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Title	Teacher mathematical pedagogical content knowledge, student learning style, instructional plan, and classroom interactions in Mathematics: a multi case study
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ABSTRACT

This multiple case study examined the interaction patterns in selected Grade 8 mathematics classrooms in a science high school through a systematic observation approach of the most prevalent classroom interactions of the students and teachers. It also determined how these interactions differed by student learning style and by teacher mathematical pedagogical content Knowledge (MPCK).

Three Grade 8 classes and their teachers participated in the study. Data were collected using the interaction patterns instrument, classroom observation snapshot, questionnaires, interview guides, tests, and the instructional plan rubric. Content analysis was performed on classroom interaction patterns, classroom observation snapshots, instructional plans, and interview transcripts. A thematic analysis was also performed to examine interaction patterns.

Results show that the most prevalent classroom interactions were scaffolding student learning (teacher-initiated) and initiating unnecessary remarks/behaviors (student-initiated). It was also observed that mathematics classes were still teacher-centered and students were predominantly auditory and kinesthetic. Furthermore, The three teachers had almost the same level of MPCK and the same most prevalent classroom interaction pattern—scaffolding student learning. Teacher MPCK also influenced instructional planning of teachers. The study further found that experienced teachers considered the student learning style in instructional planning and novice one considered it even while in the process of implementing the instructional plan.

Keywords: classroom interactions, instructional plan, teacher mathematical pedagogical content Knowledge, student learning style