhance student learning through teacher collaboration. Our North Option teacher candidates have read *The Teaching Gap* (Stigler & Hiebert, 1999) and they have been introduced to lesson study strategies in class and through the viewing of a Ministry of Education/York Region lesson study overview video. Our new assignment will provide our teacher candidates with an opportunity to continue to develop their understanding of lesson study and the ways in which working with colleagues can help them improve their teaching practice.

The assignment involves the following:

- 1) Teacher candidates work in groups of 2 or 3 to plan and deliver a mathematics research lesson provided by the Ministry of Education as part of the Mathematics Curriculum Exemplars (<http://www.edu.gov.on.ca/eng/document/curricul/elemcurric.html>);
- 2) During practicum, teacher candidates will observe each other as they deliver the research lesson they planned together. The TCs will have an observation checklist to focus their observation on the lesson and student learning that results from the lesson. The effectiveness of the lesson will be reflected in student learning assessed by the TCs through thoughtful questioning and observation;
- 3) After the first delivery/observation, the TCs will meet to discuss and reflect on the research lesson and to suggest ways that the lesson might be changed before it is delivered by the next TC;
- 4) After all group members have delivered the research lesson, the TCs will meet to debrief the process and to once again revise the lesson to improve its capacity to foster student learning;
- 5) Teacher candidates will prepare and submit a 2-3 page reflection of their lesson study experience and will submit copies of their original research lesson and any adjustments that were made for future lesson delivery.

I have suggested exemplar lessons in the following strands for each grade:

Grade 1 (and SK) - Number Sense and Numeration - Going to the Zoo

Grade 2 - Data Management and Probability - Spinners

Grade 3 - Patterning and Algebra - Patterns on the Hundreds Board

Grade 4 - Number Sense and Numeration/Data Management and Probability - Pizza for a Class Party

Grade 5 - Data Management and Probability - Brenda's Bike Shop

Grade 6 - Patterning and Algebra - Investigating Patterns with Tiles

Grade 7 - Measurement/Number Sense and Numeration - Saving Space

Grade 8 - Data Management and Probability/Number Sense and Numeration - Rolling in Sales

As you know, the exemplar lessons involve 2 pre-tasks and the exemplar (culminating) task. I think it would be best if the TCs could engage your students in all three lessons. Only the exemplar lesson, however, will be planned using the lesson study model. I'm hoping that the suggested strands and activities will fit with your program. If not, the TCs are prepared to look at the other exemplars for your grade level to find an exemplar lesson that works for you and your students.

For those TCs assigned to split grades and Kindergarten (for which there are no exemplars), I've asked that they adjust the ministry lesson so that it will accommodate students in both grades (SK and grade 1 in the Kindergarten example). Many of the learning expectations are appropriate for combined grades.

In addition to providing time in your program for the TCs to deliver the pre-task and exemplar lessons, I'm asking that you allow them time to meet with their lesson study group for one period before the lesson is delivered (not necessarily on the day of lesson delivery) and for one period after the lesson is delivered (again, not necessarily on the same day). For a very few teacher candidates, they will be partnering with TCs in other schools due to teaching assignments. These teacher candidates will need a bit more time for the process as they will have to travel between schools for the shared planning, observation, and debriefing.

I'm very excited about the opportunities that this assignment will provide for the students but I will be looking for your feedback regarding the process. I'll talk more about the assignment at our Partnership meeting this Thursday, October 6th but individual circumstances may require adjustments to the assignment so please don't hesitate to give me a call if you have any questions, concerns, suggestions, or challenges that may make this assignment not possible for your situation!

Sincerely,

Carrie Chassels