

6. Analytical Study on Expressive Abilities Based in Scientific and Logical Thought

Leader: MIYAKE Masao, Director, Department for Curriculum Research,
Curriculum Research Center

(1) Purpose and Aim of Study

In response to the results of studies such as TIMSS, PISA, and the research on curriculum implementation, MEXT is now seeking ways to enhance students' powers of formulation and expression to use their own ideas to arrive at answers to problems. This study set out to identify how the rate of correct responses to essay-type questions among Japanese children, as revealed by the series of TIMSS surveys up to 2003, may change in the 2007 TIMSS conducted four years subsequently. This investigation is also crucial to the task of determining the extent to which students are developing scientific and logical thought processes and the capacity to express their own opinions and ideas, as intended under the Courses of Study.

(2) Outline of Research Results

- As highlighted in PISA, Japanese schoolchildren's skills of reading comprehension and expression cannot be considered adequate in international terms. The study thus undertook detailed analysis of the results of open-ended questions set for TIMSS, the international comparative study of academic ability in science among elementary and lower secondary school children, with the aim of identifying the areas in which problems lie. It was found that, compared to four years earlier, the rate of correct responses to open-ended question was tending to improve, but that there were still points requiring attention in relation to some forms of question content.
- Earlier research has identified several angles for analysis of responses to essay-type questions, including the vocabulary (terms) used by students in their written responses, the logical construction of the responses, and the use of drawings and charts as explanatory tools. Further consideration was given to these angles in the course of this study.