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Learning to learn from teaching: a first-hand account of lesson study in Japan

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Abstract

Purpose – Over the last 15 years, Japanese lesson study has attracted growing interest as an alternative to conventional teacher professional development. Despite its popularity and results, the descriptive knowledge base of authentic lesson study in Japan is still limited to a few cases from elementary math and science teachers. The purpose of this paper is to contribute to the expansion of the lesson study descriptive knowledge base by offering a first-hand account of two American educators' experience with lesson study at the secondary level while working as licensed teachers in a Japanese school.

Design/methodology/approach – Using an autoethnographic case study methodology, the authors document their personal experience working through a complete lesson study cycle with a ninth grade English course in Japan, systematically reconstructed from field texts and deliberate co-construction techniques.

Findings – The paper describes significant cognitive and socio-cultural adjustments that were required to participate in the process, and highlights essential skills and mindsets for lesson study: fashioning a coherent lesson storyline, articulating and testing working hypotheses, relying on evidence to guide planning and reflection, embracing collective ownership of improvement, and persisting with problems over time.

Originality/value – This first-hand account provides a distinctive inside look at lesson study from an American perspective and offers a rare description of Japan-based lesson study at the secondary level. The detailed records and insights contribute to researchers and practitioners emerging understanding of prerequisite skills for lesson study.

Keywords Japan, Professional development, Reflective practice, Teaching, Lesson study

Paper type Research paper

1. Introduction

Over the last 15 years, Japanese lesson study has attracted growing interest in the USA as an alternative to conventional teacher professional development. As of 2004, educators from over 300 American schools had participated in some form of lesson study, and the numbers have continued to rise (Lesson Study Research Group, 2004; Yoshida, 2012).

Fitting lesson study into US schools raises fundamental questions. What are the unique features that constitute lesson study in the Japanese context? What adjustments are needed for American teachers to engage in lesson study? What aspects of lesson study are inherent to Japanese culture and might need intentional development for the US context?

To help address these questions, Lewis *et al.* (2006) outline a lesson study research agenda and suggest one priority is to "expand the descriptive knowledge base" (p. 4).

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Specifically, they call for more Japan examples to better understand features of lesson study in its native context and appropriately adapt the process to US settings. The authors also recommend these descriptions to expand in scope and range beyond the few existing elementary math and science cases.

This paper contributes to the expansion of descriptive cases by offering a first-hand account of two American educators' experience with lesson study at the secondary level while working as licensed teachers in a Japanese school. We believe this account offers unique value, not only by extending the descriptive knowledge base, but by providing an inside look at lesson study through the lens of American teachers and uncovering significant cognitive and socio-cultural adjustments that were required to participate in the process. We begin with a brief background on lesson study, describe our use of autoethnographic methodology, provide a detailed narrative of our lesson study experience with a ninth grade English course, and close with a discussion of essential skills and mindsets for lesson study gleaned from this unique inside perspective.

2. Background on lesson study

The English term lesson study comes from the Japanese words *jugyō kenkyū* which are commonly translated as "lesson study" since *jugyō* means "lesson" and *kenkyū* means "study" or "research." During a typical lesson study cycle, teachers jointly select a long-term investigative theme, gather available research, study the curriculum, and design a detailed lesson for a selected topic related to the theme. One team member teaches the research lesson (*kenkyū jugyō*) while colleagues observe and collect data on student learning. An extensive discussion follows the observation, focussing on evidence collected and proposed lesson revisions. The team redesigns the instructional plan based on these reflections and chooses a member to re-teach the lesson. The process culminates with an open house where additional faculty and guests observe the lesson and collect data on student learning. After a formal debriefing and analysis that includes the guests, teachers reflect on their experience, document findings, and consider questions for subsequent lesson study cycles (Lewis, 2002; Stigler and Hiebert, 1999).

As a form of instructional inquiry, lesson study is consistent with studies of effective professional learning, which emphasize shared goals, collective responsibility, authentic assessment, self-directed reflection, stable settings, and supportive leadership (e.g. Carroll *et al.*, 2010). In contrast to generic professional development or compliance-driven reforms, lesson study begins in the classroom and focusses on teachers gaining knowledge and making adjustments through collaborative investigation of individual lessons. As Stigler and Hiebert (1999) explain, each lesson holds ecological validity: "Even a single lesson retains the key complexities – curriculum, student characteristics, materials, and physical environment [...] that must be taken into account as we try to improve classroom teaching" (p. 122).

2.1 History of US lesson study

The history of US lesson study began in the early 1990s when Makoto Yoshida, under the guidance of Professor Jim Stigler, initiated plans to follow a lesson study group in Japan for his dissertation at the University of Chicago (Lesson Study Research Group, 2004). At nearly the same time, educational researcher Catherine Lewis encountered lesson study while observing Japanese classrooms (Lewis, 1995). Over the next decade, Yoshida, Stigler, Lewis, and other researchers began formal investigations of lesson study, which overlapped with completion of the Third International Mathematics and Science Study (TIMSS) video study. These parallel research efforts culminated in the

first scholarly publications on lesson study (Lewis and Tsuchida, 1998; Stigler and Hiebert, 1999), and prompted rapid spread of lesson study throughout the USA and other parts of the world (Sarkar Arani *et al.*, 2010).

Numerous reports and studies have since been published, describing US lesson study projects, including obstacles encountered and conditions necessary for implementation (e.g. Fernandez *et al.*, 2003; Lewis, 2002; Perry and Lewis, 2008; Yoshida, 2012)[1]. A few recent projects have also demonstrated positive teacher and student outcomes related to lesson study (Lewis *et al.*, 2006, 2012; Perry and Lewis, 2010, 2011).

2.2 Limited descriptive knowledge base

Despite the growing popularity of lesson study and increasing volume of publications, the descriptive knowledge base of lesson study *in Japan* is still limited to a few fully developed Japanese cases. The two most extensive examples are the dissertation on elementary math lesson study by Yoshida (1999) and an elementary science case documented by Lewis (2002). Other useful cases, such as an elementary math study by Suzuki (2012), have also emerged which provide partial descriptions of the lesson study process (e.g. analysis of discourse in post-lesson discussions). All of these existing cases focus on elementary math or science and are written from third-person perspective by researchers embedded in the Japanese context. There are currently no published descriptions of full lesson study cycles from Japanese secondary schools and no published first-person accounts of lesson study in Japan. Expanding the descriptive knowledge base with more examples from Japan remains an important priority to increase our understanding of authentic lesson study and guide the design of research and implementation in other contexts (Lewis *et al.*, 2006; Yoshida, 2012).

3. Methods

This study contributes to the expansion of the lesson study descriptive knowledge base through a retrospective, first-person account of two American teachers' lesson study apprenticeship at the secondary level while embedded as licensed teachers in a Japanese K-12 school. We used autoethnographic case study methodology, a research approach that employs detailed description and systematic analysis of personal experience to bring new insight and understanding to cultural experience (Ellis *et al.*, 2011). Chang (2007) defined autoethnography as cultural (etho) in its interpretation, autobiographical in its content (auto), and ethnographic in its research methodology (graphy).

This three-part definition suggested autoethnography to be an appropriate method for this study for three reasons:

(1) the research goal was to critically analyze the cultural adjustments and learning experiences of American teachers immersed in Japanese lesson study and uncover insights that might contribute to US implementation efforts;

(2) the authors' autobiographical experience provided rare primary source content and rich, detailed descriptions essential to accomplish this objective; and

(3) translation of personal experiences and recollections into credible research data required a process of systematic analysis and triangulation of sources unique to ethnographic methodology.

3.1 Data collection

A common pitfall with autoethnography is the tendency to rely exclusively on memory and recollection as data sources, leading to potential selectivity or embellishment of details. To guard against these risks, we relied on multiple sources of data, referred to as "field texts," to discipline our analysis and to "help fill in the richness, nuance, and complexity of the landscape" (Clandinin and Connelly, 2000, p. 83). Among the methods and sources of data were the creation of visual tools such as diagrams of meeting locations and classrooms; lists of key people, events, decisions, and memories; reconstructing timelines and routines; collecting journals, correspondence, pictures, calendars, and electronic files; and interviewing or corresponding with colleagues who shared the events and experiences. The data collection spanned multiple years of compiling, sorting, and organizing these field texts to systematically reconstruct the narrative, relying heavily on co-construction techniques and reflective conversations with Japanese teaching colleagues to verify accuracy of details.

3.2 Analysis and interpretation

Data collection, analysis, and interpretation took place concurrently, involving five major iterations. The first three iterations focussed on reconstructing diagrams of events and meeting locations, recalling challenges and epiphanies, and securing additional lesson study artifacts. During the fourth and fifth iteration we scrutinized the text for embellished memories or under-represented challenges, and checked for transparency of personal struggles and shortcomings. Each iteration of analysis stimulated further writing, and each episode of writing inspired further lines of inquiry, data collection, and analysis. Throughout each phase of narrative reconstruction, we simultaneously recorded notes on the cognitive and socio-cultural adjustments required to participate in the process and the essential skills and mindsets for lesson study. We also compared emerging findings with other key studies from lesson study research literature.

Involvement of Japanese teachers and students. After leaving Japan and concluding our immersion experience, we corresponded or met face-to-face with Japanese colleagues on multiple occasions and inquired about their project memories and insights. When there was insufficient information to expound on their perspective, we erred on the side of under-reporting rather than embellish details and diminish credibility of the research. No input from students was gathered after we left Japan, and therefore student voices are represented only by our historical record.

4. First-hand narrative account

In February, 1994, as Yoshida and Lewis were beginning their exploration of lesson study in Japan, the authors of this paper, arrived in Saitama prefecture (25 miles north of Tokyo) to begin full-time assignments at a Japanese K-12 school in Urawa city. A separate elementary, middle, and high school were all uniquely contained within the same building, sharing the same staff and resources. As the only non-Japanese faculty members, we gradually developed fluency with Japanese through evening language classes and national standardized Japanese proficiency exams. Over a period of seven years, we taught oral English communication classes, designed international exchange programs for students, and coordinated professional development and exchange programs for Japanese teachers and US university professors. We also participated regularly in various forms of authentic Japanese lesson study.

4.1 Project context

The term lesson study encompasses a wide continuum of reflective practices which share a common feature: the observation and analysis of live classroom research lessons by a group of teachers (Lewis *et al.*, 2006). In our experience, some observation events were schoolwide activities, others were departmental, and some were associated with district-level education research groups (*kyōiku kenkyū kai*). This is consistent with variations of Japanese lesson study described by other researchers (Chichibu and Kihara, 2013; Lewis and Takahashi, 2013). Within-school observation events were called *kōnai kenkyū jugyō* (within school research lessons); public observation events were referred to as *kōkai kenkyū jugyō* (public research lessons).

Our most formative lesson study experience was in a district-level research group for English teachers. The Japanese school year stretched from April to March divided by trimesters. Each trimester, one school hosted a research lesson observation for the district. After visiting another junior high school during first trimester, the research group nominated our school for the second event in late October.

4.2 Author roles and project timeline

In the early planning stages, our English department identified the ninth grade oral communication class as the investigative context for this project. BAE (first author) taught this course in a team-teaching format, assisted by the Japanese ninth grade teacher responsible for English grammar, reading, and writing classes. GGE (second author) participated in planning and observation sessions for the research lesson and helped prepare materials for guest observers. Figure 1 provides an overview of project phases, participants, and timeline.

4.3 Teachers' room: home base for lesson study planning

Our daily professional routines in Japan were defined by membership in the school community and a strong sense of reciprocal accountability. Each day began by

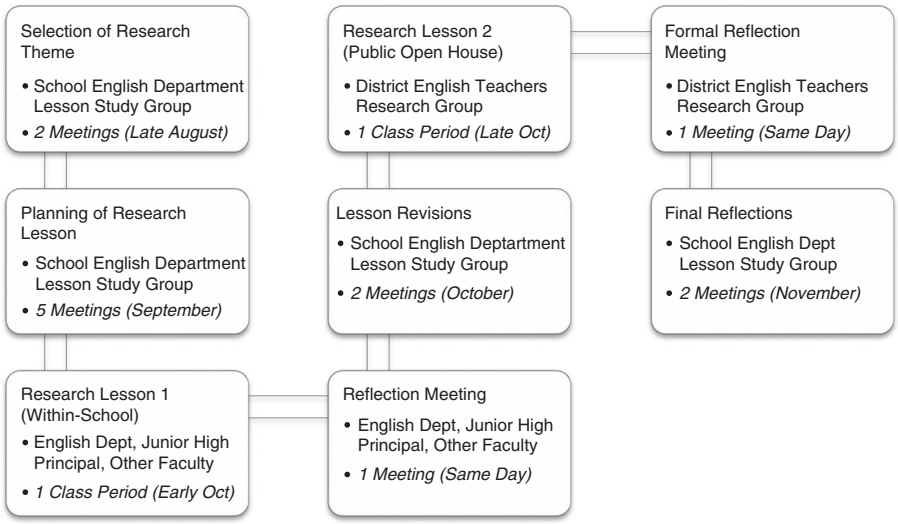

Figure 1.
Lesson study project phases, participants, and timeline

switching from outdoor to indoor shoes at faculty lockers and proceeding upstairs to the *shokuin shitsu* ("staff room" or "teachers' room"; see Figure 2) where all teachers' desks were arranged side-by-side and grouped by departments. Daily opening and closing meetings took place in the *shokuin shitsu* at 8:05 a.m and 5:05 p.m. Elementary and middle school teachers spent approximately 22 hours per week in direct classroom teaching; high school teachers spent about 16 hours. Between periods, teachers used the *shokuin shitsu* to collaborate, prepare, grade papers, make phone calls, or meet with students, often returning home after 7:00 p.m. This shared space was also where we planned for lesson study projects.

4.4 Selection of research theme

In late August, the English department convened two meetings to select a research theme for our school-based lesson study work, which would supplement our participation in the district-level project. After reviewing recent evidence (e.g. student work, classroom observations, survey responses) and discussing the school-wide emphasis on "independence and self-reliance" (*jiritsu*), the group settled on "fostering students' initiative in communication" as the departmental theme for the upcoming lesson study project. BAE and the Japanese team teacher would teach the research lesson on two occasions: once for preliminary within-school observation, and a second revised lesson for formal district-level observation in late October.

4.5 Planning the research lesson

With this research theme in mind, the English team studied the ninth grade curriculum and the specific unit for October which focussed on building vocabulary and conversation skills for immediate past recreation activities. We designed a specific lesson and dialogue exercise to help students communicate about recent summer vacation experiences. Table I shows the "plan to guide teaching and learning" including the research theme, goals, and design rationale. It also includes the evaluation plan and example dialogue exercise.

Building on a rough draft from the Japanese ninth grade teacher, we designed five learning activities as outlined in the "lesson progression" (see non-italicized

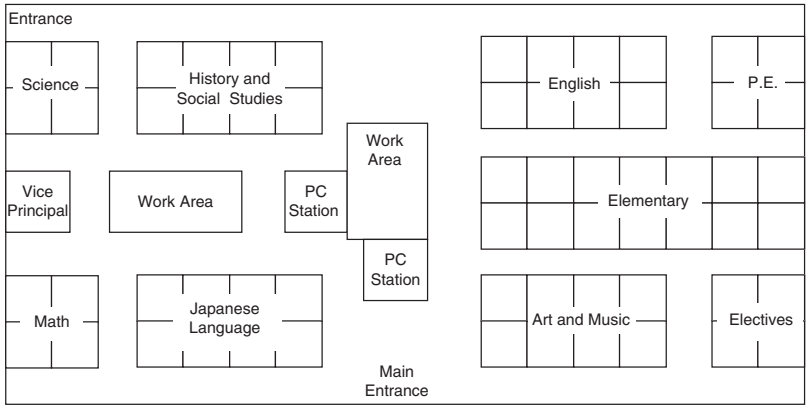

Figure 2.
Diagram of *shokuin shitsu* (translated as "staff room" or "teachers' room")

Course: 9th Grade Oral Communication
Unit: Communicating about Recreation and Vacation
Lesson Title: What did you do this summer?
Materials: Handouts with example dialogue
Research Theme: Fostering students' initiative in communication
Goals for the Lesson: To verbally communicate and sustain dialogue about immediate past (or recent past) vacation activities

Unit Goals:

1. To build vocabulary for listening and speaking about degrees of pleasure or displeasure (like or dislike) for various recreational activities
   Key vocabulary: not bad, so-so, wonderful, terrific, very disappointing, fantastic, nothing special, pretty boring, awful, really great, all right, terrible
2. To build vocabulary for listening and speaking about vacation activities
   Key vocabulary: went away, stayed home, went to the beach, went to the country, went to xxx, went skiing, hosted relatives, visited relatives
3. To develop skills in listening for gist of a conversation about recreation (the main point or essence), details regarding recreation (what someone did), and attitude toward the experience (pleasure or displeasure)
4. To verbally communicate and sustain dialogue about immediate past (or recent past) recreational or vacation activities
   Prior Lessons: Communicating about Food and Restaurants; Engaging in Small Talk
   Current Lesson: Communicating about Summer Vacation Activities
   Upcoming Lessons: Communicating about Shopping and Movies

Prior Student Knowledge:
Students should be familiar with vocabulary from previous lessons for expressing likes and dislikes with various recreational activities
Since the lesson takes place in fall, students will have recent memories of summer vacation and several of the ninth grade students were participants in the school's *beikoku kenshū* (America study) program
Students will have prior exposure to many familiar words associated with travel and vacation which are incorporated into the Japanese language through katakana (separate Japanese alphabet used specifically for popular foreign words). We will want to anticipate those words (such as Disneyland and California) and help students break habits of resorting to katakana pronunciation patterns

Design Rationale (working hypothesis):
By introducing a sample dialogue structure for informal conversation about recent past events (specifically summer vacation) we hope to foster students' ability to construct and personalize similar responses and dialogue about their own experiences. The lesson is also based on the premise that memorizing and practicing authentic conversation examples combined with modeling and pronunciation guidance from a native speaker, might help students gain necessary confidence, vocabulary, and skill to communicate about recent past recreational experiences. This lesson builds on previous lessons and vocabulary for expressing likes and dislikes with various recreational activities as well as restaurant dining experiences. It also paves the way for the upcoming lessons where students will express similar attitudes or impressions regarding shopping and movies

Evaluation Plan:
Immediate: Teachers will keep notes on a clip board for each presentation pair regarding pronunciation, intonation, memorization, and delivery (whether students express dialogue with a sense of meaning). These notes are for formative purposes not for official grades
End of Term: Listening Test with CD-ROM

Table I.
Plan to guide teaching and learning

(*continued*)

Example Dialogue:
A: How was your summer?
B: Not bad, but it went by too fast
A: Did you travel anywhere?
B: Yes. I went to California for a week to visit relatives
A: What did you do?
B: We spent time at the beach and also went to Disneyland
A: Did you enjoy the beach?
B: It was all right, but the weather was too hot. I got a terrible sunburn
A: Did you like the food in America?
B: It was ok. But I missed Japanese food

Table I.

sections of Table II). After a brief opening greeting, we planned to model the sample dialogue for students, followed by ten minutes of teacher-supported pair practice and memorization. Each student pair would then perform the dialogue in front of class, concluding with additional pronunciation and intonation practice based on observed patterns of persistent difficulty.

The premise of our design was to create a sequence of activities that scaffolded students' communication ability, providing a sample dialogue structure for future use to formulate and personalize their own responses. We hypothesized that memorizing and practicing authentic conversation examples, combined with modeling and pronunciation guidance from a native speaker, might help students gain necessary confidence, vocabulary, and skill to communicate about recent past recreational experiences.

Since the district observers were English teachers and fluent in both languages, we created an English translation of the standard lesson study template. The detailed format required anticipation of expected student and teacher responses (see column 2 of Table II). It also required specific goals and rationale for each lesson segment (see column 3), specifying how the activity fit into the overall lesson storyline and how it might advance students' ability to initiate and sustain English conversation. The team spent approximately five hours in planning meetings discussing and drafting these notes for the initial research lesson.

4.6 Within-school research lesson and reflection meeting

The school had two classrooms of ninth grade students (9A and 9B). We presented a preliminary within-school research lesson (*kōnai kenkyū jugyō*) to the 9A students while the English department, junior high principal, and several additional faculty members, participated as observers. Each observer received a copy of the lesson plan, equally divided areas of the room to focus attention on a small group of students, and lined the perimeter to document students' participation in the lesson.

Immediately following this observation, the English teachers introduced us to the Japanese practice of conducting post-lesson *hansei kai* (reflection meetings) where we examined evidence and discussed potential lesson revisions. *Hansei* (self-critical reflection) is a fundamental aspect of Japanese culture and routines. For every major event, project, or undertaking, school leaders scheduled a *hansei kai* to thoroughly debrief results and intentionally plan future improvements. Teachers viewed this as an objective exercise and openly embraced feedback on the research lesson.

Learning activities	Expected student reactions/ teacher responses and support	Goals of this segment/methods of evaluation
Opening Greeting (1 min) T: How's it going? S: Great. How's it going? T: Great	(Part of regular classroom routine)	Typically students begin each lesson by bowing to the teacher and providing a greeting in Japanese. Since this is an English Oral Communication class, we have adopted a routine of having students begin each lesson with a short informal greeting that they would commonly experience in everyday English conversation
Introduction to Lesson *(4 min)* *Japanese teacher to explain topic for this lesson: "What did you do this summer?" (written on the board prior to the class)* *Teachers model a sample conversation for the class about their personal summer vacations. Repeat the conversation twice so students can practice listening* *Ask for volunteers to explain the gist and details in Japanese*	*Expect students to be listening intently to example conversation and trying to understand what their teachers did over the summer*	*Goal is to start the lesson by giving students an authentic example of the kind of conversation we are hoping they will learn to produce in the lesson* *Look for facial expressions, eye-contact, levels of attention and engagement*
Warm-Up Discussion in Pairs *(5 min)* *Have students work in pairs to talk about their summer vacation in English using whatever language they can come up with* *Provide students with two simple prompts on the board as conversation starters: "How was your summer vacation?" and "What did you do?"*	*Expect students to have difficulty generating sentences to articulate their experience and will revert to using a mixture of Japanese and English* *Teachers circulate to as many pairs as possible simply to listen and see how much English students are able to generate. Avoid interjecting or correcting at this stage. Try to circulate to all students*	*The purpose of this segment is to engage students in a brief initial attempt to generate conversation without any significant assistance or dialogue structure, both as a diagnostic to see how much language they can produce on their own, and to help them measure their own progress from the beginning to the end of the lesson* *Listen for how much language students are able to produce and what sentence patterns they use to express themselves*
Introduce Dialogue Exercise (10 min) Teachers handout an example dialogue exercise with a full sequence of exchanges about a student who spent his summer in America and visited Disneyland in California Teachers model the conversation for the class one time as they read along American teacher reads each line of dialogue and has students repeat phrases to practice pronunciation Japanese teacher checks for understanding and calls on students to translate segments of the dialogue into Japanese Teachers model the conversation once more	Students will likely struggle with English words that are also incorporated into Japanese katakana (such as Disneyland and California) Students will likely struggle with the words: where, anywhere, terrible Will also need to practice intonation on: "Not bad," "It was all right," and "It was ok" Students may be unable to translate "it went by too fast" Teachers will listen for other words that are problematic (not anticipated above) and provide additional practice for students	The focus here is to provide students with an example dialogue structure they can place in their minds so that they can formulate similar sentence patterns on their own in the future. We also want to prepare them for successful practice by modeling correct pronunciation and intonation patterns Listen for areas of difficulty with pronunciation or intonation. Listen for degree to which students speak the lines with meaning vs reading them off in a monotone style without a sense of understanding

Table II.
Lesson progression

(*continued*)

Learning activities	Expected student reactions/ teacher responses and support	Goals of this segment/methods of evaluation
Dialogue Practice in Pairs (10 min) *(15 min)* Students practice in pairs and work to gradually produce the dialogue from memory	Some students will continue to read the conversation to each other from paper without trying to gradually commit the dialogue to memory. Other students will stop practicing out loud and just work on memorizing the dialogue independently Also expect some students to just read or speak lines without performing them as dialogue or speaking them with a sense of meaning Teachers rotate to provide feedback on pronunciation and intonation. Encourage students to gradually work on memorization and provide additional teaching for students who are repeating the lines as a memorization task without a communicative purpose *Teachers will discipline amount of time with each pair and try to circulate to all students* *Identify common patterns or areas of difficulty across the class as well as various sub-groups (e.g. struggling, intermediate, advanced)*	The pair work creates an opportunity to not only memorize the dialogue but practice speaking the words and phrases multiple times to gain confidence and work on pronunciation. It also gives the teachers an opportunity to listen to students and provide instructive feedback Listen for areas of difficulty with pronunciation or intonation. Listen for degree to which students speak the lines with meaning vs reading them off in a monotone style without a sense of understanding
Presentations (30 min) *(15 min)* Have each student pair present the sample dialogue in front of the class (from memory) *Randomly select five student pairs to perform the dialogue in front of class (from memory)*	Students will struggle with volume, eye-contact, and intonation. Some will likely race through the dialogue rather than performing as an actual dialogue and thinking about the words Teachers provide feedback after each pair and have the whole class work on areas of intonation or pronunciation that were problematic	The pair presentations give teachers the opportunity to point out to the whole class common areas of difficulty with pronunciation and follow-up with additional choral repetition. It also provides students with a post-lesson benchmark on their progress compared with their initial attempt at the start of the lesson *The change to randomly selected pair presentations still provides students with incentive to practice, knowing they might be called on to present in front of class. In addition, using random pairs rather than all students saves more time for modeling and practice during earlier lesson segments*

(*continued*)

Table II.

Learning activities	Expected student reactions/ teacher responses and support	Goals of this segment/methods of evaluation
Final Practice (3-5 min) Practice choral repetition once more, pausing to focus on most problematic sections Practice with American teacher as A and then whole class as B. Then switch. Japanese teacher helps lead B Japanese teacher provides reminder about grammar assignment which is due tomorrow	Expect volume and clarity of choral repetition to increase during this final exercise as students speak the words with greater confidence and understanding	The intent of this final segment is to provide some closure to the class period and give students a sense of accomplishment in their ability to perform the dialogue when compared to the start of the lesson

Note: Italicized sections reflect changes and additions made to the research lesson between the first and second implementation

Table II.

4.7 Lesson revisions

The *hansei kai* resulted in several changes to our instructional plan and sequence of learning activities. The most significant adjustment was having teachers open with a short model dialogue about their own vacations followed by a similar warm-up exercise where student pairs would spend five minutes freely exchanging questions about summer break (see italicized sections in Table II). We carved out time for this by changing final presentations from "all student pairs" to a "random selection of five pairs."

The junior high principal also suggested paying closer attention to our use of *kikan shidō* (between-desks instruction), a Japanese term for the guidance and instruction teachers provide while roving between desks to monitor and assist students. He pointed out that teachers focussed most of their *kikan shidō* time on a few students who were least comfortable with English, while other students received limited guidance or feedback. He suggested less time with each pair, circulating throughout the room to gain a global perspective of student progress and identifying patterns that warranted whole-class attention. We incorporated these suggestions in the second column of the lesson plan under "teacher responses and support."

4.8 Public research lesson and reflection meeting

For the official public research lesson *(kōkai kenkyū jugyō)* and final *hansei kai,* we modified the 9B class schedule and asked students to assemble after school. We reconstructed the classroom in a large meeting space with extra room on the perimeter for district guests. Observers received a small packet including a general school overview, description of the overall English curriculum, and a copy of the lesson plan to guide observations. Observers remained standing throughout the lesson and moved around quietly on the perimeter during pair work to carefully listen to students' dialogue. They diligently recorded notes on their printed copies of the lesson plan and preserved evidence of what they saw and heard during each learning activity.

The lesson proceeded much as outlined but with an unexpected result during the new opening pair exercise (recently added after the first *hansei kai*). Despite numerous errors in sentence structure and word choice, many students surprised us by

producing multiple exchanges about their vacations and sustaining English dialogue for several minutes. This was our first time observing students in spontaneous conversation before they practiced the example dialogue.

Following this warm-up exercise, we proceeded with the other lesson segments: modeling the sample dialogue, leading choral repetition, providing time for practice, and randomly selecting five pairs for final presentations. Each pair performed the dialogue effectively in terms of memorization and delivery. Students struggled with a few proper nouns (e.g. California, Disneyland), and reverted to Japanese pronunciation for these words. Intonation was slightly exaggerated by a few students and most pairs still struggled with the phrase, "It was alright." One student pair had a less convincing delivery, repeating lines rapidly without a sense of communicative purpose. We finished with additional practice and choral repetition focussed on these areas of difficulty.

After dismissing students for the day, we reconfigured the room for a formal *hansei kai*. Observers sat in student desks and the two presenting teachers sat in front, facing participants. A district leader sat next to the presenting teachers and moderated discussion using the same structured protocol we had observed in previous lesson study events. He thanked us for hosting the research lesson and asked the presenting teachers to initiate the *hansei kai* with comments and reflections on the lesson. BAE made a brief statement complimenting students' effort to master the sample dialogue and noted several challenges with pronunciation requiring further attention in future class periods. The other presenting teacher expressed partial satisfaction with student engagement and conversation but highlighted her ongoing struggle with several students who refused to use English during activities and reverted to Japanese during dialogue exercises. She cited specific examples from the research lesson and solicited advice for engaging reluctant speakers. Prompted by the moderator, she also explained the connection between the lesson design and our schoolwide emphasis on independence and self-reliance.

The moderator then invited observers to report on their lesson observations and findings related to the research theme, "fostering students' initiative in communication," and the specific lesson goal, "sustaining dialogue about recent past vacation activities." One participant shared several observations from the opening warm-up exercise where students used a wide range of vocabulary and sentence patterns: "I noticed at least two pairs were exchanging questions such as, 'Did you get a jet-lag? Did you gain weight? Did you shopping? Was it expensive?' This suggests to me," she continued, "that perhaps the students were already capable of initiating more conversation than the lesson anticipated, since the example dialogue structure provided later in the lesson was more simplistic than the sentence patterns students independently created."

Building on this observation, a second participant described another student pair that tailored the sample dialogue to make it more relevant and personal. "They adjusted the dialogue," he explained, "while keeping an eye on the teacher as if in fear of breaking rules of the activity. For example, one student added a question about favorite rides at Disneyland and the other student changed his response about American food, saying: 'I love to eat hamburgers.'"

The observer suggested, "These responses provide evidence that the exercise had effectively captured students' interest, but they also suggest memorizing the example dialogue may have constrained students from applying sentence patterns in a more authentic way. Perhaps," he proposed, "it would be productive to have students

revise the dialogue, make it more personal, and then receive feedback on necessary corrections as they practice."

Another participant noted similar observations. She suggested an alternative closing activity where students would again practice talking about their own summer vacations, as they did in the opening warm-up, but this time using the new sentence patterns acquired during the lesson.

The moderator paused the group several times to synthesize observations or comments and discuss implications related to the design rationale. He also probed for insights and applications for other courses and grade levels.

4.9 Final reflections from English team

Over the next several weeks, we joined our English department colleagues for two additional meetings to revisit observations and findings from the *hansei kai* and compile final project reflections. The evidence collected over the course of both implementations exposed important shortcomings in our lesson design and distinctly altered some of the department's basic assumptions about teaching oral communication.

First, we had dramatically underestimated students' ability to engage in spontaneous conversation about immediate past events. While we selected conversation topics of high interest to students, we had over-structured dialogue practice in ways that constrained them from engaging in authentic and personally relevant exchanges. We especially noted observers' suggestions for allowing students to revise the dialogue and receive feedback as they practiced. We also appreciated the idea of closing the lesson with a final pair exercise, repeating the opening conversation about students' own summer vacations. This would encourage immediate application of the new dialogue structure and provide a pre-post benchmark of student progress during the lesson.

Second, we discussed observational feedback which highlighted a disproportionate emphasis on lowest performing students. The examples recorded of student pairs secretly improvising with the script clearly revealed how our lesson design had limited students' opportunity for more advanced dialogue and spontaneous conversation. The department agreed to continue collaborating around lesson ideas and activities that would appropriately challenge and meet the needs of intermediate and advanced students without neglecting the lower performing subgroup. Based on the principal's insight from our first research lesson, we also agreed to monitor our "between-desks instruction" (*kikan shidō*) to more equally distribute time and attention throughout the class, identify patterns of student progress or areas of need, and make appropriate mid-lesson adjustments.

Lastly, teachers discussed the importance of intentionally and regularly evaluating alignment between lesson design and stated learning goals. The written goal for this lesson was to foster students' initiative in communicating and sustaining dialogue about immediate past vacation experiences, but we operated with a separate unstated goal of having students perform a well-rehearsed example dialogue with accurate pronunciation and intonation. This distracted us from the lesson purpose and restricted opportunities for student initiative with English.

This final lesson study gathering ended around 7:30 p.m., placing us among the last group of teachers preparing to leave the *shokuin shitsu* after a long day of teaching. As a daily routine beginning around 5:30 p.m., teachers would gradually take turns making a humble exit. Before leaving, each teacher would perform a

slight bow and quietly say, "*Osaki ni shistsurei shimasu.*" (I am deeply sorry for being so rude as to leave before you). Any remaining faculty still working at their desks would typically respond with, "*Otsukaresama deshita.*" (You must be very tired. Thank you for your hard work). As we completed these long hours of multiple reflection sessions, we recall exiting the room that evening, bowing deeply and expressing the standard apology for our "early exit" as a dozen or so teachers (mostly from the English department) remained working. The choral reply, "*Otsukaresama deshita*," carried a whole new meaning, complete with memories of all we had accomplished and learned together through the lesson study experience.

5. Insights gained from our apprenticeship: essential skills and mindsets

The preceding account provides a unique perspective of American teachers living in Japan and immersed in authentic Japanese lesson study. In this section we summarize the skills we needed to develop and shifts in mindset we experienced while learning to participate alongside Japanese colleagues as active members in the lesson study process. We also incorporate references to other relevant literature, corroborating, and extending findings from previous lesson study research.

5.1 Fashioning a coherent lesson storyline

Throughout the lesson study process, Japanese teachers challenged us to shift our thinking and grow our capacity in fashioning a coherent, well-scripted lesson storyline – the overall sequence or progression of lesson activities that helps students advance toward identified learning goals. Teachers began the planning phase by building consensus around the main elements of the storyline and relied on this as a unifying framework to guide planning, implementation, and observations. The storyline evolved from group discussion around a series of key questions like the following:

> What do we want students to understand or be able to do at the end of this lesson or series of lessons? What evidence will we collect during and after the lesson to help us evaluate student progress and study the relationship between teaching and learning?
>
> What prior knowledge and background experience will students bring to this lesson? What will most students already know or what assumptions will they have? What common misconceptions might we expect? What related content or pre-requisite knowledge will be covered prior to the lesson?
>
> What combination and order of learning activities will help students progress toward these learning goals? How will each individual activity connect and build on the previous activity? How will it pave the way for subsequent learning activities? What are the specific teacher and student roles for each individual activity that will best facilitate the desired outcome?

As American-trained teachers working to participate in this process, we had no prior experience systematically addressing these questions or fashioning a storyline to guide the construction of a detailed research lesson. Our experience had largely focussed on fragmented planning of individual lesson elements, managing efficient distribution of time, and incorporating a variety of learning activities or delivery methods. We paid limited attention to the coherence and flow of the larger narrative structure and how the sequence of activities combined to support lesson goals.

Previous research has emphasized the value of the storyline as part of the lesson study planning process and documented its absence in studies of US teaching. Yoshida (1999) compares the lesson progression to the "script of a play" (p. 103). Lewis (2002) refers to the "drama or sequence of experiences that will propel students" toward desired lesson outcomes (p. 64). While not specifically referencing lesson study, Roth and Garnier (2006-2007) point out the need for American teachers to "create more coherent content storylines" for development of effective science lessons (p. 21).

In addition to creating coherence during the planning process, our experience highlights the value of the storyline during lesson implementation where it serves as an operational guide to clarify teacher and student roles. The use of *kikan shidō* provides a helpful illustration. Before this lesson study project, BAE typically approached all pair work sessions with a singular mindset of circulating to students who needed the most attention. The junior high principal helped us recognize that the teacher's role during student pair work – what we chose to focus on, how long we spent with each pair, what we chose to say or not say – had a specific instructional value related to the overall lesson storyline. We recorded these *kikan shidō* reminders in the "teacher responses and support" column of the lesson plan and thoroughly reviewed these notes prior to the second implementation. In this way, the storyline functioned much like a teacher global positioning system during the lesson, not only as a reminder of the lesson sequence but also the specific teacher actions and decisions essential for each learning activity.

The storyline played an equally important role during reflection and revision. In the account reported here, in addition to the notes about *kikan shidō*, the group added two opening exercises to the beginning of the storyline and altered the structure of the final segment to make time for these additions. The storyline provided the group with an accessible, shared framework for productively identifying and discussing these key lesson segments and modifications.

5.2 Articulating and testing working hypotheses

Another area of emphasis we observed with Japanese colleagues was the continual effort to articulate rationale for each element of the instructional design. As we composed the "plan to guide teaching and learning" (see Table I) the Japanese teachers crafted a working hypothesis for how this sequence of activities addressed the lesson, unit, and overall project goals. They did the same for each individual lesson segment, explaining goals, and rationale for the learning activity in the far right column of the lesson progression. During the post-lesson *hansei kai*, the moderator facilitated analysis of these ideas and suppositions based on evidence collected from observations. Even when lesson results revealed gaps in reasoning behind the design, as was the case with the project reported here, having a recorded hypothesis or rationale made it possible to reflect meaningfully on the lesson and make revisions based on our latest findings.

This repeated emphasis on justifying and explaining lesson choices was unlike anything we experienced with lesson planning in the USA. We were accustomed to writing lesson objectives and identifying learning activities. We generally understood the importance of selecting activities aligned with intended outcomes, but there was no cognitive process in place for deliberately articulating and monitoring these choices.

Other research projects have reported similar findings regarding US teachers. In the Fernandez *et al.* (2003) study, US teachers selected the research theme of "fostering

students' problem solving and responsibility for learning," but as they developed lesson plans, this goal was "noticeably absent from their conversations" (p. 174). The TIMSS video studies reflect similar patterns. Analysis of eighth grade algebra lessons in the USA revealed that when teaching problems designed to help students grapple with concepts and make connections, US teachers instead converted lesson activities into a series of procedural tasks that did not promote conceptual thinking (Stigler and Hiebert, 1999). Both sets of findings point to the absence of a clear working hypothesis and the underdeveloped skill of articulating rationale for how instructional choices influence learning outcomes.

Learning to incorporate this additional element as part of the lesson study process helped us think more carefully about cause-effect relationships between instructional choices and student learning – to better understand and predict how teaching influences learning and how student responses, in turn, influence teaching moves. For example, when students surprised us with their ability to produce spontaneous English conversation, it compelled us to rethink our working hypothesis and reconsider assumptions about how students learn to communicate. It prompted us to question existing instructional practices (e.g. asking students to memorize example dialogues) and increased our curiosity in alternative approaches. We discovered the purpose of conducting a carefully planned research lesson was not to produce an exemplary lesson or evaluate individual teachers, as was our typical experience with classroom observations in the USA. Instead, the purpose was to create a laboratory for collective inquiry. The presenting teacher was simply a vehicle for testing out these carefully crafted hypotheses so that a community of teachers could observe and study the effect on student learning.

5.3 Relying on evidence to guide planning and reflection

A third critical skill required for lesson study was the effective use of evidence to guide planning and reflection. The Japanese teachers relied on evidence to support their work at each stage of the process, beginning with the use of student work, observation records, and survey data to guide selection of a research theme. During instructional planning, teachers documented key indicators of progress and methods of evaluation for each successive learning activity. These notes were preserved in the far right column of the lesson plan as a tool to guide observers during lesson implementation. The design of the post-lesson *hansei kai* also facilitated careful examination of observational data and student work products. Each comment observers contributed included specific descriptions of evidence to support their statements or conjectures. The moderator summarized these comments and probed for more details, asking for similar or disparate examples to continue the discussion. As the group transitioned from the reflective discussion to the revision process, they continued to rely on these evidence-based findings to guide lesson adjustments and future plans.

While our background and training in the USA included some emphasis on assessment and references to evidence-based decision making, we had no prior experience focussing on evidence with this level of depth and rigor. We previously associated evidence with quizzes, tests, homework, and grades but were not accustomed to analyzing classroom interactions and artifacts as potential sources of evidence. When planning lessons, we primarily focussed on identifying information, activities, and exercises for each segment of the class period but did not systematically consider points of evaluation for each instructional interval.

When observing lessons, we focussed more on teacher behaviors or superficial aspects of the classroom environment. When asked to reflect and make revisions, our first instinct was to comment on whether the lesson went as planned and whether students were generally engaged.

Previous studies have highlighted the effective use of evidence as a professional development priority for US teachers. Perry and Lewis (2008) describe how participants in a district-level project struggled to collect useful evidence and were overwhelmed trying to capture all the interactions that transpired in a research lesson. Fernandez *et al.* (2003) describe how a group of US teachers began assisting and interacting with students during a research lesson rather than concentrating on data collection efforts.

Our lesson study apprenticeship exposed similar underdeveloped skills but it also provided a unique context for improvement. Through the example of our colleagues, we eventually developed a new set of cognitive disciplines for collecting student data during observations and supporting post-lesson comments with clear references to evidence. This was modeled for us by lesson observers who focussed observations on small groups of students and carefully recorded notes for use during the *hansei kai* (e.g. utterances of students' spontaneous conversation about jet-lag and shopping, or carefully preserved observations of students secretly altering the example dialogue). These experiences broadened our understanding of classroom evidence and heightened our awareness of the data sources available for monitoring student progress and guiding instructional decisions. They also helped us recognize that if the goal was to improve teaching as measured by evidence, then insights gained from instructional miscues could be just as valuable as insights gained from instructional successes.

5.4 Embracing collaboration and collective ownership of improvement

As illustrated with the teachers' room diagram (Figure 2), our lesson study work was situated within a cultural context defined by collaboration and reciprocal accountability. The word for collaboration in Japanese (*kyōryoku*) contains the word for "power" and the two kanji characters in *kyōryoku*, 協力, convey the notion of "power being multiplied to the fullest extent when working together." For our Japanese colleagues, collaboration was a way of life, not a strategy adopted for selected meetings or projects. Teachers met informally throughout the day to plan lessons, discuss ideas, and visit each other's classrooms.

This spirit of collaboration and collective ownership was even more pronounced during lesson study. Teachers relied on each other to shape and guide development of detailed lesson plans. Regardless of age, experience, or who was presenting the lesson, teachers referred to the instructional plan as a collective responsibility and jointly owned set of ideas. During lesson observations, they worked as a team to distribute themselves around the room and capture evidence from multiple student perspectives. When observers offered suggestions or constructive criticism, such as the junior high principal's suggestion about improving use of *kikan shidō*, the entire group took ownership of the suggestion as a useful idea for improving our lesson.

The themes of collective ownership and collaboration are well-documented throughout the lesson study research literature. Yoshida (1999, 2012) highlights the collaborative nature of lesson study and the value of collective observations. Perry and Lewis (2008) as well as Sarkar Arani *et al.* (2010) emphasize the importance of

"professional community" as a critical condition for successful adaptation of lesson study. Stigler and Hiebert (1999) describe patterns of isolation in US schools and the need to foster a collaborative culture focussed on improving teaching. While the idea of professional learning communities is now commonplace in most US schools, the terms "learning community" and "teacher collaboration" are loosely defined and rarely used to reference the kind of commitment to joint improvement exemplified in Japanese settings (Ermeling and Gallimore, 2013).

Our experience reinforces these findings regarding the culture of collaboration as a critical foundation for lesson study and extends these findings by providing vivid examples of adjustments required for American teachers to appreciate the full scope and meaning of this term. We had previously viewed teaching as mostly a private activity with maximum autonomy and limited interaction with colleagues. We were not accustomed to such a transparent environment where teaching and learning problems (e.g. "fostering initiative with communication") became shared problems and successes were jointly celebrated. This was both exciting and challenging as it required a significant amount of trust and willingness to sacrifice our own personal preferences for the sake of a collective effort. It also required we remain objective and remember comments and suggestions, such as "improving our *kikan-shidō* practices" or "giving students more opportunity for spontaneous dialogue," were intended as feedback on the team's lesson design, not a critique of the presenting teacher.

We improved over time in adopting this collective mindset and learned to view the lesson as a joint product. We also learned to appreciate the power of conducting observations as a team, affording us a shared reference point and opportunity to see our instructional ideas in action, rather than merely share or debate best practices. Most importantly, as illustrated in our final exit from the teachers' room as the project concluded, we began to recognize our shared responsibility for teaching and learning and view ourselves as part of a culture and community that was perpetually working together toward a common set of goals.

5.5 Persisting with problems over time

A final insight gained from our lesson study apprenticeship was learning to persist with problems over time and embrace the slow, steady process of instructional improvement. The Japanese teachers spent multiple years investigating a single research theme and worked persistently to revise and improve each research lesson through several iterations of planning and reflection. They worked for long hours, celebrated small improvements, and measured progress by what they learned, not by how quickly they achieved results. We observed this same mindset during each school visitation for other district lesson study events. The widespread acceptance of this steady, relentless process is one primary way Japanese educators have worked to improve teaching practice over many decades (Sarkar Arani *et al.*, 2010; Chichibu and Kihara, 2013).

Previous research on lesson study reinforces this message of adopting a long-term perspective of improvement. Yoshida (1999) describes how lesson study teams in Japan will focus on one research theme for three to six years. Perry and Lewis (2008) explain how district lesson study leaders in the USA were still experiencing new breakthroughs in understanding after seven years of lesson study projects.

By contrast, most newly certified US teachers enter a culture that demands immediate results and offers little tolerance for incremental improvement. The training

activities we experienced in the USA were typically brief, episodic workshops and generic training sessions during faculty meetings. These events shaped our expectations of professional learning as a largely passive endeavor requiring minimal time, effort, or follow-through.

Our lesson study experience challenged us to transcend these pervasive norms and remain hungry, remain humble, and remain curious. It taught us to be patient with our own learning as well as others' and required that we embrace questions and obstacles in our practice as opportunities to grow and improve. This was not an easy adjustment. Spending many hours over a period of months to plan and study a single lesson initially seemed excessively tedious and disproportionate to the large volume of lessons in our curriculum. It was difficult to remain patient during multiple iterations of lesson revision and willingly subject well-thought out plans and rationale to further scrutiny and refinement.

Stigler and Hiebert (1999) emphasize that to integrate lesson study into US education "we must reset our expectations, cultivated over a century of school reform, and anticipate slow and steady improvement, not momentous change" (p. 132). Expanding on this exhortation, one analogy we learned for lesson study was the comparison to a rich drop of food coloring gradually diffusing through a container of water. When an ordinary drop of colorless water is released into the container there is a momentary ripple effect but no lasting or discernible change in the water's properties or appearance. By contrast, when a single drop of food coloring is added to the water, there is a deep, pervasive effect that gradually spreads through the entire container and dramatically changes the water to a rich, indelible color. In much the same fashion, the concentrated planning, observation, and persistent study of these individual research lessons produces a deep, pervasive knowledge that diffuses through daily practice and has a lasting effect on decisions about teaching and learning.

6. Conclusion

Like other researchers who have reported benefits of lesson study, we believe it has potential to profoundly change the way US educators approach improvement of teaching and learning. Our experience provides additional evidence that American teachers can learn to participate in lesson study and embrace incremental improvement. Our experience also suggests that skills and mindsets required to participate effectively may not be instinctive or easily acquired. Other US teachers learning to conduct lesson study will likely need significant time and resources to gain understanding and appreciation for what it means to fashion a coherent storyline, articulate, and test hypotheses, rely on evidence to guide reflection, embrace collective ownership of improvement, and persist with problems over time.

These observations and reflections represent a limited perspective of two American teachers in one Japanese community. Much more work is needed to address the research agenda outlined by Lewis *et al.* (2006) and to expand the descriptive knowledge base of lesson study examples from Japan. At the same time, this first-hand account provides a distinctive inside look at lesson study from an American perspective and offers a rare description of a Japan-based lesson study project at the secondary level. The detailed records and insights contribute to emerging understanding of essential skills and mindsets needed for lesson study. The account also provides direction for researchers and practitioners in the USA to investigate

methods and effects of intentionally cultivating these skills and mindsets during future research and implementation.

The success of lesson study outside of Japan will continue to depend on the level of commitment practitioners have to understanding these skills and mindsets, the rationale behind the way lesson study is designed, and the conditions that support authentic lesson study. We caution against hasty adaptations of lesson study by practitioners who are anxious to implement the model but risk compromising critical elements due to lack of sufficient knowledge and experience. Like Yoshida's (2012) description of Japanese swordsmanship (*kendō*) it is critical that we first "master the basic form" before experimenting with our own style and ideas (p. 144). Just as the lesson study process requires a persistent commitment over time to improve teaching and learning, leaders and practitioners will benefit from adopting a similar mindset of patience with the slow, steady process of effective implementation: taking time to develop a solid foundation of lesson study principles, carefully and incrementally testing out adaptations to evaluate their effectiveness, and diligently working toward deep substantive change and lasting results.

Note

1. For a more complete list of references please e-mail: brad.ermeling@gmail.com

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