RECENT DISSERTATIONS

MICHAL DRECHSLER, 2005:

Textbooks', teachers', and students' understanding of models used to explain acid-base reactions (licentiate thesis)

Department of Chemistry, Karlstad University, Sweden
Karlstad University Studies 2005:1.

Abstract

This thesis reports an investigation of how acid-base models are understood in the Swedish upper-secondary school. Acid-base reactions can be described in several ways: by formula equations as reactions between substances, or by ionic equations as proton transfer reactions according to Brønsted's model. Both models are introduced in chemistry teaching at Swedish secondary schools. The aim of this study was to determine how textbooks and teachers handle the different models to explain acid-base reactions. Further to investigate the ideas Swedish students from upper secondary school had about the role of chemistry models in general and those related to acids and bases. The four most widely used chemistry textbooks for upper secondary school in Sweden were analyzed. Further, semi-structured interviews were conducted with six chemistry teachers and seven students from upper secondary school. The textbooks neither described the differences between the models used to explain acid-base reactions nor clarified why the Brønsted model was introduced. Teachers were well aware of the importance of using models in their lessons. However, they seemed to have difficulties in applying this view with respect to acids and bases. There was no clear distinction between the models used to explain acid-base reactions and some teachers had not reflected on the differences between them. In addition, teachers seemed to rely on the content of chemistry textbooks. In spite of the positive selection the students in our study had difficulties to properly describe acid-base reactions using the Brønsted model. They were aware of the importance of using models in chemistry in general, but could not apply their views to acid-base reactions. Implications for textbook writers, teaching and further research are discussed.

Language: English
ISBN: 91-85335-40-1
Contact: michal.drechslar@kau.se