PRE-SERVICE TEACHERS' USE OF INFORMATION WHEN DIAGNOSING FIRST GRADERS' NUMBER SENSE

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Supporting first graders in developing their number sense from basic counting to more sophisticated understandings of numbers and operations is a challenging task (Anghileri, 2006). Teachers have to assess where the children are in their learning process, e.g., by analysing how they solve arithmetic tasks or how they explain their answers. Diagnosing first graders' number sense in such a way is an essential prerequisite for providing them with suitable follow-up learning opportunities. Studies in this context show that the quality of teachers' diagnostic judgements depends on whether valid information can be identified and used while invalid information can be ignored (Loibl et al., 2020). It is, however, still unclear to what extent pre-service teachers are able to use information when diagnosing first graders' number sense. Accordingly, our research questions are: (1) In what ways do pre-service teachers use information of different validity for diagnosing first graders' number sense? (2) To what extent is the quality of their diagnosis related to their use of information?

To address these research questions, we designed a vignette-based test instrument comprising of four authentic classroom situations based on text (student-teacher interaction) and images (photo of task and solution). The vignettes were developed based on literature and validated through $n=14$ experts (teacher educators in the field of arithmetic). According to our research aim, each vignette was varied in three experimental conditions with different information validity. The vignettes were embedded in an online questionnaire and answered by $n=173$ pre-service teachers at the end of a one-semester course on learning arithmetics in primary school. Two types of data were collected: written diagnostic judgements and process data about the use of information in form of mouse movements. A coding manual for analysing the participants' diagnostic judgements is currently developed. First findings will be presented and discussed at the conference. We expect that the findings indicate to what extent pre-service teachers succeed or struggle in identifying and using valid information when diagnosing first grader's number sense. The results of the study can help to understand how diagnostic competence can be fostered in university courses.

References

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