EFFECTS OF TEACHING
FOR DEVELOPMENT OF METACOGNITIVE ABILITY
- CLASSROOM SESSIONS -

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SUMMARY

The purpose of this paper is to investigate the effects of teaching for developing of metacognitive ability. This experiment involved fourth grade 2 classrooms (experimental classroom and control classroom). Classroom sessions were carried out for the both by same teacher used same problems. But it was the differences of both classrooms' situations that were the teacher's activities and the work-sheets used on the sessions. In the experimental classroom the teacher promoted the children to do metacognitive activities through the framework of teaching for development of metacognitive ability (Table 1). Instead, a pretest and posttest were carried out for all children.

The main findings of this investigation are the followings:

- Both metacognitive and cognitive growth of the experimental classroom are higher than those of the control classroom
- In the posttest, some children in the experimental classroom did some metacognitive activities that they had not done in the pretest

METHOD

Classroom Session Table 1 is the framework of the teaching of the experimental classroom. It is based on Schoenfeld (1987) and others.

Pretest and Posttest In the tests, each child was asked to solve the problem on the work-sheet and to answer the stimulated recall questionnaire. The work-sheet was used to analyze his/her problem solving process, and the stimulated recall questionnaire was used to represent his/her metacognitive activities.

Analysis These problems of the pretest and posttest were the same. Then from the tests, children's metacognitive growths and cognitive growths were respectively identified as followings.
Metacognitive growth is defined as

[the number of his/her metacognitive activities on the posttest]

$\bullet\cdot$ **[the number of his/her metacognitive activities on the pretest]**.

Cognitive growth is defined as

[the marks at his/her work-sheet on the posttest]—[the marks at his/her work-sheet on the pretest].

The results of teaching will be reported in this presentation.

Table 1 Framework of teaching for development of metacognitive ability

I. Solving the problem by oneself.
II. Talking about cognitive activities.
III. Talking about metacognitive activities.
IV. Using the metacognitive activities for a similar problem.

Table 2 Framework of investigation of metacognitive activity

1. Method of Investigation
(1-1) Solving a problem on the work-sheet
(1-2) Answering the stimulated recall questionnaire
2. Method of Analysis
(2-1) Scoring the mathematical problem solving processes

REFERENCES

Schoenfeld,A.H., (1987). What's All the Fuss about Metacognition ? In Schoenfeld, A. H.(Ed.), *Cognitive Science and Mathematics Education*, pp.189-215, Hillsdale, NJ : Lawrence Erlbaum.

This means to subtract.