

# The Movement of Thinking Mechanism from ‘Internalization and Revision’ to ‘Extrapolation and Explanation’: The Study on the Conceptual Development about Conservation of Mass for Taiwanese Seventh Graders

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## Abstract

The purpose of this study was to explore the development of conceptual categories and thinking mechanisms relating to the concept of ‘conservation of mass’ for 7th graders. Firstly, the two-tier diagnostic instrument focusing on conservation of mass was administered to 35 7th graders from Kaohsiung County. The participants were divided into high, middle and low groups according their scores in the test. And, 6 participants (with 2 students in each group) were chosen to attend the following semi-structured interviews. Secondly, the microgenetic analysis was employed to analyze the conceptual content and development of conceptual categories to construct the flow chart of students’ conceptual development. The analyses revealed that students’ conceptual development about conservation of mass involved the development and shift intra- and inter- conceptual categories, which all of the relating categories were advanced simultaneously instead of the development of individual category independently. In addition, the thinking mechanism of students showed the tendency from “internalization and revision” to “extrapolation and explanation”.

Keywords: Microgenetic Analysis, conceptual development, conceptual categories, the conception of conservation of mass.