

An exploratory study of students' conceptual understanding of energy cycle in thermochemistry through argument-based inquiry instructional strategy (ABIIS) laboratory

ABSTRACT

This study explores how laboratory activity with the argumentative approach could promote students' conceptual understanding in the Hess' law energy cycle through laboratory work. Laboratory work with an argument-based inquiry instructional strategy was set up to 15 pre-university students from one of the Form 6 Centre at the West Coast Division of Sabah, Malaysia. The laboratory work consists of a guided inquiry-based instruction with an argumentative approach in the topic of thermochemistry. The students' understanding of the energy processes was analyzed with a qualitative method using a semi-structured interview and triangulated with conversation analysis. The data collected from students' conversation during the activity was then triangulated with reflective writing at the end of the laboratory lesson. The study shows the students' prior knowledge and argumentation discourse significantly influences the development of conceptual understanding. This study emphasizes argument-based inquiry (ABIIS) in laboratory work to enhance their conceptual knowledge in the laboratory.