

## **The Effects of Lesson Study on Classroom Observations and Perceptions of Lesson Effectiveness**

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### **Abstract**

This study examined the effects of lesson study on participants' classroom observations and perceptions of lesson effectiveness, by investigating the focus of their observations during a mathematics lesson and their ratings of the lesson's effectiveness, both preceding and subsequent to the lesson study experience. Prior to the lesson study, subjects viewed a videotaped lesson, rated the lesson's effectiveness on a scale of 1 to 10, and provided a detailed rationale for their ratings. After the lesson study experience, the process was repeated. Pre- and post-lesson study ratings were compared, and comments were categorized as relating to teacher behavior, student behavior, or other. Analyses revealed that the focus of participants' observations remained relatively constant, while perceptions of lesson effectiveness, particularly with regard to teacher instruction, showed some change. Implications of the study and questions worthy of further exploration are discussed.

**Keywords:** Teaching, lesson study, observation, effectiveness.

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*"Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling."  
Albert Bandura*

As suggested by Bandura (1977), observation is a critical part of developing any ability; and there is a growing body of research that supports the observation of both skilled teachers and peers as valuable practices for the development of teachers (Anderson, Barksdale & Hite, 2005; Madsen & Cassidy, 2005). For this reason, experiences that allow preservice and inservice teachers to observe teaching are considered a key component of teacher education and professional development, and there is even a growing movement to use observation in higher education, for the purpose of enhancing the quality of university teaching and learning (Hammersley-Fletcher & Orsmond, 2005). Unfortunately, while the assumption is that all observations have a positive effect on future teaching performance, research has shown that just sitting in a classroom observing experienced teachers does not necessarily help one learn to teach (Ben-Peretz & Rumney, 1991). Studies suggest that, in general, inexperienced and novice teachers do not possess

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well-developed observation skills (Star & Strickland, 2008), and typically attend to fewer specific teaching activities when viewing a lesson, perhaps because they lack the frame of reference to classify a teaching activity as significant or insignificant. There is also evidence that inexperienced observers do not include student outcomes as readily in their examinations of effective teaching as they do the behaviors of the teacher (Madsen & Cassidy, 2005; Van Zoest, 1995). Although being able to identify traits of effective teachers is viewed as an important component of observations, since student learning is typically considered a necessary outcome of effective teaching – a process whereby students are affected in the desired direction by the instruction, decisions, and behaviors of the teacher (Madsen & Cassidy, 2005) – it could be argued that observations might be better focused on students than teachers.

In light of this evidence, it is clear that if observation is going to be a worthwhile experience, it is crucial to prepare teachers to recognize and identify key teacher *and* student behaviors in the learning environment. The literature offers a few recommendations for making observation activities more effective (Acheson & Gall, 2003) – namely, ensuring that the observer is provided with a focus for the observation and knows what to look for, that a specific procedure is used for the observation, and that the observer strictly maintains his or her role as an observer. Additionally, within the realm of peer observation, the research suggests that individuals are most likely to benefit from peer observation if the process is approached as an experience in collaborative research in which all participants are co-researchers (Richards & Lockhart, 1992), and as an opportunity for colleagues to collect information, perhaps about a specific need or issue that they choose to look at in greater detail.

An activity that embodies all of these characteristics is lesson study. This professional development practice, which originated in Japan, engages teachers in a process of systematically examining their teaching, with the goal of becoming more effective. The process centers on teachers working collaboratively on a "study lesson" – first planning it, then teaching it, observing it, reflecting on it, critiquing it, revising it, and optionally repeating the process. To provide focus and direction throughout the process, the teachers select an overarching goal and related research question to explore. The research focus, as well as the collaborative qualities of lesson study and guidelines for peer observation, makes it the ideal candidate for fostering the development of observation skills that will positively affect future teaching. Moreover, considered by many Japanese educators as a process that gives teachers "the eyes to see children" (Lewis, 2002, p. 27), lesson study facilitates the focused observation of students, with an emphasis on gathering evidence about how the instruction, decisions and behaviors of the teacher affect student thinking and learning.

Lesson study has been established as a valuable model for improving teacher effectiveness (Dubin, 2010), and has seen growing use at all levels, from inservice and preservice teacher education to higher education. For preservice teachers, the practice serves as a mechanism for bridging theory and practice, and provides a means of initiating them into the practice of collaborative planning, teaching, observation and reflection (Burroughs & Luebeck, 2010; Chassels & Melville, 2009). Within the college environment, lesson

study has demonstrated its value for producing lively exchanges of ideas about teaching and learning among faculty, graduate students and undergraduate students in a non-evaluative setting (Alvine, Judson, Schein, & Yoshida, 2007). For all teachers, it provides opportunities to build professional learning communities, to learn from one another, and to think deeply about content and student learning (Dubin, 2010). Furthermore, the literature suggests that it possesses great potential as a powerful tool for facilitating teacher growth in content knowledge and understanding of curriculum, pedagogy, and student learning, and for developing habits of critical observation, analysis, and reflection (Burroughs & Luebeck, 2010; Chassels & Melville, 2009; Murata & Takahashi, 2002; Perry & Lewis, 2003; Stigler & Hiebert, 1999).

### **Research Question**

While the literature asserts the value of lesson study as an avenue for facilitating critical observation skills, and specifically the focused observation of students, there is no evidence to suggest that these skills become habits that are carried forward into observations outside the context of lesson study. In order to gain preliminary insight into this matter, this study began by investigating the issue with a small group of preservice teachers. Thus, the question of the study was as follows: How does lesson study affect preservice teachers' observations and perceptions of lesson effectiveness? Specifically, how do the focus of preservice teachers' observations and perceptions of lesson effectiveness compare pre- and post-lesson study?

### **Context**

The subjects of the study were 20 preservice teachers enrolled in a mathematics methods course at a small four-year university in Hawaii. The course was the second of two required mathematics methods courses required of all students in the elementary teacher education program, and included a 35-hour practicum, which was at least the third field experience for all of them. At the beginning of the course, all subjects had observed and worked in the field for at least 80 hours, and at the end of the course, those hours totaled more than 115.

A primary focus of the course was the implementation of a lesson study. The aim of the assignment was to give preservice teachers an opportunity to experience the process of lesson study, so as to facilitate critical observation and understanding of student learning, and engage them in systematically examining their practice, with the ultimate goal of helping them to become more reflective and effective teachers.

For the lesson study, the subjects were placed in groups ranging in size from three to five members, and required to complete one lesson study sequence, which included collaboratively creating a study lesson, implementing and observing the lesson, debriefing the lesson, and revising it. At the beginning of the process, the subjects received an in-depth introduction to the practice of lesson study and were then guided through a process of selecting an overarching goal for their students, as well as a related research question, in order to provide focus and direction for their work.

After collaboratively planning the lesson, each group chose one group member to teach the lesson within his or her practicum classroom, while the remaining group members served strictly as observers of the lesson. Prior to the observation, group members received a detailed explanation about the role of the observer in lesson study, and instructions about who to observe, what to observe and how to observe. Included was an explanation about observation as a window into student thinking, and an emphasis on observing students over teachers, and gathering evidence about how instructional activities affect student learning and thinking. After the lesson was taught, the groups reconvened to share their observations, to reflect, to discuss strengths and weaknesses of the lesson, and to revise the lesson accordingly. Groups were given the option to implement the study lesson for a second time, after revision, either in the same class or within a different class. If a second implementation occurred, the group was instructed to meet again to debrief and revise the lesson plan for a second time. At the conclusion of the lesson study process, groups were required to write a lesson study report. The report format was an adaptation of the format developed by the Lesson Study Research Group (Chokshi, Yoshida & Fernandez, 2001), and required groups to document the process, and to discuss the motivations, goals, achievements, and challenges at each stage. In addition, reports included a group reflection and individual reflections, which addressed resulting changes in thinking, general techniques or principles that were learned from the process and specific ideas that would be taken to future classrooms.

Each group was advised by the course instructor throughout the process. As advisor, the instructor was invited by group members to occasionally provide subject matter expertise, new ideas and different perspectives. The instructor also attended all study lessons and participated in all post-lesson debriefings, in the capacity of advisor, and in order to facilitate discussions and foster further reflection.

## **Method**

Prior to the lesson study process, the subjects were required to watch a video of a math lesson taught by an experienced teacher who had served as a model for a lesson study experience. The subjects were required to take notes throughout the lesson, and at the conclusion of the lesson were asked to rate the overall effectiveness of the lesson by circling a number from 1 (*low*) to 10 (*high*) on a number line, and directed to “describe in as much detail as possible your rationale for assigning the above rating,” with instructions to comment on both teacher and student behavior. At the conclusion of course, the subjects were required to complete the same exercise using the same lesson.

The data collected were from all 20 students initially noted as subjects of the study. Numerical ratings were recorded for comparison pre- and post-lesson study. If a subject marked the line in between numbers, regardless of where the mark occurred in relationship to the numbers on either side, a number one-half higher than the lower number was assigned. For example, if the assigned rating was a mark between 7 and 8 on the number line, the data point assigned was 7.5.

Using a framework developed by Madsen & Cassidy (2005), comments were categorized as teacher-related or student-related. Teacher-related comments were further coded as pertaining to instruction (planning, accuracy, sequence of lesson), delivery (pacing, enthusiasm, and body language), classroom management (behavior control, routines, transitions from one activity to another) or other (general teaching comments such as "he's effective," "he's good with the kids"; judgments stating that the teacher should or could have done something a different way; or generic comments about the classroom that did not clearly fall into one of the above categories such as "nice job," or personal comments such as "I liked this lesson"). Student-related comments were categorized as relating to academic (task performance, accuracy) or social behaviors (on- and off-task behavior, following directions). Additionally, comments were marked as being positive, negative or neutral.

For the purpose of establishing interrater reliability, two researchers independently categorized comments from six of the twenty subjects. Subsequently, they reviewed each other's categorizations and worked until it was agreed that 100% of comments were sorted accurately and consistently. At that point, one of the researchers categorized comments from the remaining 14 subjects.

Additional data came in the form of post-lesson study reflections written by each of the subjects. Within the reflections, the subjects wrote about how lesson study influenced what they looked for in an effective lesson. This data was used to provide additional insight regarding the subjects' impressions of the effect of lesson study on their observations and perceptions of lesson effectiveness.

## Results

All comments were marked and tallied. Frequency data are displayed in Table 1. The resulting data allowed for the comparison of descriptive comments and ratings pre- and post-lesson study. The total number of comments dropped from 209, before the lesson study experience, to 144 following the lesson study experience. Percentages of teacher-related comments and student-related comments remained relatively constant pre- and post-lesson study, with teacher-related comments constituting 71.0% of total comments before lesson study and 68.1% of the total comments after lesson study, and student-related comments constituting 16.3% and 18.8% respectively.

Of the six written response categories (teacher instruction, teacher delivery, teacher classroom management, other, student academic learning, and student social learning), subjects made the most comments regarding teacher instruction (67.1%, combined pre- and post-lesson study total), followed by student academic behavior (17.0%, combined pre- and post-lesson study total), and the least number of comments regarding student social behavior (0.3%, combined pre- and post-lesson study total), preceded by teacher management behavior (0.8%, combined pre- and post-lesson study total).

Noteworthy, are the percentages of negative comments pre- and post-lesson study. Negative comments, as a whole, dropped considerably, from 27.3% prior to lesson study to

6.9% subsequent to lesson study, as did negative comments about teacher behavior (from 18.7% to 3.5%), and negative comments regarding instruction (from 16.9% to 3.5%). Additionally, positive comments about teacher instruction increased from 47.8% to 59.0%.

Overall, the subjects' ratings of lesson effectiveness rose after the lesson study experience, ranging from 2 to 10 with an average rating of 7.6 at the beginning of the course, and from 7 to 10 with an average rating of 9.2 after lesson study.

**Table 1. Subjects' Pre- and Post-Lesson Study Comments According to Focus.**

Focus	Focus Total, Percentage of Total Comments, and Mean Number of Comments Per Student with Standard Deviation							
	Pre-Lesson Study				Post-Lesson Study			
	Total	<i>P</i>	<i>M</i>	<i>SD</i>	Total	<i>P</i>	<i>M</i>	<i>SD</i>
Teacher Instruction								
Positive	100	47.8%	5.56	3.03	85	59.0%	4.72	2.59
Negative	34	16.3%	1.89	2.76	5	3.5%	0.28	0.57
Neutral	8	3.8%	0.44	1.20	5	3.5%	0.28	0.75
Teacher Delivery								
Positive	1	0.5%	0.06	0.24	3	2.1%	0.17	0.51
Negative	3	1.4%	0.17	0.38	0	0.0%	0.00	0.00
Neutral	0	0.0%	0.00	0.00	0	0.0%	0.00	0.00
Teacher Management								
Positive	1	0.5%	0.06	0.24	0	0.0%	0.00	0.00
Negative	2	1.0%	0.11	0.32	0	0.0%	0.00	0.00
Neutral	0	0.0%	0.00	0.00	0	0.0%	0.00	0.00
Student Academic								
Positive	27	12.9%	1.50	1.54	21	14.6%	1.17	1.15
Negative	3	1.4%	0.17	0.51	1	0.7%	0.06	0.24
Neutral	4	1.9%	0.22	0.43	4	2.8%	0.22	0.55
Student Social								
Positive	0	0.0%	0.00	0.00	1	0.7%	0.06	0.24
Negative	0	0.0%	0.00	0.00	0	0.0%	0.00	0.00
Neutral	0	0.0%	0.00	0.00	0	0.0%	0.00	0.00
Other								
Positive	11	5.3%	0.61	0.85	10	6.9%	0.56	0.70
Negative	15	7.2%	0.83	0.79	4	2.8%	0.22	0.43
Neutral	0	0.0%	0.00	0.00	5	3.5%	0.28	0.75

## Discussion

The purpose of the study was to examine how lesson study affects participants' observations and perceptions of lesson effectiveness. The results of the analysis were unexpected, yet revealing. It was anticipated that the focused observation of students, which is asserted to be a major strength of lesson study, would become a developed inclination that was carried forward into observations outside of the context of lesson study. However, the data revealed a different story. It appeared that lesson study did not change the focus of observations, as the percentage of teacher-related comments, student-related comments and other comments remained relatively unchanged from pre- to post-lesson study. The results showing that the subjects tended to focus more on teacher behaviors than on student behaviors are consistent with existing research, and, in particular, a study which demonstrated that preservice teachers, both pre- and post-practicum, wrote more teacher-related comments than student-related comments, even when asked to focus on student behavior during an observation task (Madsen & Cassidy, 2005).

In addition to the broad classification of the observations, a more in-depth look at the data revealed other unanticipated findings. Interesting was the relatively low number of comments related to teacher delivery (1.9% pre-lesson study and 2.1% post-lesson study), considering the large base of research that supports the delivery style of the teacher as having the greatest effect on observers' perceptions of teaching effectiveness (Hamann, Baker, McAllister, and Bauer, 2000; Madsen, 2003; MacLeod & Napoles, 2011). Also noteworthy was the fact that both before and after the lesson study, the participants made more comments related to the teacher's instruction than about the teacher's classroom management and student social behaviors. This contradicts studies which suggest that inexperienced teachers are more likely than experienced teachers to focus their attention on the behavior of students, particularly as it pertains to the classroom management skills of the teacher (Madsen, 2003), but may be explained by the fact that observers may be more influenced by off-task behavior than on-task behavior (Madsen, 2003), and there were no evident issues with student behavior within this lesson.

Beyond basic findings about the focus of observations, the data revealed additional information about the participants' perceptions of teaching effectiveness and student learning. Of particular interest was the change in percentage of negative comments post-lesson study. Negative comments as a whole dropped considerably, as did negative comments about teacher behavior – primarily teacher instruction. Moreover, positive comments about teacher instruction increased. In essence, it appeared that the participants were much less critical of the teacher, and even, in fact, more complimentary following the lesson study experience. While the reason for this change is not clear, perhaps, through the lesson study experience, participants came to notice and place greater value on the subtle aspects of teaching related to the teacher's interaction with the students, and how the teacher's behavior affected the students, than on the practical and more obvious matters of teaching such as the planning and implementation of the lesson. In fact, the most frequent negative comments prior to the lesson study related to the teacher's inability to complete the lesson as planned, his failure to adhere to the lesson plan, and his failure to achieve the stated objectives of the lesson, whereas comments about the teacher follow-

ing the lesson study focused more on things such as the teacher's questioning techniques and how he engaged the students. Although comments such as, "The teacher really encouraged problem solving by having students brainstorm and asking them what they needed to solve the problem. He never just gave them the answer. Instead, he had the students think for themselves," were necessarily classified as teacher behavior rather than student behavior, they do demonstrate the subjects' awareness of how the teacher's behavior might affect student behavior. Additionally, analysis of the subjects' post-lesson study written reflections showed some evidence of changes in the focus of their observations. For example, one participant wrote, "I think that lesson study has forced me to think outside of my comfort zone and really think about the student, the learner. For a long time I thought I was creating lessons based on my observations, but honestly, I was basing my lesson design on the standards, what I needed to teach." Another participant wrote, "The lesson study showed me that effective mathematics learning experiences are experiences where mathematics is made relevant to the child, and the child makes a connection of the mathematical concept to something important to themselves. The lesson study showed me that it's not enough to use real-world examples; it has to be relevant to the student." And yet another participant wrote, "Now I will definitely consider what students will say and how they will react to the instruction that the teacher gives. Before the lesson study, I don't think I ever actually considered how students would react." Remarks such as these clearly demonstrate a newfound appreciation for the importance of considering the learner in the observation and evaluation of a learning environment.

It should be noted that the study sample was one of convenience. This sampling technique, while useful in documenting the particular quality of a phenomenon within a given sample, and for detecting relationships among different phenomena, is not representative of the entire population, and, thus, must be considered with regard to the generalizability of these results. The results from this study may differ from the results of a similar study with different populations, such as teachers at other levels and with differing amounts of experience, and these limitations should be taken into account when considering the implications of this study.

### **Implications**

The results of this study support existing literature that suggests that preservice teachers tend to focus more on teacher behavior than on student behavior, and further reveal that a single experience in lesson study, alone, may not influence the focus of their observations. On the other hand, the analysis also reveals that lesson study may alter participants' perceptions of teacher effectiveness. Together, these results point to important considerations and measures for those wishing to use lesson study with preservice teachers, and those attempting to facilitate the development of observation skills amongst this population. Furthermore, while the population of the study was limited to preservice teachers, this group is subset of all those learning to teach, and thus there are key lessons to be learned for all those who desire to facilitate the development of observation skills for the purpose of improving teaching and learning.

### ***Future Practice***

Foremost, the study brings to light the notion of observation, and a need to consider its meaning, its purpose, and how teachers are prepared to engage in it. First, what is meant by observation? Is it enough for participants to watch passively? Or does it imply a more intentional process – one of careful directed attention? Moreover, is observation intended as an evaluative process or a non-evaluative process aimed at facilitating reflection? Although the practice is used widely in education circles, the definition of observation varies just as widely, and thus so does its use. In order to improve the usefulness of this practice, we must be clear about what is meant by observation, and what is desired of teachers, in this regard. Furthermore, given that observation is used extensively in pre-service teacher preparation, and commonly with inservice teachers and university faculty, it is worthwhile to consider how individuals are prepared to engage in this practice. Teaching individuals what it means to observe, and how to observe is clearly a requisite step in getting them to do so throughout the lesson study process and beyond.

For educators interested in using lesson study to facilitate more effective observation and understanding of student learning, the following measures are suggested:

- *Include explicit instruction on observation.* It cannot be assumed that quality observation will automatically happen as a result of lesson study. Within the lesson study experience, participants must be provided with explicit instruction on observation, particularly as it pertains to lesson study. In addition to an explanation of the role of the observer in lesson study, detailed instructions must be given about who to observe, what to observe, and how to observe. If possible, participants should receive preparation, in the way of small tasks, which allows them to practice critical observation, prior to observing the study lesson.
- *Emphasize student thinking and learning.* Rather than merely focusing on “watching” students, a greater and more deliberate emphasis must be placed on looking for evidence of student thinking and learning. Within the instruction on observation, a detailed explanation about observation as a “window into student thinking” should be included, as well as a discussion about the importance of gathering evidence on how instructional activities affect student thinking and learning, and thus the value of observing students over teachers. In addition, at each step throughout the lesson study process, participants should be asked questions that will require them to look for evidence of student thinking and learning.
- *Provide quality support.* An important aspect of effective lesson study experiences is attention from a mentor or a professional. In addition to providing participants with subject matter expertise, new ideas and different perspectives, this individual plays an essential role in teaching and coaching participants to become more effective observers of student learning and thinking, and thus should model critical observation, guide participants’ observations, and ensure that participants’ observations remain appropriately focused throughout the process.

As a final consideration, it appears that although lesson study is an avenue for facilitating critical observation, a single lesson study experience may not be sufficient to create de-

veloped habits that are carried forward into observations outside of the context of lesson study. While this does not detract from the usefulness of the practice, it serves as a reminder that establishing “habits” typically requires repeated exposure and practice. Thus, it is recommended that participants receive extended or additional experiences with lesson study, if possible.

### ***Future Research***

Given the results of the study, it is prudent to continue to investigate how lesson study can best be implemented in order to promote observations that will have the greatest positive impact on future teaching performance, and their sustained use. In particular, it would be worthwhile to determine if repeated or longer-lasting experiences with lesson study would have a greater impact on the focus of participants’ observations. Additionally, repeating this study using lessons that demonstrate a range of teaching experience and styles of teaching, and that reveal various issues and problems, might provide additional insight into the focus of participants’ observations and how they perceive effective teaching and learning. Finally, the issues presented as limitations of the study point to the need for further research which incorporates various and extended populations.

## **Conclusion**

In conclusion, this investigation substantiates the complexities of the commonly used and seemingly simple practice of teacher observation. Without a doubt, effective observation – that which is capable of positively affecting teaching and learning – is a difficult skill that does not happen naturally, and cannot be considered an automatic byproduct of opportunities to observe. Furthermore, this study suggests that even with quality practices such as lesson study, well-developed observation skills cannot be guaranteed. Nevertheless, if these abilities are desired of teachers, it is essential that we persist in teaching them these skills, give them ample opportunities to practice them, provide the necessary support to facilitate them, and continue with the search for the most effective ways of doing so.

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