

Lesson Study in North America Progress and Challenges

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<http://www.lessonresearch.net>

Areas of Progress

- Interest
- Resources and Tools
- Understanding
- Proof of Effectiveness

Progress 1: Growth of Interest

Since 1999:

- 32 states, 150 lesson study clusters/
groups
- 335 schools, 125 school districts
- 2300 teachers
- Listserv with 900+ members
- Many public research lessons

Source: www.tc.columbia.edu/lessonstudy/timeline.html

Until lesson study we never discussed the value of the content being taught. We discussed the different ways students learn (multiple intelligences), how the brain works, how to differentiate.... Never had those discussions involved...problem-solving techniques, how to develop a particular concept...what to expect for outcomes.

Lesson Study Communities Teacher (EDC), Massachusetts

I like stretching my own brain.

Teacher from San Mateo, California

Progress 2: Tools and Resources

- Video of US & Japanese lesson study
www.lessonresearch.net, globaledresources.com
- Lesson Study Books & Handbook
www.rbs.org
- Articles, reports
- Protocols at websites

Growth of Websites that Provide Lesson Study Tools & Information

Mills College Lesson Study Group
www.lessonresearch.net

Research for Better Schools
www.rbs.org

Teachers College Lesson Study Research Group
www.tc.edu/lessonstudy/

Univ. of Wisc. Lesson Study Project
www.uwlax.edu/sotl/lsp

Too Many Websites to List!

Education Development Center
www2.edc.org/lessonstudy/lessonstudy/

Northwest Regional Lab
www.nwrel.org/msec/lessonstudy/index.html

Global Education Resources
www.globaledresources.com/

Diverse Lesson Study Settings

- Many Levels (university, high school, middle school, preschool)
- Many Subjects (e.g., social studies, second language learning, science, special ed)
- Many Themes (e.g., “accountable talk,” understanding, interest, fluency)

Progress 3: Understanding of Lesson Study

How does lesson study improve instruction?

Visible Features of Lesson Study

- Planning
- Curriculum Study
- Research Lesson
- Data Collection
- Discussion
- Revision
- Etc.

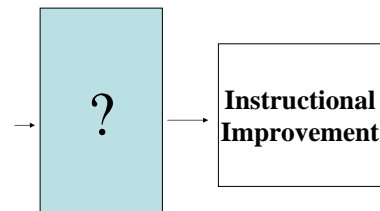


Figure 1
A Common (Mis)Conception of Lesson Study

Visible Features of Lesson Study

- Plan
- Teach
- Observe
- Discuss
- Etc.

Key Pathway

- Lesson Plans Improve

Instructional Improvement

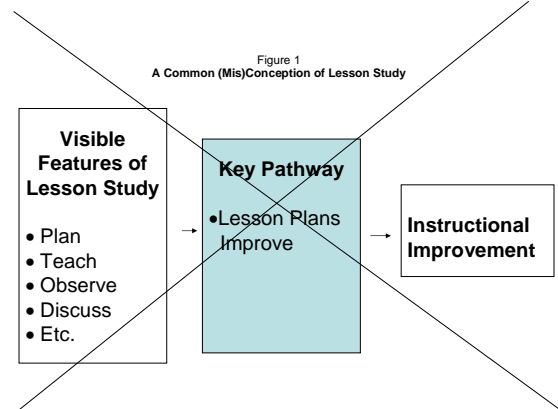
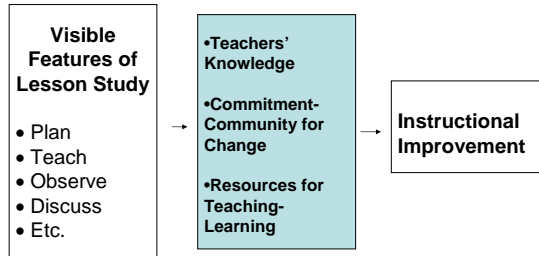


Figure 1
A Common (Mis)Conception of Lesson Study



Being able to talk together as a whole group is such a big part of lesson study... you're not just going down this narrow little road of your own.

Teacher from North Marion Middle School, Oregon, NWREL Collaborator

The opportunity to focus on two to four students' learning was incredible... You feel like you are in a true research mode.

Teacher from San Mateo, California

This experience has affected the way some of us structure our lessons, and has given us the courage to try challenging lessons

Lesson Study Communities Teacher, Massachusetts

Even if you think you have thought of all the student responses

there will always be more.

Teacher, San Mateo, California

Great trust has developed over time that allows us to be both teachers and learners with each other. Isn't that what it's all about?

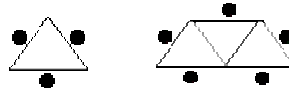
Lesson Study Communities Team Reflection, Massachusetts

Progress 4: Proof of Effectiveness

- Kindergarten Teachers Connect Standard, Teaching Knowledge (Murata, under review)
- High School Teachers Shift to Inquiry-Based Strategies in Science (Ermeling, LessonLab)
- Teachers in “How Many Seats” Build Mathematical & Instructional Knowledge

Can patterns help us find an easy way to answer the question:

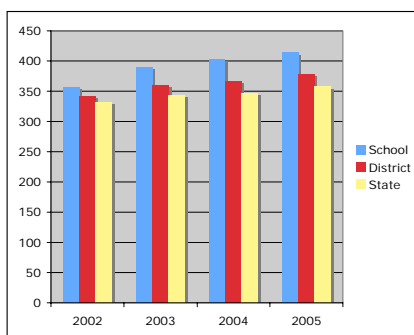
How many seats fit around a row of triangle tables?



INPUT Number of Triangle Tables	OUTPUT Number of Seats
1	3
2	4
3	
4	
5	
6	

Teachers’ Learnings

- Distinguish “plus one” and “plus two” pattern
- Connect numerical and geometric patterns
- Consider impact of chart on students
- See importance of student counting methods



Math Scale Scores, State Achievement Test

Challenges in U.S.

1. Access to Rich Mathematics
2. Premature “Expertise”
3. Simplistic Research Models
4. Need to Learn Across Sites and From Japanese Colleagues
5. Feedback to Policy & Research

Challenge 1: Access to Rich Mathematics



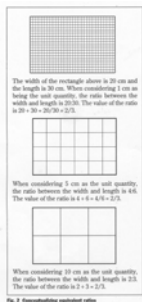
A fourth-grade class needs 5 leaves each day to feed its 2 caterpillars. How many leaves would they need each day for 12 caterpillars?

Answer: _____

Use drawings, words, or numbers to show how you got your answer.

(NCTM, 2002)

Ideas From Planning

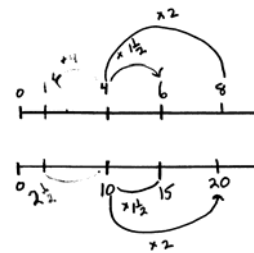


(Lo, Watanabe, & Cai, 2004)

- Unit rate (value of a ratio) relates equivalent fractions;
- Relates to measurement;
- Uses division;
- Units (e.g., of 1) can be grouped to form larger units (e.g., of 5)
- We typically think in "simplest form" rather than have kids think about units

Ideas from Asian Curricula

- Double number line can summarize methods



Ideas From Planning

- These methods differ from the standard cross-multiply and divide algorithm

(McDougall Littell, 2004)

EXAMPLE 3 Using the Cross Products Property

Use the cross products property to solve the proportion $\frac{3}{m} = \frac{5}{15}$.

Solution

$\frac{3}{m} = \frac{5}{15}$	Write original proportion.
$3 \cdot 15 = m \cdot 5$	Cross products property
$\frac{3 \cdot 15}{5} = \frac{m \cdot 5}{5}$	Divide each side by 5.
$9 = m$	Simplify; m is by itself.

ANSWER The solution is 9.

CHECK You can check the solution by showing that $\frac{3}{9}$ and $\frac{5}{15}$ simplify to the same fraction:

$$\frac{3}{9} = \frac{1}{3} \text{ and } \frac{5}{15} = \frac{1}{3}, \text{ so } \frac{3}{9} = \frac{5}{15}.$$

Strategies for Building Access to Rich Mathematics

- Compare various curricula
- Study innovative approaches
- Draw in research/researchers
- Interview students, study student work
- Do math as adults, share solutions

Challenge 2: Premature “Expertise”

- We should think of ourselves as learners, not experts
- Lesson study is a simple idea, but a complex process
- Many lesson study models in Japan; just 2 examples from Japan in U.S.

Challenge 3: Simplistic Research Models

Have you had the experience of seeing a promising innovation discarded before it has been deeply understood or implemented?

Maybe a Simplistic Research Model Was to Blame

Lesson Study as

- Aspirin?
- Recipe?

OR

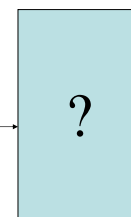
- Flexible Learning System With Core Principles?

How does lesson study improve instruction?

Visible

Features of Lesson Study

- Consider Goals
- Study Curriculum and Standards
- Plan and Conduct Research Lesson
- Collect Data
- Debrief Lesson
- Use Debrief to Inform Instruction



Instructional Improvement

Lesson Study is Not Just “Doing” the Surface Features

It's doing them in a way that builds

- Knowledge of Teaching & Content
- Motivation to Improve
- Connections-Accountability Among Teachers
- “Eyes to See Students”
- Attention to Students’ Long-term Development
- Etc.

Danger of Simplistic Research

Conclude lesson study “doesn’t work” and move on to next fad



Challenge 4: Need to Learn Across Sites

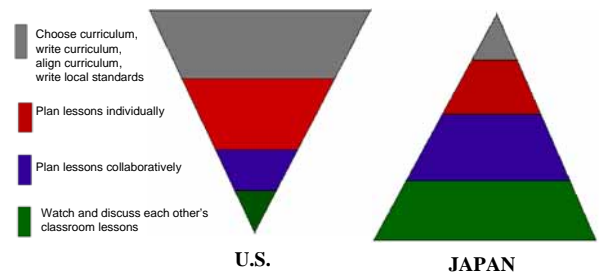
Need National Learning Community on Lesson Study. Difficulties:

- Geographic expanse of U.S.
- Lack of tradition, funding for cross-site lesson study sharing
- Commercial motives undermine learning across sites in some cases

Challenge 5: Feedback to Policy, Research, Curriculum

In Japan, lesson study serves as formative research and feedback loop to policy, research, and curriculum

Teachers' Activities to Improve Instruction



We've Come A Long Way!

Thanks to the hard work of

- Many courageous US teachers
- Many generous Japanese colleagues
- Some far-sighted organizations & administrators

We feel there is a great value in a public lesson. It is an opportunity to put our work out for public scrutiny.

Lesson Study Communities, Massachusetts

If we had to use one word to describe our work for the past two years, it would be
COURAGE

... to maintain this philosophy and pedagogical thinking as we struggled with our deficient MCAS scores ... overcrowded classrooms...

*Lesson Study Communities Team Reflection,
Massachusetts*

It is important to keep the goal visible.

Teacher from San Mateo, California

There are many ways to solve problems correctly.

And even more ways to solve them incorrectly.

Teacher from San Mateo, California

I really see this as an opportunity - taking teaching out of the closet... giving it a professional dignity it hasn't had

*Teacher reflecting at Foxboro Open House,
Massachusetts*

I feel the biggest mistake we can make when pitching lesson study to US teachers is to tell them it is easy and painless. It is hard and possibly painful and they should prepare for it. The rewards, however, are fantastic. Real, concrete, observable improvement occurs in teaching.

Middle School Math Teacher, Paterson School #2, New Jersey