

## GENERAL INTRODUCTION

At the third APEC Education Ministerial Meeting held on 29-30 April 2004 in Santiago, the ministers defined the four priority areas for future network activities. “Stimulating Learning in Mathematics and Science” is one of the four priority areas. Based on this priority, the APEC project “A Collaborative study on innovations for teaching and learning mathematics in different cultures among the APEC Member Economies” was approved by APEC Member Economies in August 2005. The project is managed by the Center for Research in Mathematics Education (CRME) in Khon Kaen University and the Center for Research on International Cooperation in Educational Development (CRICED) in University of Tsukuba.

The project aims at: 1) to collaboratively develop innovations on teaching and learning mathematics in different cultures of the APEC Member Economies, and 2) to develop collaborative framework involving mathematics education among the APEC Member Economies. For these aims, the project focuses on the good practices in school classroom and ways of professional development such as the Lesson Study in each Member Economies. As the goal of project, we would like to publish the report (or book) with CD-roms including good teaching practices of participated economies and models of good practices which enable to use for the innovation of mathematics education in APEC economies and the world.

In order to achieve the goal of the project, we set two meetings within the four phases of the project:

**Phase I**, open symposium and closed workshop (specialist session) among key mathematics educators from the cosponsoring APEC Member Economies hosted by Center for Research on International Cooperation for Educational Development, University of Tsukuba, Japan will be organized in order to develop a research proposal and collaborative framework for the implementation of innovation scheme in teaching and learning mathematics (January 2006).

**Phase II**, each cosponsoring APEC Economy will develop some examples based on the framework (February-March 2006).

**Phase III**, the International Symposium will be organized in order to share and reflect on each Economy’s research results and best practice. The Symposium will be hosted by Center for Research in Mathematics Education (CRME), Faculty of Education, Khon Kaen University, Thailand (May 2006).

**Phase IV**, The product for innovation of mathematics education will be developed. (July, 2006)

The project itself is carried out by the people invited in the two meetings at Phase I and Phase III. At the same time, to open the ideas for good practices to everyone in each society, the open symposium will be set in each meeting. We are expecting to invite same people in the both meetings. Depending on the restriction of the grant, we

are expecting to invite people from the following countries: USA, Japan, Korea, Australia, Chili, China, Hong Kong, Vietnam, Thailand, Philippines, Indonesia, Malaysia and Singapore. At the same time, we have been making effort to invite more people from other APEC economies. Participating of matheducators who have wishes to come to self fund will be acceptable.

The foci of the two meetings are to share the ideas of good practices from participants and structuring, developing and reviewing the product with VTR for teacher education and reform movement in Mathematics Education.

### **Ways of Publications**

We develop our results through first and second meeting. At first meeting, participants present the discussion paper with some examples of good practice. At the end of first meeting, we would like to set editorial board, the clear format and structure of final papers with VTR. At second meeting in Thailand, participants are expecting to present papers with VTR based on the format and structure. After the discussion in Thailand meeting, we need to revise papers with VTR.

We are planning to report following ways. Contributions in the first meeting of Tokyo will be sited on the conference website and published from the Special Issues of Tsukuba Journal of Educational Study in Mathematics. Contributions in second meeting of Khon Kaen will be sited on the conference website and published from the Special Issues of Journal of Center for Research in Mathematics Education. Finally, we are planning to publish the comprehensive, revised and accepted papers in two meetings as a book with DVD or CD-roms.

### **Tentative Definition of Good Practice in Mathematics**

We use the word of good practice in mathematics classroom as for the reform of each economy's mathematics education. It must not be the same depending on each economy. The ideas of innovation included in good practices might be useful for other economies. Depending on the result of TIMSS video tape study, we knew that there are differences among countries. There are strongly impressed people in the world by distributed VTR tapes. But we know that the study itself did not aim to know what the good practice is and which country should be the model of the mathematics lesson. In each economy there are a lot of researches in classroom and matheducators have been developing the good practices. On the other hands, there are problems that they can not write what, how and why good it is because there are no appropriate scientific ways to illustrate it as understandable among different cultural societies.

This project focus on gathering good practices themselves from participants in each economy and discuss what is good, why it is and how the teacher can develop such a good practice. If we discuss these points, we may know that how each good practice

has been done on different cultural setting and through the using these difference as our mirrors, we revalue our good practice from different perspective and get ideas and models for innovation of our mathematics education and try to use the model to the reform.

Indeed, TIMSS video tape study enables us to know how useful to look at a short part of the lesson and discuss about analyzing of it by each of us such as why it is good and why teacher did such a way. Through the meetings, we would like to talk about each good practice and define how we can express good practice. At the beginning of this project, we tentatively define the good practice in mathematics with following conditions.

- 1) It is visible, recordable in the classroom and can be showed to other people.
- 2) It may be known as a good approach in an economy.
- 3) There is a teacher who is well known by its approach.
- 4) It may be known as useful for the reform of mathematics education.
- 5) Many teachers may have their wish to do the same approach.
- 6) It may be taught in the teacher education (pre-service or in-service)
- 7) Against its approach, on contrast, there are different/traditional approaches based on different/traditional value.

These conditions are tentative as for imaging what it is. One of the goals of project is to develop visible models of good practices which can be used for teacher educations with DVD or CD-roms (or distributed through Internet) in each economies. Thus in the meetings, it is necessary to show and share examples by VTRs (digital movies).

### **Structure of Meeting in Tokyo, January 15-16, 2006**

The aims of Phase I, first meetings, are constructed with two components to share the ideas for good (or best) practices, know the diversity meanings and approach in different cultures and share the good ideas of ongoing professional development such as the Lesson Study. First component of the meeting is open symposium based on key note lectures and symposium for shearing ideas. Second component is closed workshop (specialist session) to share the good practices in each economy, knowing why it is good and the developing shared frameworks for second meetings in Thailand.

The structure of meeting in Tokyo is explained in following schedule and obligation of participants of workshop will be written after the schedule.

### **Schedule of APEC - Tsukuba meetings in Tokyo**

Following are schedule of APEC - Tsukuba meetings in Tokyo. Titles of lectures are tentative.

**Jan 14 SAT.** Arrival of Participants

**Jan 15 SUN.** Open Symposium for planning collaboration (APEC participants survey of other countries' reform movements):

**Improving the Quality of Education for Developing Numeracy on Education for All: Planning the International Collaboration for Future**

Keynote lectures:

“Mathematical Literacy for Living from OECD-PISA perspective”

Dr.,Jan de Lange, Director, Freudenthal Institute, Netherlands.

Chair, OECD-PISA technical committee

“Japanese Lesson Study for Developing Best Practice”

Professor Akihiko Takahashi, DePaul University,

Professor Shizumi Shimizu, University of Tsukuba

Panel for sharing the ideas of projects for planning international collaboration on Numeracy:

“How have countries adopted the Lesson Study Approach for Educational Development on their JICA Projects ? ”

General view of JICA Projects

Presentation from Countries on JICA Projects in Mathematics

**Jan 16 MON.** Open symposium on APEC:

**“International Symposium on Innovative Teaching Mathematics through Lesson Study”**

Welcome Speech, Yoichi Iwasaki President of the University of Tsukuba

Opening Address, Dr. Chira Hongladrom, Lead Shepherd of APEC Human Resouce Development Working Group,

Key note lectures:

“Professional Development through Lesson Study: A Lesson learned from US”

Professor Catherine C. Lewis, Mills College USA

“Comparative Study of Mathematics Classroom”

Professor Frederick Leung, Hong Kong

Lectures:

“Innovation of mathematics teaching with ICT”

## General Introduction

Professor Yasuyuki Iijima, Aichi University of Education, Japan

“Good Practice in Korea”

Professor Kyoungmee Park, Korea

“Open-ended Approach and Teacher Education”

Professor Maitree Inprashita, Thailand

General Discussion:

“Developing Research for Good Practice and its Methods”

Modulator: Professor Tad Watanabe, USA

**Jan 16 to Jan 20.** Specialist session on APEC

**“International workshop on Innovative Teaching Mathematics through Lesson Study”**

Jan 16 (after open symposium) Opening of Specialist Session

Jan 17 Morning School visit: Elementary School, University of Tsukuba.

Jan 18 Morning School visit: Secondary School, University of Tsukuba

Jan 20 Noon Closing

**Ways of Specialist session, Jan 16 – Jan 20, in APEC-Tsukuba Conference**

One of the goals of project is to develop visible models of good practices. At specialist session, we would like to discuss following points based on contribution from participants: what lesson study is, what the good practice is, why it is good, how it was developed. At the last stage of the session, we would like to conclude the reliable format, structure and categories of topics to describe good practice in mathematics education.

Specialist session will be managed by following two ways.

- a. Lesson Study meetings at the attached schools on January 17 and 18 mornings
  - 1) Short explanation of the lessons
  - 2) Lesson observations
  - 3) Discussion about lessons after observations
  - 4) Discussion about what Japanese way of the lesson study is.
- b. Presentation and discussion depending on categories

Presentation and discussion are categorized by topics depending on their full papers. Tentative categories are followings but it is not aimed to orient the contents of papers.

- A. Lesson Study Project for special themes in mathematics education

- B. Lesson Study Project for developing Innovative lesson approaches
- C. Lesson Study Project for teacher education and professional development
- E. Lesson Study Project for Implementing Curriculum
- F. Lesson Study Project with ICT

Presentation and discussion are managed following ways.

- 1) Modulator and presenters are nominated depending on their papers

The role of modulator is refocusing on special topics to be discussed.

- 2) 30 minutes (or less) presentations including questions and answers

The aim of presentation is sharing ideas on good practices. In presentation, the presenter prepares his/her presentation with a short movie (10 minutes or less). Presentation must answer what is good, why it is good, and how it is developed. The methodology to show video movie, the way of presentation, itself is also meaningful for discussing how useful to look at a short part of the lesson for teacher education.

- 3) Modulator poses the questions and having short Break.

After three or four presentations, the modulator pose some questions which are useful for sharing key and meaning full ideas for innovation of mathematics education, knowing difference and developing the ideas for innovation of mathematics education.

- 4) Discussion in group depending on questions

Group discussion is done by participants from economies and observers.

- 5) Each group reports in 5 minutes

- 6) Modulator integrates reports and writes the concluding paper with reporters.

### **Venues of APEC - Tsukuba Conference in Tokyo**

The meetings will be held following places:

Jan 15-16: International Conference Auditorium

JICA INSTITUTE FOR INTERNATIONAL COOPERATION

<http://www.jica.go.jp/english/contact/ific/index.html>

Jan 17-20: Attached Schools, University of Tsukuba at Tokyo

<http://www.gakko.otsuka.tsukuba.ac.jp/map.jpg>

and Meeting Rooms:

JICA INSTITUTE FOR INTERNATIONAL COOPERATION

Accommodations of representatives is going to be sited at the hotel in JICA Institute

for International Cooperation Building in Tokyo

**Important Information for Participants at First Meeting in Tokyo**

**Format of the papers**

The format of all papers including lectures and presentation in open symposium is the PME format<sup>1</sup> by Adobe pdf or MS word. There are no limitation of pages in the case of lectures in January 15 and 16. In the case of lectures in January 15 and 16, simultaneous translation English-Japanese is set for Japanese participants. Thus, it is necessary to have papers for translation.

For specialist sessions, we are expecting 8 pages but if necessary we do not count the pages of Appendix. You can see any papers of PME on ERIC by the key words "Psychology of Mathematics Education"

**Dead line of submission**

Please send your paper to [apec@criced.tsukuba.ac.jp](mailto:apec@criced.tsukuba.ac.jp) no later than January 7 for people can read before your coming to the conference.

**Recommended format of the paper for specialist session**

Followings are the expecting contents of full papers for specialist session:

- Description of Good Practices
- Why we can say it as good practices?
- What kind of reform is expected by such kinds of practices?

If necessary:

Please describe the setting in curriculum standard for explaining why it is good.

Please explain it by the technical term of mother language as well as English meanings of it.

Please explain it with relation to the world mathematics education research movement.

- Through the conference we would like to elaborate and develop appropriate ways of research paper format for describing and qualifying the good practice. Thus, you do not necessary to imagine the passed PME style research papers for writing your paper. It is better for us to consider using it to teacher education with example of VTR.

---

<sup>1</sup> <http://www.pme30.cz/doc/PME30Template.rtf>

- If necessary, you can add pages with the appendix for describing details of the lesson but at the same time, people could not read if you put appendix too many protocols in the lesson. If necessary, it may be also useful if you can add the lesson plan with your economy's format as well as excerpt of protocols of the lesson.

Additionally, at your presentation in conference, please use VTR or the data file of movie within 10 minutes for introducing a good practice. It may be necessary that VTR is edited with captions in English for understanding.

Following is an example:

[http://e-archives.criced.tsukuba.ac.jp/en/result\\_data.php?idx\\_key=1034](http://e-archives.criced.tsukuba.ac.jp/en/result_data.php?idx_key=1034)

You can see clearer/heavier version:

<http://www.criced.tsukuba.ac.jp/math/teaching-material.html>

Exploring Japanese Mathematics Lesson

-For sharing key ideas-

[.wmv](#)  
[\(short ver.\)\(53.3MB\)](#)

This is an example. The ways of developing VTR and showing may be a good topic to be discussed in our meeting. In this case, it is developed for teacher education. It is expected that teacher educator, in this case Masami ISODA, explains each situations. Depending on the ways of using, it is not comfortable because there is no explanation about whole lesson and teaching plan. Captions are not protocols!

The video more than 10 minutes is not appropriate to understand because English is the second language for most of participants. It must be helpful for all people if your paper including some protocols and resume of VTR for understanding your VTR.

### **Supporting Travel Expense**

Your travel expense will be supported from APEC Singapore Office or University of Tsukuba. The necessary information will be send to each person. If you have question in process, please ask immediately to the correspondences.

**List of Correspondence of the Conference**

Chair of organizing committee

ISODA, Masami

Associate Professor of Mathematics Education,

International Cooperation in Educational Development

University of Tsukuba, 305-8572 Japan

isoda@criced.tsukuba.ac.jp, Tel: +81-29-853-7286, Fax: +81-29-853-7288

Program organizer

SHIMIZU, Shizumi

Associate Professor of Mathematics Education,

Graduate School of Comprehensive Human Science

University of Tsukuba, 305-8572 Japan

Organizing Committee

OKUBO Kazuyoshi, Hokkaido University of Education

SHIMIZU Yoshinori, University of Tsukuba

YOSHIDA Minoru, Shinsyu University

SAITO Noboru, Naruto University of Education

BABA Takuya, Hiroshima University

NINOMIYA Hiroyuki, Ehime University

Supporting Members

CHINO, Kimiho., MIYAKAWA, Takeshi., AOYAMA, Kazuhiro.

Researchers, Mathematics Education,

International Cooperation in Educational Development

University of Tsukuba, 305-8572 Japan

chinok@criced.tsukuba.ac.jp, Tel&Fax: +81-29-853-6573

Conference Host

University of Tsukuba

## General Introduction

Organized by

Ministry of Education, Japan

Japan International Cooperation Agency (JICA)

Supported by

Ministry of Foreign Affairs, Japan

Japan Society of Mathematical Education (JSME)

Japan Society of Science Education (JSSE)