

Abstract

This research discusses the effect of Prediction-Observation-Explanation (POE) teaching strategy on the "density" concept study among students, and their concept changes during the POE teaching. Research targets are 82 students from three eighth grade classes in a junior high school. The major researching tools are pre/post examination papers and associate study materials. The examination papers are designed and compiled by the researcher. These examination papers are inspected, revised and tested by three physics and chemistry teachers. Based on students' misconception in "density" and the POE teaching strategy, study materials are designed as worksheets. Researcher found that students have the following misconceptions: (1) incorrectly make use of "light" and "heavy" as the determination of floating and sinking; (2) wrong analogy: students concluded the floating and sinking of the objects only by the analogy with certain conditions (such as mass) between objects; (3) simple linear relationship produced misconceptions: students considered that the density would increase if mass increased given the same kind of objects. My research suggests: (1) when teaching "density", teachers should base on multiple circumstances instead of single one in order to judge whether students understand the concept, and determine their understanding of the concepts by studying their reactions under different circumstances; (2) after the completion of teaching one concept, teachers should leave more time to students to think through; (3) instead of letting students learn by reciting formulas, organizing activities for experiments can more effectively introduce students to the abstract concept from concrete operations.