

Pikaned Uthaichai 2011: The Development of 12th Graders in Molecular Genetics Concepts by Inquiry-based Learning Activities. Master of Education (Science Education), Major Field: Science Education, Department of Education. Thesis Advisor: Miss Jeerawan Ketsing, Ph.D. 200 pages.

The case study research aimed to 1) study the current teaching and learning management with regard to the unit of Molecular Genetics of teacher. 2) study the 12th graders' molecule genetics concept 3) study the 12th graders' molecule genetics concept who learnt by inquiry-based learning activities. The study comprised of 2 phases. Phase 1 were to explore current teaching and learning management of the Molecular Genetics unit of teacher and to examine 12th graders' molecular genetics concept. The case were 58 12th graders who learnt the Molecular Genetics unit in 2009 academic year in a high school located in Buriram province, as well as the teacher who taught the unit. Data about the current teaching and learning management was collected by school and classroom observation, researcher's field note and semistructure interviews with the teacher and students. The data was analyzed through a content analysis. For students' molecule genetics concept, the data was gathered via the Molecular Genetics Concept Test and grouping into five concept groups according to Westbrook and Marek. The results were used for designing the leaning activities used in the phase 2. Phase 2 were to study the 12th graders' molecule genetics concept who learnt by inquiry-based learning activities. The case was 36 12th graders who studied the Molecular Genetics unit in 2010 academic year of the school in the phase 1. The data was collected by using the Molecular Genetics Concept Test before and after they learned the unit through inquiry-based learning activities. The data was analyzed by grouping it into five concept groups as same as the phase 1

The results of the phase 1 reveal that in the Molecular Genetics unit, the most teaching method used was lecture. The teacher did not use a variety of instructional media. They mainly relied on text book. The main method for addressing the students' learning was multiple choices test. With respect to molecular genetics concepts, the study shows that the majority of the students perceived alternative understanding even if they had learnt the unit. The results of the Phase 2 indicate that inquiry-based learning activities were able to develop 12th graders' molecular genetics. After learning the Molecular Genetics unit through inquiry-based learning activities, the number of the students who had complete understanding was increased in all of the concepts being tested while the number of the student who conceived alternative understandings and no understanding were decreased when comparing with the before studying the unit.

Student's signature

Thesis Advisor's signature