

## Forward

This is the progress report on the APEC project “A Collaborative study on innovations for teaching and learning mathematics in different cultures among the APEC Member Economies”. It included the result of APEC - Tsukuba International Conference.

At the third APEC Education Ministerial Meeting held on 29-30 April 2004 in Santiago, the ministers defined 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 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. At the first stage, we held APEC - Tsukuba International Conference on ‘Innovative Teaching Mathematics through Lesson Study’, in January 15-20th in Tokyo. The aim was to share research questions and develop collaborative framework for the implementation of innovative scheme in teaching and learning of mathematics. For stimulating learning in mathematics and science, we focused on Lesson Study to develop good practices as a way of innovation. We used VTR for sharing lesson and tried to clarify Lesson Study method and good practice. Those two are major features through project which contributes improvement of education, especially mathematics and science, in members of economies.

Based on financial support of APEC project and University of Tsukuba, the project organized following meetings:

- Survey of Mathematical Literacy in OECD-PISA and the Lesson Study movement in Developing Countries: Improving the Quality of Education for Developing Numeracy on Education for All
- APEC Open symposium: “International Symposium on Innovative Teaching Mathematics through Lesson Study”
- APEC Specialist session: “International workshop on Innovative Teaching Mathematics through Lesson Study”. Including school visits to know what Japanese Lesson Study is.

The conference has 226 participants and observers from 13 members of economies and 7 other countries. 13 members: Australia, Chile, China, Hong Kong, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, Thailand, USA and Vietnam (alphabetical orders).

Followings are targets and results of the Tokyo conference ‘Innovative Teaching Mathematics through Lesson Study’

- In order to develop a research proposal and collaborative framework for the implementation of innovation scheme in teaching and learning mathematics;
  - We shared good practices as models of lessons and lesson studies for developing good practices in each members of economies.
  - We shared Japanese Lesson Study which is a recommended way of professional developments, implementing curriculum and developing good practices.
  - We elaborated the study paper format for Thailand session
    - ✧ Good practice is defined by outcome.
    - ✧ Present good practice as a result of Lesson Study.
    - ✧ Lesson VTR is necessary for sharing good practice.
    - ✧ Defined format of the paper and VTR.

Through the conference, we discussed the conditions of good practice and the meanings of lesson studies. The former is related with the way of view a lesson. The discussion on the meanings of lesson studies is very important at shearing processes. We can categorize presented lesson studies as follows;

First category is comparative studies on lesson studies by researchers focused on cultural-educational differences behind lessons. We learned from following economies reports; TIMSS video tape study: Lecture from Hong Kong, Learners Perspective Study; Lecture and Reports from Hong Kong, Korea and Philippines

Second category is lesson studies for developing good practices by teachers and math-educators. They are focused on improvement of the qualities of education: students learning, teaching approaches, developing subject matter, curriculum implementations and professional development. Following economies' reports focused on ideas for developing practice; Australia, Chile, China, Indonesia, Japan, Malaysia, Singapore, Thailand, USA and Vietnam.

Both categories are useful and very important for our research project, “A Collaborative study on innovations for teaching and learning mathematics in different cultures among the APEC Member Economies”. In relation to our project, first perspective on comparative study contributed to know cultural differences and second perspective on improvement of the qualities of education contributed to share the idea of innovation. Based on these fruitful discussions, we recognized both perspectives are very important and for developing good practices, we preferred Japanese meanings of Lesson Study. Even if we focused on Lesson Study there are varieties of meanings and implementing processes depending on economies but we shared Lesson Study method that it done by teachers' group, elaborating lessons each other through observing lessons each others. Such as the cycle of ‘plan (preparation), do (study lesson: observation), see (reflection)’

We preferred Lesson Study from following reasons: First, it is focused on

improvement of the qualities of education in general. It is a way of professional development in any subject. Secondly, it is well known methods in other economies and already adopted at some economies such as USA, Indonesia and Thailand. Especially in USA, there is reform movement based on Lesson Study (See ‘Before it too late: A Report to the Nation from the National Commission on Mathematics and Science Teaching for the 21st Century (2000)’). Thirdly, because Lesson Study have already been adopted in economies, we can share the good experience, knowing what the significant of Lesson Study and knowing how to manage the Lesson Study project in each other. For example, US Lesson Study project and Thailand project show the real meaning of Lesson Study by their given data. Fourthly, mathematics is a most easily subject to share the idea of teaching approach. Beginning from mathematics, we can influence the idea of Lesson Study to the other subjects such as science.

The ‘APEC International Symposium on Innovation and Good Practice for Teaching and Learning Mathematics through Lesson Study’ will be held in Khon Kaen, Thailand in June 14-17th, 2006. In that symposium, we expect contributions from members of economies as their result of lesson studies based on developed frame work in Tokyo meetings. Through these processes, we share the methods of Lesson Study and good practices with VTRs which are useful for innovation of mathematics education in each member economy. We are looking forward to meet each other again and to share the good practices of mathematics teaching with VTR which are developed through Lesson Study.

We would like to acknowledge supported and contributed governmental organizations and institutions. APEC project “A Collaborative study on innovations for teaching and learning mathematics in different cultures among the APEC Member Economies” is proposed from Thailand. The conference is organized by the University of Tsukuba with the organizing committee with support of APEC Project Overseers, co-organized by : Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT) and Japan International Cooperation Agency (JICA), supported by Ministry of Foreign Affairs of Japan (MOFA), Japan Society of Mathematical Education (JSME), Japan Society for Science Education (JSSE). At last part of this forward, we would like to note the names of Takeshi Miyakawa, Kazuhiro Aoyama and Kimiho Chino, researcher of CRICED, that we could not complete this progress report without their hard editorial works.

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