Introduction to Lesson Study

Training Handout

ETA, April 2012
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I. Rationale

Most of the researches on teaching methodologies in Ethiopia found out that mathematics and science lessons of our schools were still teacher-centered, and student's participation is limited and their learning tends to be a passive way. The survey also identified teacher's skill gap, such as in teaching methods, facilitation, communication, utilization of teaching and learning aids, lesson planning and assessment, in order to make "active learning" in M&S lessons. Therefore, in order to realize and promote "active learning" in our classrooms, the intervention should be provided for all these areas as a continuous form of training, by employing lesson study approach.

The lesson study is the problem solving process whereby teacher work together for improving classroom lessons, employing "Plan -Implement -Evaluate" principle. In this approach, groups of teachers will plan a lesson, a designated teacher gives the lesson based on the lesson plan in the presence of servers, and after the lesson the teacher and the observers discuss it to identify opportunities for improvement. Learning from other teacher's experiences and practices using actual lessons allow teachers to develop knowledge and skills of utilizing teaching and learning materials effectively and of assessing and understanding the students.

As the lesson study activities are basically implemented in school or cluster setting, setting, it would be applicable and effective approach to the framework of Continuous Professional Development CPD program, which is currently being implemented in all Ethiopian schools.

II. Objectives

Through the session, the participants will be able to:
- Explain the importance of lesson study;
- Describe the procedure of lesson study approach;
- Apply lesson study approach to improve their lessons

III. Session Plan

a) Session Flow

<table>
<thead>
<tr>
<th>No</th>
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<th>Time</th>
<th>Person-in-charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Presentation by facilitator</td>
<td>45 min</td>
<td>Session facilitator</td>
</tr>
<tr>
<td>2</td>
<td>Discussion /Q&amp;A</td>
<td>30 min</td>
<td>Session facilitator and participants</td>
</tr>
<tr>
<td>3</td>
<td>Video Show</td>
<td>45 min</td>
<td>Session facilitator</td>
</tr>
</tbody>
</table>
IV. Session Content

A. Lesson Study: Conceptual Overview

Lesson study is a collaboration-based teacher professional development approach that originated in Japan (Fernandez and Yoshida 2004; Lewis and Tsuchida 1998; Stigler and Hiebert 1999). Lesson study attracted the attention of an international audience in the past decade, and in 2002 it was one of the foci for the Ninth Conference of the International Congress on Mathematics Education (ICME). It subsequently spread to many other countries and more than a dozen international conferences and workshops were held around the world in which people shared their experiences and progress with lesson study as they adopted this new form of professional development in their unique cultural contexts (e.g., Conference on Learning Study 2006; Fujita et al. 2004; Lo 2003; National College for Educational Leadership 2004; Shimizu et al. 2005).

Despite the rapid rate of interest in this approach to professional development, lesson study remains relatively new to countries outside of Japan, and most schools and teachers are at the early stages of adoption and implementation of the innovation. And, while there is an emerging body of lesson study literature, we do not yet have a coherent and shared understanding of how lesson study effectively work in different contexts and models of teacher learning. The purpose of this handout is to give a conceptual overview of lesson study, including its common structure, samples of application and
its history. The chapter will also present emerging research literature on the topic, address challenges in the field, as well as identify promising avenues for future research in lesson study.

**B. Lesson Study: Structures, History, and Variation**

Lesson study incorporates many characteristics of effective professional development programs identified in prior research: it is site-based, practice-oriented, focused on student learning, collaboration-based, and research-oriented (Bell and Gilbert 2004; Borko 2004; Cochran-Smith and Lytle 1999, 2001; Darling-Hammond 1994; Wang and O'Dell 2002; Little 2001; Hawley and Valli 1999; Wilson and Berne 1999). Lesson study places teachers at the center of the professional activity with their interests and a desire to better understand student learning based on their own teaching experiences. The idea is simple: teachers organically come together with a shared question regarding their students' learning, plan a lesson to make student learning visible, and examine and discuss what they observe. Through multiple iterations of the process, teachers have many opportunities to discuss student learning and how their teaching affects it. Lesson study typically follows the steps outlined in Fig. 1, with a research lesson (live lesson observation) as the centerpiece of the study process (Fernandez and Yoshida 2004; Lewis 2002; Lewis and Tsuchida 1998; Murata and Takahashi 2002; Wang-Iverson and Yoshida 2005).

After identifying a lesson goal, teachers plan a lesson. The goals can be general at first (e.g., how students understand equivalent fractions), and are increasingly refined and focused throughout the lesson study process to become specific research questions by the end (e.g., strategies students use to compare 2/4 and 3/6). Teachers choose and/or design a teaching approach to make student learning visible, keeping their lesson goal in mind. The main purpose of this step is not to plan a perfect lesson but to test a teaching approach (or investigate a question about teaching) in a live context to study how students learn. As they plan, they anticipate students' possible responses and craft the details of the lesson. Teachers come to know the key aspects of the lesson, to anticipate how students may respond to these aspects, and to explore different thinking and reasoning that may lie behind the possible responses.
During planning, teachers also have an opportunity to study curricular materials, which can help teachers' content knowledge development. During the lesson, teachers attend to student thinking and take notes on different student approaches. In the debriefing after the lesson, teachers discuss student learning based on the data they have collected during the observation.

There are other professional development programs that incorporate many of the characteristics of lesson study (e.g., action research, teacher research). However, what sets lesson study apart from those activities is the live research lesson. The live research lesson creates a unique learning opportunity for teachers. Shared classroom experiences expose teachers' professional knowledge that may otherwise not be shared: teachers notice certain aspects of teaching and learning. This implicit and organic noticing does not happen in artificially replicated professional development setting.

In Japan, lesson study has been widely used for over a century. Many Japanese educators attribute success in changing their teaching practice to participation in lesson study (Lewis et al. 2006; Murata and Takahashi 2002; Shimizu et al. 2005). As a foundational mechanism to support the improvement of teaching, lesson study is used to examine and better understand new educational approaches, curricular content, and

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**Fig 1. Lesson study cycle**

1. Consider goals for student learning and development
2. Plan a “research lesson” based on the goals
3. Observe the “research lesson” and collect data on student learning and development
4. Use the data to reflect on the lesson and on instruction more broadly
5. If desired, revise and re-teach the research lesson to a new group of students

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instructional sequences introduced in Japan. In many cases, teachers play the central role in making new approaches adoptable and content accessible. Lesson study makes teaching approaches more practical and understandable to teachers through developing deeper understanding of content and student thinking. In this manner, lesson study works effectively to connect theory and practice in Japan.

In most countries lesson study is mainly known as a small, school-based collaboration, typically in the subject area of mathematics, it comes in many different shapes and sizes in Japan. There is small and school-based lesson study as well as large-scale, national-level lesson study (Murata and Takahashi 2002; Lewis and Touched 1998; Shimizu et al. 2005). For a large-scale, national-level lesson study in Japan, teachers often travel long distances to participate, and hundreds of people can gather for one event. For mid-scale, district-level lesson study, teachers may come together for a district’s professional development day where they have a menu of choices of lessons with different grade levels, subject areas, and topics to attend. The small scale, in-school lesson study (often emulated outside of Japan) is effective for teachers to improve their teaching for students within a particular community where teachers share knowledge of the students and the community.

Large-scale lesson study is important when a new educational approach (e.g., problem-based math instruction, collaborative learning), new content, or a sequence of content instruction is introduced and teachers across different schools try to make sense of what it means in their respective classrooms. Lesson study provides an opportunity to present an example of a new educational idea and/or approach for teachers to discuss, to ask questions about, and to construct a shared understanding of the new idea. Different forms of lesson study provide different learning opportunities for teachers. A typical Japanese teacher has multiple opportunities to participate in lesson study throughout his/her professional career.
Focus on Student Learning

The new focus in teaching and learning requires teachers to balance and juggle existing knowledge of students, content, curriculum, and pedagogy while incorporating new ideas to make the practice conceptually stronger and more students centered (e.g., see National Council of Teachers of Mathematics 2000). Teaching is viewed as an interactive process in which student learning and content come together through effective teacher facilitation. This interactive teaching requires teachers to know how students typically think and express their understanding so that teachers can effectively facilitate their learning by weaving together different ideas.

Teachers subsequently use this knowledge to provide experiences for students that encourage building connections among concepts and ideas. The focus on student learning binds different parts of the lesson study cycle, as teachers identify goals in terms of student learning of a topic, investigate curricular materials that teach the topic, plan a lesson to make student learning visible in the classroom with the topic, gather data in the lesson, and, afterwards, discuss the student learning that occurred during the lesson. Teachers become increasingly knowledgeable about a particular topic (content) and student learning of the topic in the process. They learn to listen to their students' ideas and to see student development.

One critical outcome of teacher learning in the process of lesson study is a new way to see teaching as a series of activities of inquiry around student learning. Lesson study helps cultivate a new attitude toward teaching, namely that teaching is not a one-way and didactic path, but a two way integration of student ideas and content exploration meaningfully facilitated by teachers, an endeavor that can be extremely challenging. The emphasis on student learning in the lesson study process continually reminds teachers how important it is for them to understand students' ideas and helps bring the visions of reform into their classrooms.
Teacher Learning

In examining the development and adaptation process of lesson study, Lewis et al. (2006) identified critical research needs, one being explication of the innovation mechanism. In order for us to understand how lesson study supports instructional improvement, we need to better understand what happens to teachers in its process. Initially, individuals interested in lesson study focused on the curricular resources (e.g., lesson plans) teachers produced as potential results of lesson study. While that was a reasonable expectation, after several years of lesson study effort, we are now in a better position to understand that in supporting instructional improvement, lesson study can produce much more than mere lesson plans. Murata et al. (2004) suggested three specific areas that develop and interact through the lesson study process to support teacher learning. The three broad areas, shown in the modified model in Fig. 2, are teachers' knowledge, teachers' commitment and community, and learning resources (see Lewis et al. 2006; Lewis et al. 2007).

Lesson study, according to Fernandez (2005), also provides opportunities for teachers to develop their pedagogical content knowledge. Different types of knowledge (e.g., knowledge of content, curricula, and student learning) come together and interact with one another during the lesson study cycle (Fig. 1). An ideal context is created in which teachers can integrate these types of knowledge and make content accessible to their students. Often in traditional professional development, these different types of knowledge are learned separately (e.g., attending a lecture on math content, reading a book on classroom management). In lesson study, they come together and work interdependently to support student learning in the very practice of teaching, thus helping teachers experience different types of knowledge in a coherent and related whole.
The teachers create through lesson study support development of knowledge and connections among types of knowledge. While teaching is considered an independent and often isolated practice in many countries, lesson study brings teachers together to share goals, discuss ideas, and work collaboratively. It is likely that teachers who teach similar content to similar students have similar questions and issues about teaching. When these teachers gather and share their ideas and resources, a meaningful learning community is created, and the sense of belonging and professionalism developed in the community can strengthen teachers' commitment to their profession and motivate them to continually improve their practice (Grossman et al. 2001). For the teachers who collaboratively plan a research lesson, the process helps to add purpose to their everyday work.
Their everyday life is experienced as a part of the larger professional endeavor among colleagues and an activity for which different events have clear purposes.

Obviously, the development and improvement of learning resources is a part of the lesson study process. Teachers’ knowledge development and commitment to professional community growth interact with the development of learning resources (e.g., lesson plans), and as the resources are refined and improved, they provide a meaningful context for teachers to discuss student learning and to focus on the lesson. Just as young students find it helpful to have hands-on manipulative to develop mathematical concepts, lesson plans become concrete scaffolds for teachers to focus their attention and learn about the specific content area under discussion.

The three areas supported through lesson study for teacher learning (knowledge development, community development, and material development; Fig. 2) are essential for instructional improvement and for increasing student achievement. Many professional development programs aim only to help teachers develop knowledge for teaching. While the single-focus approach is effective in some cases, when considering the sustainability of professional growth and teacher motivation, the three part-teacher-learning model identifies and incorporates the interactive relationships among different areas of teacher professional development.

**Adapting Lesson Study**

The small-scale case study on lesson study approach was also implemented in Ethiopia. It was implemented in one of the cluster (consisting of one center school and four cluster schools) in Oromia Region. As discussed in the research paper by Dr. Jeilu, remarkable differences in achievement of the students were observed before and after the intervention.
<table>
<thead>
<tr>
<th>Schools</th>
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<th>Pre-test</th>
<th>Post-test</th>
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<tbody>
<tr>
<td>Dhankaka CRC</td>
<td>No. of students sat for test</td>
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<td>274</td>
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<tr>
<td></td>
<td>Mean scores achieved</td>
<td>4.91</td>
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</tr>
<tr>
<td></td>
<td>No. of students passed</td>
<td>140</td>
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</tr>
<tr>
<td></td>
<td>No. of students failed</td>
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<td>30</td>
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<tr>
<td>Dhankaka No.2</td>
<td>No. of students sat for test</td>
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</tr>
<tr>
<td></td>
<td>Mean scores achieved</td>
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</tr>
<tr>
<td></td>
<td>No. of students passed</td>
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</tr>
<tr>
<td></td>
<td>No. of students failed</td>
<td>36</td>
<td>9</td>
</tr>
<tr>
<td>Gubasaye</td>
<td>No. of students sat for test</td>
<td>46</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Mean scores achieved</td>
<td>5.38</td>
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</tr>
<tr>
<td></td>
<td>No. of students passed</td>
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<tr>
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<td>No. of students failed</td>
<td>14</td>
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<tr>
<td>Giche</td>
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<td>Mean scores achieved</td>
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(Source: Lesson Study Project Report, Addis Ababa University, 2007)

One of the strengths of lesson study is that it places teachers' interests in the center of their learning process. In order for teachers to take full advantage of the opportunities of lesson study, they must be research-oriented and have inquisitive dispositions. However, if the teachers do not have these dispositions, as some research indicates, the dispositions can gradually be developed by the teachers through participating in the lesson study process. Opportunities provided through lesson study support teachers as they develop knowledge and research skills and engage in future lesson study cycles in more effective and meaningful ways. While it may take longer for beginning lesson study participants to learn to hone in on the critical research process, in most cases, these teachers will become familiar and more adept with these expectations by their second or third lesson study experience. In the meantime, the sense of community and new professionalism will sustain their motivation to participate. Thus, these challenges found in the case studies mentioned earlier may be necessary learning steps for teachers who are for the first time considering teaching as a research process.
**C. Lesson Study: Learning about a Lesson Together**

The chapters in this book will provide pictures of current efforts in research and educational activities with lesson study in different parts of the world. While we in dependently work and try to understand how lesson study works in our own context, it is likely that there are others who are having similar experiences. We need to find ways for us to communicate and share our emerging knowledge and understanding, so that we can better support our research and educational activities.

Lesson study is used indifferent settings to support educational research and activities centered on teacher and student learning. We will have opportunities to learn what may or may not work well in new settings, and how different modifications and adjustments were made to better support the goals for each lesson study group. As teaching is a highly localized practice, modifications are expected and essential in order to adopt and use this new professional development approach effectively. Still, too many modifications may change the nature of lesson study, and teachers may find themselves participating in yet another ineffective professional development program with a new name. In order to avoid this, the key characteristics of lesson study should be maintained with care, while modifications are made. Some of these characteristics are listed below; however, this is not an exhaustive list.

1. **Lesson study is centered on teachers' interests:**

   Teachers' interests are central to their professional development. Lesson study goals should be something teachers feel is important to investigate and relevant to their own classroom practice.

2. **Lesson study is student focused:**

   Lesson study is about student learning. At any part of the lesson study cycle (Fig. 1), the activities should focus teachers' attention to student learning and its connections to lessons/teaching.


3. **Lesson study has a research lesson:**

   Teachers have shared physical observation experiences (in some special cases, video may be used in place of the live lessons, but this is not recommended), that provide opportunities for teachers to be researchers.

4. **Lesson study is a reflective process:**

   Lesson study provides plenty of time and opportunities for teachers to reflect on their teaching practice and student learning, and the knowledge gained from and for the reflective practice should be shared in some format with the larger teaching and educational communities.

5. **Lesson study is collaborative:**

   Teachers work interdependently and collaboratively in lesson study. By understanding how different aspects of lesson study may be modified while maintaining these key characteristics, we will better understand the existing educational system and cultural values and beliefs that support the system. When adding something new to an existing system, it often becomes clear what can and cannot be changed in the system to accommodate the new. That, in turn, helps us understand how different parts of the system work and what parts are more critical to the system than the others. Lesson study can provide that opportunity.
References


31. Wang, J., & O'Dell, S. J. (2002). Mentored learning to teach according to standards

study*. Philadelphia: Research for Better Schools.

59*(6), 36-39.

34. Wilson, S. M., & Berne, J. (1999). Teacher learning and the acquisition of
professional knowledge: An examination of research on contemporary professional