

COMPLETION REPORT

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The Comparative Study of Mathematical Communication in Japan, Laos and Thailand

This comparative study of means of mathematical communication in Japanese, Laotian, and Thai mathematics schools can disclose essential aspects about mathematics teaching and learning. This is a measure of how well mathematics is taught and learned across 3 countries. The purpose of this qualitative case study research was to explore the means of mathematical communication of teachers and primary school students in Japanese, Laotian, and Thai Math classes. The target groups were teachers and students in Grades 1 – 6 at the Attached School of Naruto University of Education in Japan; the Demonstration School of Savannakhet Teacher Training College in the Lao People's Democratic Republic; and the Demonstration School of Khon Kaen University in Thailand. A total of 18 classes were inspected, one from each grade. Research tools included a video recorder, a camera, and field notes. The information was gathered by videotaping, photographing, and taking notes. Analytic descriptive methods were used to examine the data, which were based on Pirie (1998)'s conceptual framework for means of mathematical communication.

The results showed that the Japanese math classes had utilized six means of mathematical communication: ordinary language, mathematical verbal language, symbolic language, visual representation, unspoken but shared assumptions, and quasi-mathematical language. Meanwhile, math classes in the Lao PDR had discovered four means of mathematical communication, while the Thai math classes had discovered five, indicating that teachers and students in Japanese classes were using a wider variety of means of mathematical communication than those in the Thai and Lao PDR classes. Moreover, the findings revealed that at least 3 different means of mathematical communication had been used in the math classes in the three countries (ordinary language; mathematical verbal language and symbolic language). However, the means of mathematical communication in all of the Japanese classes had been based on the students at the center of mathematics learning, but some of the Thai and Lao PDR classes had been based on question - answer interactions between the teachers and students, where the teacher is the center of the classroom. This reflects the Japanese math classroom culture that allows students to think and solve problems in a variety of ways, as well as to use a variety of means of mathematical communication to create mutual understanding. Meanwhile, the math classes in Thailand and the Lao People's Democratic Republic, represent a classroom culture that aims to shift away from traditional teaching methods and towards education that encourages students to think and solve problems on their own according to educational reform policies and directions for the twenty-first century.

Publication of the Results of Research Project:

Verbal Presentation (Date, Venue, Name of Conference, Title of Presentation, Presenter, etc.)

Thesis (Name of Journal and its Date, Title and Author of Thesis, etc.)

Drafted for submission to international journal:

- 1) The Investigation of Means of Mathematical Communication: Case Studies of Math Classes in Japan, Lao PDR, and Thailand
- 2) The Comparative Study of Mathematical Communication in Japan, Lao PDR and Thailand

Book (Publisher and Date of the Book, Title and Author of the Book, etc.)