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Meaning making through use of interactive whiteboards during physics group work. A case study from engineering education

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Abstract

The thesis investigates physics group work among engineering students. A case study is presented, in which first-year engineering students participated in regular group-work sessions as part of a basic physics course. Each student group had an interactive whiteboard at its disposal, which was to be used for writing and handing in solutions to physics problems.

The research interest guiding this study is how the collective meaning-making process during the group work is influenced by the ways the students used the interactive whiteboard during the group work. Also, the nature of the subject matter is investigated from a theoretical perspective, in order to explore the interaction between the teacher and the students during teacher interventions in this particular learning situation.

Based on qualitative analyses of video data from group work, and interview transcripts from the students involved in the study, the results show that the interactive whiteboard holds promising potential with regard to the students' collective meaning-making process during problem solving. However, this potential is not realised automatically, as aspects related to group dynamics and aspects related to the group-work format could have an inhibiting effect on this potential.

The dynamics of teacher interventions, which has been investigated in light of what I argue is a fundamental epistemological feature of the subject matter, has characteristics that are attributed to an implicit agreement between the teacher and the students. This epistemological feature governs both the teacher's and the students' actions during teacher interventions, and I claim that this feature is of relevance to learning situations other than the one described in this thesis.

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