The Study of Scientific Conceptual Understanding of Reaction rate by Using 5E Model of Instruction Combined with Cooperative Learning for Matthayom Suksa 5 Students

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Abstract

The aim of this research was to study scientific conceptual understanding of reaction rate by using 5E model of instruction combined with cooperative learning. There were 5 lesson plans which covered reaction rate in all 4 topics: a) definition of reaction rate, b) calculation of reaction rate, c) concept of reaction rate and d) factors affecting reaction rate. The research sample consisted of 41 Matthayom Suksa 5 students at Tessaban1 (Engsiangsamakkee) School. The research was carried out using one group pretest-posttest design. Data collecting tool were 5 lesson plans and 20 items of 2-tier scientific conceptual understanding test. Data was analyzed by means, percentage, standard deviation, dependent samples t-test and normalized gain <g>. The results based on dependent samples t-test that students’ posttest score (13.10 ± 3.64) was significantly higher than students’ pretest score (5.68 ± 2.07), which was statistically different at the .05 level. Their normalized gain <g> equaled to 0.22, which was a low level. Percentage of students in each scientific conceptual understanding included in 3 levels: correct conception (CC), alternative conception (AC), and misconception (MC). Pretest were 2.80, 24.51 and 72.69 %, respectively and posttest were 21.59, 25.24 and 53.17 %, respectively. There were noticed that students had a better understanding of scientific concepts. This research showed that 5E model of instruction combined with cooperative learning could develop students’ scientific conceptual understanding on reaction rate.

Keywords: 5E model of instruction/ Cooperative learning/ Reaction rate/ Scientific conceptual understanding