SP - (16012) - MODELLING BASED TEACHING IN CHEMISTRY A WAY TO IMPROVE SCIENTIFIC LANGUAGE OF SECOND LANGUAGE LEARNERS?

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Short Abstract

This study focuses on if and how second language learners' explanations of polymeric concepts and scientific language in chemistry develop through Modelling Based Teaching in a multilingual context. The study is conducted in three multilingual classes, with eight different first languages represented, in an upper secondary school in Sweden. In the theoretical framework of Modelling-based Teaching in science education, MBT, along with this study, models are understood as epistemic artefacts, related to many of the scientific practices in which chemistry argumentation is an essential part of the activity (J. K. Gilbert & Justi, 2016). *Previous studies have shown that conducting a more student-active approach in chemistry teaching leads to development of student's use of scientific language* (Abir & Dori, 2013; Ehdwall & Wickman, 2018).

In addition to MBT enabling a student-communicative approach to chemistry, MBT is also multimodal. Students' explanatory models can be expressed in many different ways. When students fail to verbally express their thoughts about a scientific phenomenon, they can use non-verbal representations such as drawings, concrete models or gestures to support their argumentation (Gilbert & Justi, 2016). *Studies show that nonverbal representations, in modelling, are common when students attempt to express their ideas more clearly, for substituting or explaining specific scientific vocabulary (*Mendonça & Justi, 2013*). These aspects justify the use of MBT in a multilingual teaching situation. Concerning students who are not taught in their first language and who have not yet developed their second language or scientific language corresponding to the level of the teaching, non-verbal argumentation can be of great help to understand processes, contexts and concepts and to develop a scientific language. The result indicate that students, with Swedish as a second language in a multilingual context, benefit from the MBT- activity in developing explanations of concepts and scientific language.*