



How different pedagogical approaches affect student active learning: a teacher-researcher collaboration for assessing student engagement through video data in classroom settings

Ellen Egeland Flø
University of Oslo

The present study aims to contribute to diversify methods for video data analysis regarding teaching quality. Specifically, this is done by developing an algorithm which quantifies student engagement in video data through student movement and sound. This study builds on research showing that classical classrooms demonstrate lower engagement than optimal for learning (Pijeira-Díaz et al., 2018) and that increased engagement is connected to increased learning (Bedard et al., 2019; Kariippanon et al., 2021). Moreover, physically active classrooms demonstrate increased engagement and learning compared to a more classical teaching approach (Bedard et al., 2019; Kariippanon et al., 2021). These results taken together with the teachers' ability to affect the employed pedagogical practices and lesson design, which in turn affect student activity, is central for student engagement and learning. By interpreting teaching quality, at least in part, as the ability to affect student engagement and learning, quantification of student activity level is of great importance to assess and further develop this quality. Through a teacher-researcher collaborative project such an algorithm was developed,

and findings demonstrate the ability of the algorithm to identify quantified levels of student engagement as well as large and significant correlations between movement and sound levels in authentic classroom video data. These results demonstrate that such an algorithm can provide additional information about teaching quality from video data (i.e., which pedagogical approaches and lesson designs increase engagement), which can further inform teacher education by informing its curriculum, as well as teacher professional development. Concludingly, as there can be a certain level of skepticism to qualitative research findings among some teachers, teacher-researcher collaborative efforts may be of particular interest when additional quantitative outcomes are included, especially those which are easily converted into practical usefulness by identification of particular pedagogical approaches and/or lesson design which increase/decrease student engagement.