ABSTRACT

Structured Clock Reaction Demonstration Implementation on Assessing Student's Understanding of Atomic Structure, Chemical Bonding, Thermochemistry, and Acid and Base Concepts

Suyanta, Sukisman Purtadi, Rr. Lis Permana Sari
Chemistry Education Department, Faculty of Mathematics and Science,
State University of Yogyakarta

This research aims are to find out: 1) the profile of student's understanding of atomic structure, chemistry bond, thermochemistry, and acid and base concepts identification assessed by structured clock reaction demonstration (SCRD), 2) the forms of student's misconceptions of atomic structure, chemistry bond, thermochemistry, and acid and base concepts identification through structured clock reaction demonstration (SCRD).

This research is a descriptive research. There are ten SCRD implemented as assessment tools to explore student understanding. Each of SCRD was conducted in two stages, namely, anchoring demonstration (to give students chance doing fact observation and concept exploration) and core demonstration (including core question to explore student understanding). Rubric assessment was developed. Students answers was analyzed qualitative descriptively.

The finding of this research shows that the student's understanding of atomic structure, chemistry bond, thermochemistry, and acid and base concepts identification assessed by structured clock reaction demonstration is low (less than 10%). Misconception which can be revealed by using structured demonstration clock reaction are categorized into three form: a) misconception on concept definition (e.g. the phenomenon in which a balloon can extract some paper after the balloon is smeared onto the hair, it happens because of the electromagnetic energy; atom consists of positive ion and negative ion, oil and water can not be mixed together because both are non polar, an endoderm reaction is a reaction which is signified by heat releasing from system to environment), b) misconception on characteristic level (e.g. the whole reaction results gas is called exothermic reaction), and c) misconception on application level (e.g. oil and water can not be mixed for there is no pair of bond electron, cold water's molecule is lighter than hot water's molecule).

Key words: students' understanding, misconception, structured clock reaction demonstration, assessment