

Potisak Potisen 2015: Development of Grade-11 Students' Mental Model in Rate of Reaction through Model-Based Inquiry Activities. Master of Education (Science Education), Major Field: Science Education, Department of Education. Thesis Advisor: Assistant Professor Chatree Faikhamta, Ph.D. 141 pages.

Mental model is important for students to learn chemistry. This study was aimed to investigate 1) students' mental models in the topic rate of reaction after they had studied through Model-Based Inquiry (MBI) approach and 2) the ways of developing students' mental model in rate of reactions through that approach. Action research was used as research methodology in which I researched my own teaching in a chemistry class of 28 grade-11 students. Data from reflective journals and mental model questionnaires were used as main raw data sources. Data were analyzed by qualitative method such as categorizing, comparing and concluding.

Based on data analysis, I found that most students' mental models in the rate of reaction were in correct mental models group (45%) and incomplete correct mental models group (25%). The effective ways of teaching for improving students' mental models: were, teaching with videos that show differences between macroscopic and microscopic changes through analogy can improve students' mental models.; giving students opportunities to plan their experiments and having them present and discuss with the whole class can save time and help students do experiment effectively; teaching by engaging students with questions then finding the answer, constructing models and discussing with whole class can improve students' mental model; using challenging questions, answering with questions and discussing questions in the whole class should be emphasized; and, activities should engage students to get involved with or had the experience in constructing their own knowledge.

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Student's signature

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Thesis Advisor's signature