

USING DIGITAL TECHNOLOGY TO FOSTER STUDENTS' MATHEMATICAL AND SELF-ASSESSMENT COMPETENCIES

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Formative assessment (Black & Wiliam, 2009) is regarded as a key component of effective classroom instruction. However, formative assessment is often lacking student-centered practices like self-assessment which can not only support students' learning outcomes but also their metacognition. Moreover, little is known how digital technology can support students' formative self-assessment. In the BASE-project, we aim at the development of a digital formative self-assessment-tool (BASE-tool) to foster students' basic arithmetic competencies as well as their self-assessment competencies (Thurm, 2021).

In a first design-based-research cycle a digital diagnostic number line task (represent the multiplication 6×4 on the number line) has been designed. The number line task includes three specific design elements: (1) dynamic and interactive sample-solutions, (2) adaptive feedback on task solutions and self-assessment and (3) task-specific self-assessment criteria, which are criteria that focus on specific aspects of a correct solution (e.g., the first factor corresponds to the number of my jumps, the result of 6×4 corresponds to the end point of my last jump). We are currently conducting a qualitative video study (thinking aloud) with eight fifth graders where we investigate if and how the interplay between the three design elements of the number line task foster students' multiplication and self-assessment competencies. First, we expect that the comparison of the students' own solution with the sample solution using the detailed conceptual self-assessment criteria will support students' self-assessment competencies. In particular, we assume that students can relate the different sources of information from the three design elements and understand that self-assessment goes beyond a simple "right/wrong" assessment. Furthermore, we expect that the dynamic and interactive representations in the sample solution in combination with the other design elements support students' multiplication competencies. In the presentation, the results of the video study will be presented and discussed.

References

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