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Abstract

This paper explores first-year engineering students' participation in flipped mathematics classroom. The work uses Sfard's commognitive framework both as a lens for conceptualizing learning as participation in mathematical discourse and as a methodology for analysing the data generated by the activities that build the mathematical discourse. Data was collected mainly by video recording of classroom activities of first-year engineering students enrolled in several mathematics courses at a Norwegian university in 2016/2017. The aim of the study is to add to the lack of research on participation in flipped mathematics classrooms at the university level. The paper argues that engagement in the videos out-of-class enhances students' participation in the mathematical discourse. The commognitive analysis comparing out-of-class videos and in-class activities show that there are indications of student learning through expansion of the discourse in the videos and enhanced participation in mathematical activities.

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Helge Fredriksen received his master in physics from University of Tromsø in 1994. In addition to being a PhD Research Fellow at Agder University, Kristiansand, he holds a position as Assistant Professor at The Arctic University of Norway, campus Bodø. Fredriksen has research interests in active learning strategies in mathematics such as flipped classrooms. Additionally he participates in various R&D activities in information and communication technologies.

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