

An Important Point of View for Lesson Study: Considering Children's Own Thoughts

Yukio Sugawara
Tayama Elementary School, Japan

1 Introduction

We teachers should reform current mathematics lessons into more interesting and significant ones to children. To realize it in school, Japanese lesson study can be an important method. Therefore, we need to consider how we should push on forward with lesson study actually.

2 Basic Idea of Lesson study

Lesson study must not be done just formally, that is, 1) Collaborative Planning 2) Lesson Observation 3) Analytic Reflection 4) Ongoing Revision in turn cooperatively. It needs a firm concept or point of view throughout the process.

3 An important point of view for lesson study

One of important points of view is how the teacher considers children's own thoughts about mathematic matters and introduces them into mathematics lessons. In this case, children's own thoughts mean their peculiar and natural ideas or images that they would have about mathematic matters and problems. Therefore, the thoughts might sometimes include misconceptions and wrong strategies, which are different from adults' thoughts. In past mathematics lessons, children's own thoughts have been neglected very much as an element to prevent the effectiveness of lessons. This is an enormous misunderstanding and loss. The thoughts that children have about mathematic matters naturally are just treasures that can make mathematic lessons more enriching, and should be made an important consideration.

4 How the lesson considering children's own thoughts should be constructed

Such thoughts as children have primitively can be an element to activate and deepen mathematics lessons. The teacher approves and assesses children's own thoughts, and then introduces them into mathematics lessons, by which a discussion among the children can be provoked and their thoughts will deepen more and more. Because mathematical thinking indicates not only deductive or inductive thinking, but also practical thinking itself, through which children express their natural ideas and feelings.

5 Conclusions

Mathematics lessons in which children's own thoughts are considered by teachers, very well can foster children's mathematical thinking and expression abilities. Furthermore, such lessons can fix children's foundation on mathematics and draw out their creativity; consequently, the lessons would improve children's performance of mathematics.

Sample of Lesson Study

3rd grade: Division with a remainder

1) Collaborative Planning

- ① Study by 3rd and 4th grade teachers
Analyze subject matters
- ② Study by whole teachers in the school
Review a lesson plan

System of subject matter, Prior knowledge, **Anticipation** of children's own thoughts

Better lesson planning

2) Research Lesson (observation)

Problem: There are 17 children. They will sit by 5 children at each bench. If they all will sit, then, how many benches are needed?

Formula: $17 \div 5 = 3$ remainder 2

Children's answers: A.3 (many) A.4 (1)

T: Make children discuss together on the basis of their thoughts.

Introducing children's own thoughts in the lesson

- Children have the preconception that ϵ answer equals a quotient.
- The words "sit by 5 children at each bench" become an obstacle to them, and therefore, they can not deal with "remainder 2."



3) Analytic Reflection Lesson protocol, VTR

Reflecting the instruction by the teacher and the phase of children's thinking

- Reflect the lesson plan and practiced lesson (questionings and instruction by the teacher)
- Children's activities

The answer is $3 + 1 = 4$ (?)

4) Ongoing Revision

- Devising a better lesson plan collaboratively to make the use of children's own thoughts