

PRE-SERVICE TEACHERS' TASK SELECTIONS FOR ASSESSING STUDENTS' MISCONCEPTIONS

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Diagnostic competencies are an important facet of mathematics teachers' professional competence (Leuders et al., 2022). In assessment situations, teachers need to select and assign appropriate tasks that have the potential to reveal an individual student's misconception in a certain topic. Previous research suggests that teachers do not always select the most appropriate tasks to support student *learning*, but we do not well understand teachers' task selection processes in *assessment* situations (Kron et al., 2021). Specifically, there is little empirical evidence for the assumption that selecting tasks with high diagnostic potential leads to more correct diagnoses.

We asked pre-service teachers to identify individual students' misconceptions in the domain of numbers. We were interested in the extent to which the *quantity* and the *diagnostic quality* of selected tasks were related to participants' accuracy in identifying students' misconceptions. The sample comprised 461 pre-service primary school teachers (403 female). We used a digital simulation with six virtual students, each of whom had one specific misconception that was revealed in their task solutions (e.g., errors in tasks requiring understanding of the place-value system). Participants had to identify the virtual student's underlying misconception by selecting tasks from a given portfolio and reviewing the student's answers. We analyzed the number of selected tasks (*quantity*) and their diagnostic potential for revealing the respective student's underlying misconception (*diagnostic quality*).

General linear mixed models showed that across all assessments, selecting one additional task increased the odds of accurately identifying the misconception by 10%, whereas selecting one additional task with high diagnostic potential increased the odds by 101%. Thus, in task-based assessments, the quality of the selected tasks is indeed more important than the total number of tasks used. Further analysis is needed to better understand how pre-service teachers identify relevant task features.

References

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