The same in math as in language arts? Applying the PLATO framework across subjects in Norwegian classrooms

Armin Jentsch
University of Oslo

Scholars from subject matter didactics often argue that teaching quality research should consider the specifics of the subjects into which they investigate (e.g., by developing subject-specific observation systems). However, findings are difficult to interpret across subjects if subject-specific observation systems are applied because it is not clear whether the same constructs were assessed. To ensure that teaching quality was assessed equivalently across subjects, the same classroom observation systems must be applied, and observation scores can then be investigated for measurement equivalence. As evidence on this matter is still rare, we address this desideratum and make use of data from the Linking Instruction and Student Achievement (LISA) study in which video observations from 85 Norwegian mathematics and language arts classrooms were collected and coded with the Protocol for Language Arts Teaching Observation (PLATO). We performed Generalizability studies to decompose observation score variability into classroom, lesson, and rater effects. We found that raters apply the PLATO framework differently in mathematics and language arts classrooms. In more detail, in mathematics more variability is due to changes in teaching quality over time for purpose, representation of content and modeling (e.g., variability across lessons within classrooms). On the contrary, we found higher lesson variability for classroom discourse and text-based instruction in language arts. For some dimensions, large rater effects were observed. In mathematics rater main effects were found, whereas in language arts, raters ranked classrooms differently. Although data were collected from only two subjects and in a single educational context, our findings challenge the assumption that the same constructs were captured across subjects, suggesting that PLATO scores have a different meaning in mathematics and language arts classrooms.