Khuanruethai Thiangchanthathip 2010: Developing Grade - 11 Students' Scientific Conceptions in the Topic of Endocrine System and Understanding of Nature of Science by Inquiry – Based Learning. Master of Education (Science Education), Major Field: Science Education, Department of Education. Thesis Advisor: Assistant Professor Sumalee Kanjanachatree, Ed.D. 157 pages.

The purpose of this research was to study the developing grade – 11 students' scientific conceptions in the topic of endocrine system and understanding of nature of science by inquiry – based learning. The participants in this study were eighty grade – 11 students from a school under the jurisdiction of the Office of Phayao Education Zone 1 first academic year 2009. The research tools consist of: inquiry - based learning plan on the topic of endocrine system, an endocrine system concept test, an open-ended questionnaire, classroom observation field notes and students' journal. The data about developing students' scientific conceptions in the topic of endocrine system from an endocrine system concept test were calculated by using percentage to describe degrees of the students' conceptions in 4 groups. The data about developing students understanding of nature of science from an open - ended questionnaire were calculated by using percentage to describe degrees of the students' understanding of nature of science by groups of students' answers. The data from classroom observation field notes and students' journal were analyzed by content analysis.

The results were: 1) inquiry - based learning could develop students' conceptions in the topic of endocrine system. Students acquired more scientific conceptions, partial scientific conceptions and students had less partial scientific conceptions with misconceptions and less misconceptions. Except that on homeostasis with endocrine system, students had more misconceptions. 2) inquiry - based learning could also develop students' understanding and reasoning of nature of science in all aspects. Most students held a better understanding of the participation of scientists in public affairs both as specialists or as citizens, developing science relates to social technology cultural basis and political, science demands evidence, science is tentative and science is a social activity in which everyone should participate, respectively.

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