

Wilawan Hitapisut 2013: Constructivist Based Learning Activities Integrated with History of Chemistry about Chemical Equilibrium of High School Students. Master of Education (Science Education), Major Field: Science Education, Department of Education. Thesis Advisor: Mrs. Akarat Tanak, Ph.D. 133 pages.

The research aimed to study the learning guideline using constructivist based activities integrated with history of chemistry that could adjust and enhance the concept of chemical equilibrium of grade-11 students; and to study chemical equilibrium conception of grade-11 students from the school in Saraburi province, after using the activities. The research was designed as a classroom action research. The data were collected from a concept test which comprised of 10 open-ended items, students' journals and worksheets, and teachers' field notes. The data from concept test were grouped into five categories and then calculated to percentage. The data obtained from students' journals and worksheets, and teachers' field notes, were analyzed by content analysis.

The results showed that the learning guideline using constructivist based activities integrated with history of chemistry was able to adjust and enhance the chemical equilibrium concept of grade-11 students. The integration of history provided the students with similar experiences to that of the scientists in the past. The activities enabled the students to check their knowledge and provoke questions prior to the classroom learning. The students were encouraged to find out the answers by their own learning from the actual practice of the scientists; the social interaction between students and students, and teacher and students; and various media. The students had thus gained new and accurate scientific concepts by relating and combining their own constructed knowledge. It was found that the constructivist based activities integrated with history of chemistry had eased the conceptual adjustment of students. It was found that 60.58% of the students understand scientific concept, 23.85% have partial understanding, 11.73% of students have partial understanding with misunderstanding concept, 3.46% of students misunderstand the concept, and 0.38% of students have no scientific understanding. Most of the students understand the scientific concept of the *Reversible Reactions*. On the other hand, the concept of *Chemical Reaction Equilibrium* was misunderstood by most students. It can be concluded that the constructivist based activities integrated with history of chemistry that can help adjusting and enhancing the concept of chemical equilibrium of grade-11 students.

---

Student's signature

---

Thesis Advisor's signature