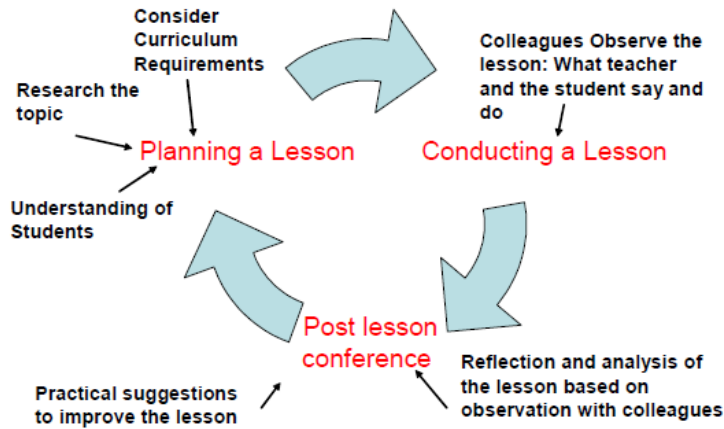


## Process of Lesson Study Plan, Do, See Cyclical Process



Faculty of Education, Saitama University

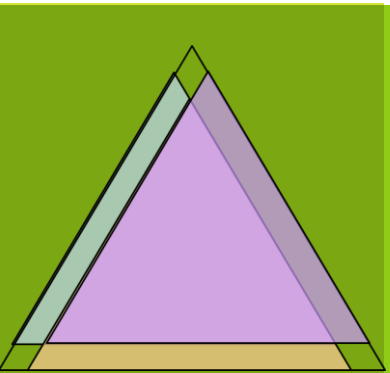
United Graduate School of Education,  
Tokyo Gakugei University

(Associate Professor) MATSUZAKI Akio, Ph.D.

[makio@mail.saitama-u.ac.jp](mailto:makio@mail.saitama-u.ac.jp)



Saitama University



# WHAT ARE WE NEED LESSON STUDY WITH REALIZING STUDENT CENTERED APPROACH?

22 November 2019

Mongolian Association of Lesson Study Conference

# Self Introduction & My Works

From April 2005 to September 2008

Mathematics Education

Junior & Senior High School at Komaba, University of Tsukuba

[2008] Proyecto Mejoramiento En La Enseñanza Técnica En El Área De Matemática (PROMETAM) Phase 2 in Republic of Honduras

From October 2008 up to September 2010

ICT Education

Graduate School of Education, Naruto University of Education

International Cooperation Center for the Teacher Education and Training (INCET)

International Education Cooperation

[2009] Short-term specialist: Strengthening of Teacher Education Program Phase2 (STEP2) in Islamic Republic of Afghanistan



[2014] Review Survey of JICA Regional Training of Math Education in Micronesia (3 countries)

[2016-2017] Short-term specialist: Project for Child-Centered Education Supports (PROCESS) in Mongolia

[2016-2018] JICA Training Course in Mongolia

[2019] Study Tour in Mongolia

From October 2010 up to now Faculty of Education, Saitama University

# Three Elements which Construct Lesson Study

Planned Lesson

[The 1<sup>st</sup> Element] Lesson Plan

The lesson-presenter should prepare a lesson plan.

Implemented Lesson

[The 2<sup>nd</sup> Element] Lesson Observation

The lesson-presenter should conduct the lesson according to the lesson plan.

The observes should record the lesson in accordance with the format of the lesson observation sheet.

Achieved Lesson

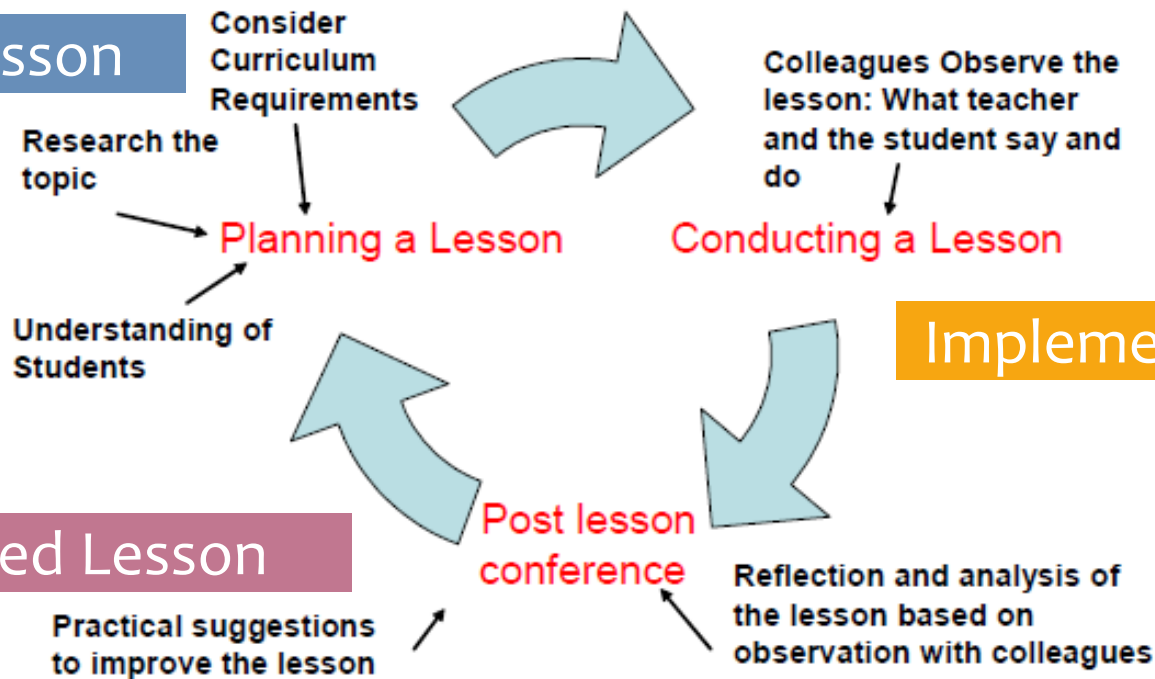
[The 3<sup>rd</sup> Element] Post –Lesson Conference

A post lesson conference should be held under a facilitator's guidance: (1) Reflections by the lesson-presenter, (2) questions or suggestions from the observers, and (3) guidance and advice by specialist(s) or school leader(s) etc...

# Process of Lesson Study

## Process of Lesson Study Plan, Do, See Cyclical Process

Planned Lesson



Achieved Lesson

Implemented Lesson

Naruto University of Education (2006). "Guidelines for Lesson Study,, International Cooperation Initiative (p.1),, MEXT.

Naruto University of Education (2008). "School Improvement by Implementation of "Lesson Study": A Guidebook for School Leaders,, International Cooperation Initiative (p.3),, MEXT.

# Didactic Triangle and the Methods of Lesson Study

## Up to now

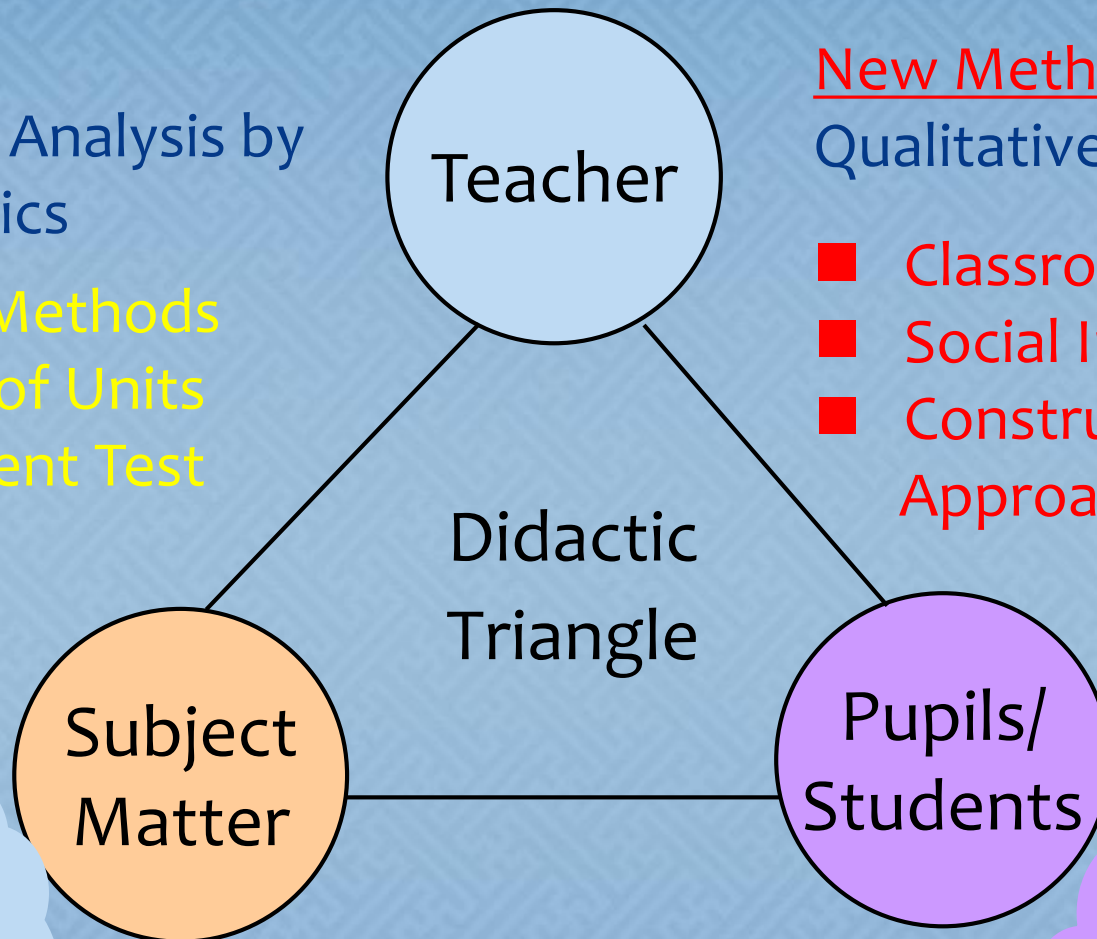
Quantitative Analysis by Using Statistics

- Teaching Methods
- Structure of Units
- Achievement Test

## New Methods

Qualitative Analysis

- Classroom Culture
- Social Interaction
- Constructionist Approach



Teacher Centered

The Methods of Lesson Study

Pupils/Students Centered

# The Methods of Lesson Study

Difficulties of analyzing responses of questionnaire of teaching methods.  
(e.g.) I am tackling **problem solving** with pupils/students in my lesson.

Why  
Video Study?

Trends in International Mathematics and Science Study (TIMSS)

Video Study

Total 231 Lessons



100 Lessons



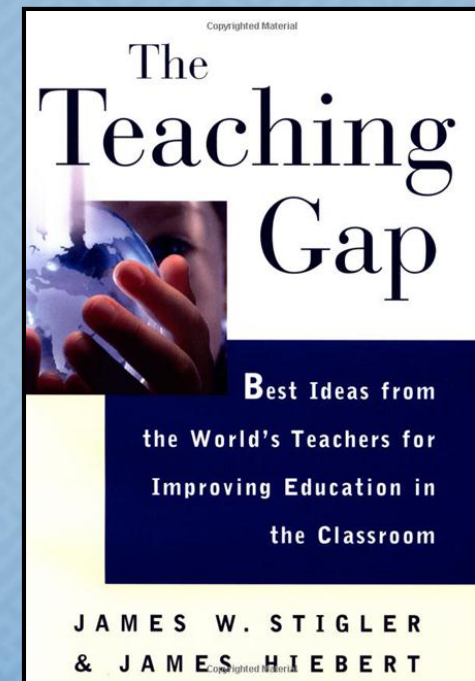
50 Lessons



81 Lessons

Lesson video, Questionnaire for teachers  
Copies of page(s) of textbook, worksheet(s)...

Mathematics Class for 8<sup>th</sup> Grade



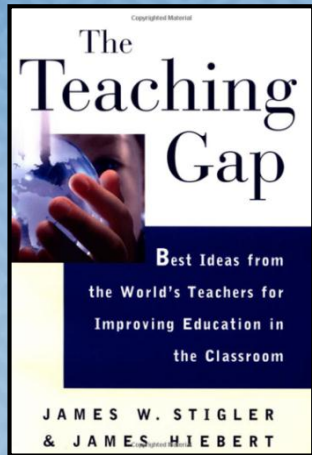
Stigler, J. & Hiebert, J. (1999), "The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom,, New York, USA: The Free Press.



# The Japan Pattern

Japanese lessons often follow a sequence of five activities.

- *Reviewing the previous lesson.*
- *Presenting the problem for the day.*
- *Students working individually or in groups.*
- *Discussing solution methods.*
- *Highlighting and summarizing the major points.*



Activities two through five can be cycled through several times in one lesson, but usually not more than twice. When a second problem is presented, it often is much like the first, and students are expected to practice the method(s) presented for solving the first problem. (pp.79-80)

Stigler, J. & Hiebert, J. (1999). 'Chapter 5: Teaching is a system, "The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom,, New York, USA: The Free Press.



# The Mongolia Pattern

Takei, H. & Matsuzaki, A. (2019). 'The Mongolians' participation in the mathematics lesson study in Saitama prefecture: The practice of mathematics lessons by in-service teacher and pre-service teacher, "JSSE Research Report,, Vol.33No.4, pp.5-10 (written in Japanese).

We observed 6 math lessons (at 4 schools; school 20, school 23, school 45, and school school Erdmin urguu) in Mongolia on 3-9 December 2018. After each lesson, lesson conference are holded.

The pattern of mathematics instruction in the Mongolia is similar to the Japan pattern.



The Japan  
pattern

- *Reviewing the previous lesson.*
- *Presenting the problem for the day.*

Start

Core

- *Students working individually or in groups.*
- *Discussing solution methods.*

End

- *Highlighting and summarizing the major points.*



# The Learner's Perspective Study (LPS)

## The Learner's Perspective Study



'An International Research Collaboration in Mathematics Education.'

Saturday, 01 June 2013

Home

About the Project

Research Teams

News

Publications

Members

### The Learner's Perspective Study.

The Learner's Perspective Study examines the patterns of participation in competently-taught eighth grade mathematics classrooms in sixteen countries in a more integrated and comprehensive fashion than has been attempted in previous international studies. Research teams now participating in the Learners' Perspective study are based in universities in Australia, China, the Czech Republic, Germany, Israel, Japan, Korea, New Zealand, Norway, The Philippines, Portugal, Singapore, South Africa, Sweden, the United Kingdom and the USA.

The results of the Learner's Perspective Study are reported in a Book Series, published by Sense Publishers. The first three volumes are: *Mathematics Classrooms in Twelve Countries: The Insider's Perspective*, *Making Connections: Comparing Mathematics Classrooms Around the World* and *Mathematical Tasks in Classrooms around the world*. New volumes are planned for release to further enhance the series.

Lesson Study  
form Learner's  
Perspective

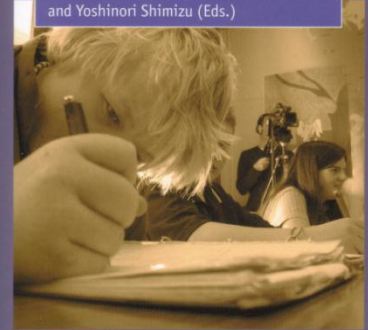
Pupils/  
Students  
Centered

[URL] <http://extranet.edfac.unimelb.edu.au/DSME/lps/>

THE LEARNER'S PERSPECTIVE STUDY

### Mathematics Classrooms in Twelve Countries: The Insider's Perspective

David Clarke, Christine Keitel  
and Yoshinori Shimizu (Eds.)

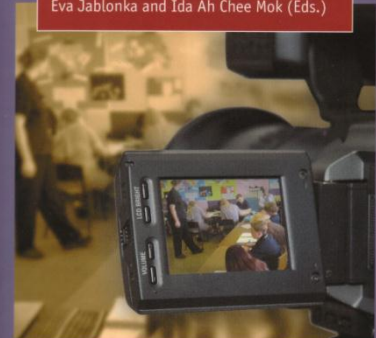


SensePublishers

THE LEARNER'S PERSPECTIVE STUDY

### Making Connections: Comparing Mathematics Classrooms Around The World

David Clarke, Jonas Emanuelsson,  
Eva Jablonka and Ida Ah Chee Mok (Eds.)



SensePublishers

# The LPS Research Design

Clarke, D. (2006). Chapter Two 'The LPS Research Design, In D. Clarke, C. Keitel, & Y. Shimizu. (Eds.), "Mathematics Classroom in Twelve Countries: The Insider's Perspective (pp.15-36),, Sense Publishers.

Camera One:  
The Teacher Camera

Camera Three:  
The Whole Class Camera

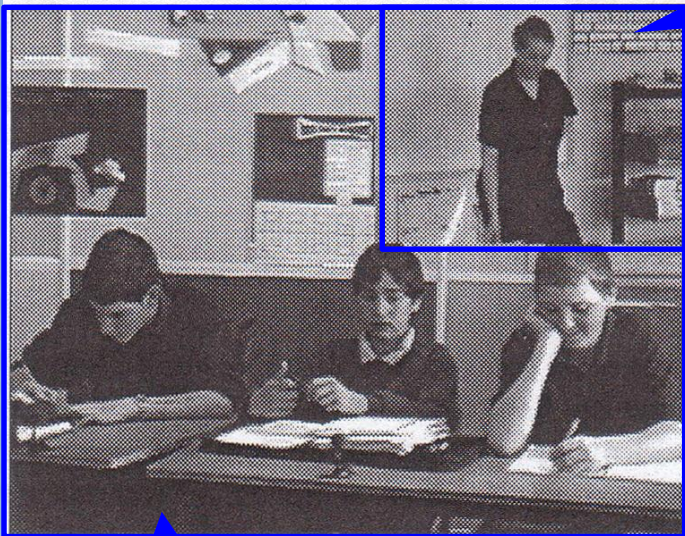


Figure 3. Picture-in-picture video display

Camera Two:  
The Student Camera

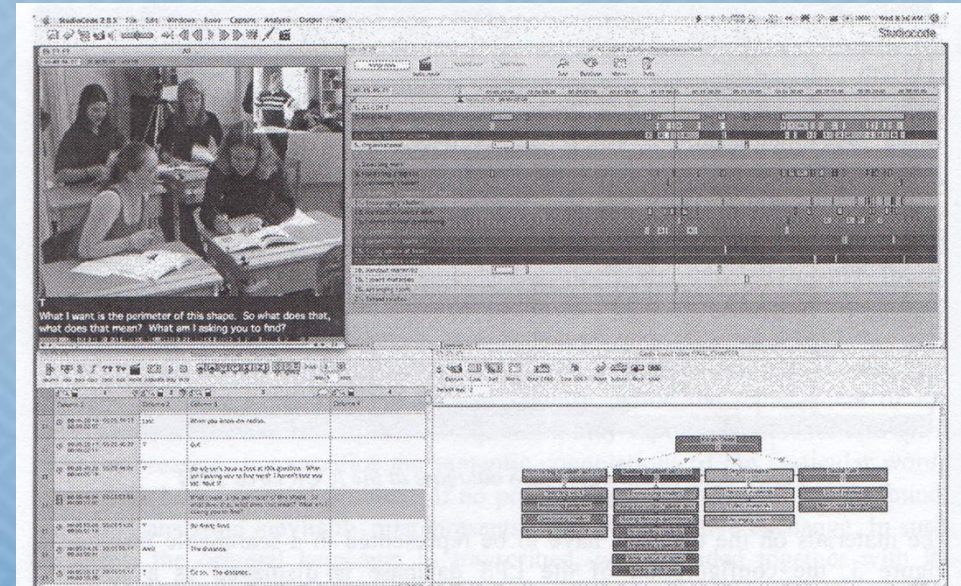


Figure 4. Sample analytical display (StudioCode) – video window (top left), time-line (top right), transcript window (bottom-left) and coding facility (bottom-right)

# Characteristics and Differences between TIMSS Video Study and LPS

## TIMSS Video Study

TIMSS video study intended sampling survey of lessons by using video survey.

- Recording only one lesson which random selected
- Video recording focus on the teacher

## The Learner's Perspective Study (LPS)

Objects of the LPS are unit structure (connections between lessons), didactical performance by the teacher's and the learners.

- Recording more than 10 lessons by expert teachers
- Video recording focus on performances both the teacher and the learners
- Interviews for the teachers and the learners by stimulated recall

# Two Directions of Lesson Study

Isoda, M. (2010). 'APEC-HRDWG Project: "Innovation of Mathematics Education through Lesson Study": erenow, now, and future, "MEXT Sponsored Research 2009: Research and Survey Project of Education Cooperation in Global Network,, pp.18-19 (written in Japanese).

## ■ Lesson Study as Top-down Approach Model

TIMSS Video Study

The Learner's Perspective Study (LPS)

Status of the researchers are different from one of the teachers because the researchers analyze the lessons as one of research objects. The researchers have roles to observe the pupils/students and analyze didactical performance of the teachers by using action research.

## ■ Lesson Study as Bottom-up Approach Model

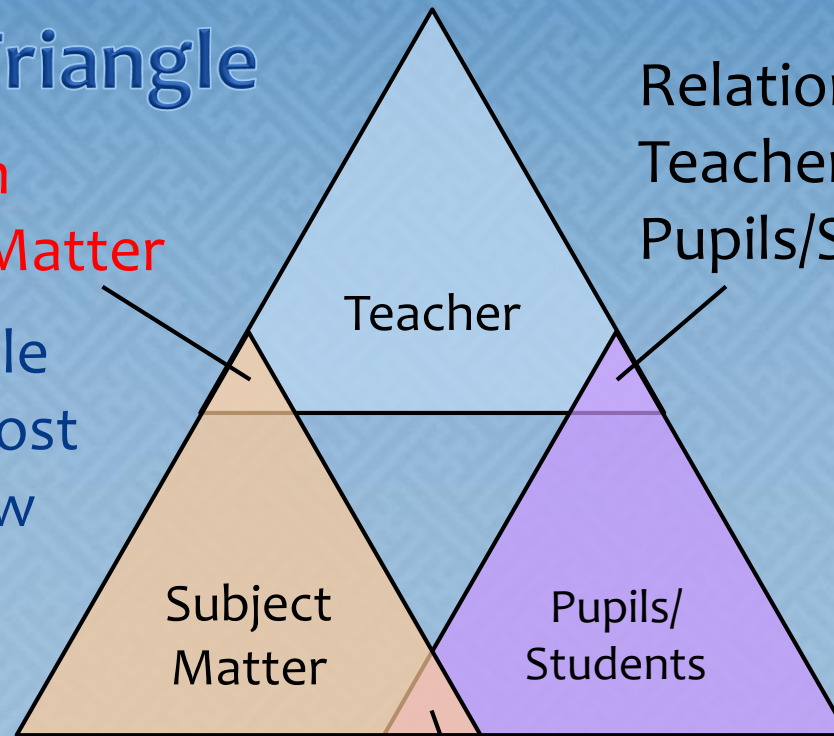
Traditional Japanese Lesson Study (Jyugyo kenkyu)

Status of the researchers and the teachers are NOT different. Lesson study in this direction is more practical because they wish for better growth of the pupils/students. **Objects are to propose good models for research theme or a practical theory to generate good practices.**

# Lesson Study Triangle

**Relationship between Teacher and Subject Matter**

The most effective role of lesson study is to foster the observers' view points for lessons.



Relationship between Teacher and Pupils/Students

Teacher

Subject Matter

Pupils/Students

**Relationship between Pupils/Students and Subject Matter**

Ikeda, T. (2003). 'History of lesson study and its current status and issues, In Y. Hashimoto, K. Tsubota, & T. Ikeda. (Eds.), "Lesson Study/ Now why lesson study are needed? Reconstruction of Mathematics Lesson (pp.13-32),, Toyokan Publishing (written in Japanese).

