

## READING THE WORLD WITH MATHEMATICS: A CRITICAL MATHEMATICS LITERACY CURRICULUM IN TAIWAN

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### Abstract

This study aims to go into co-constructive approaches to teaching and learning in a junior high classroom in Taiwan. It studies co-construction of curriculum from the perspectives of a mathematics teacher and the students, as the teacher and the students attempted to co-construct aspects of the Classroom Level curriculum with each other. This 3-year study focuses on exploring the practices and understandings of the co-construction process between the teacher and the students when they conduct curriculum decision-making at the Classroom Level. In addition, in current curriculum reform contexts in Taiwan as well as in an active globalizing world, this study also tries to understand how the teacher and the students conduct reflective practices and what they have achieved when co-constructing curriculum at the Classroom Level. This kind of interpretive study is rarely seen in Taiwan's junior high school classrooms. Multiple methods are used to collect research data, including participant observation, interviews and document analysis. Results of this study are as follows:

- I. The co-construction of curriculum at the Classroom Level initiatively focused on the selection and organization of curricular experiences, including course content, learning activities, and subject matter: accuracy, precision, clarity, consistency, relevance, and good reasoning. Nevertheless, around the final year of the study, the mathematics teacher and the students gradually infused a critical thinking perspective into the co-construction of curriculum. That is, they started trying to examine those structures or elements of thought implicit in all the reasoning: purpose, question-at-issue, assumptions, concepts, reasoning leading to conclusions, empirical grounding, objectiveness from alternative viewpoints, and implications and consequences.
- II. The co-construction of curriculum initiatives at the Classroom Level was achieved through continuous negotiation between the mathematics teacher and the students. In order to deal with the simultaneous but incompatible opposition of opinions between the two parties, the teacher and students gradually stayed in a module as below: (1) learn a few negotiation strategies; (2) try to find out key tactics for success; (3) create a contract; (4) perform and reflect.
- III. The co-construction of curriculum initiatives at Classroom Level inspired the mathematics teacher and the students to adopt a range of approaches to upgrade their reflective practice level and the tools were a starting point. The theme of the students' reflective practice often focused on mathematics problem-solving strategies and the best effective way in calculation. On the other hand, the mathematics teacher's reflective practice often focused on personal philosophy clarification.
- IV. The co-construction of curriculum initiatives at Classroom Level facilitated the empowerment of the mathematics teacher and the students as well the quality-improvement of curriculum deliberation. Based on the long collaborative process, the teacher and the students not only used the present resources inside the classroom, but also tried to seek outside resources from School Level, Municipal Level and National Level through techniques and application of network relationship management.

**Keywords:** Co-construction, Critical Literacy, Reflective Practice, Network Relationship Management.