

Changes in purpose, content and format: Trends in assessment in mathematics education

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As long as people have taught other people, assessment – understood as using students’ responses to specially created or spontaneously occurring stimuli to draw inferences about their knowledge and skills – has been part of this educational enterprise. Knowledge of students’ understanding is considered to be indispensable for educational decision making. This is true at all levels of education, from kindergarten to university, and from the micro setting of a classroom to the macro environment of education policy. There is general agreement that without feedback about students’ learning, education cannot function. However, what information is gathered and in what way this information is collected, can differ largely due to different views on learning and instruction. Therefore, the worldwide reform of mathematics education, started in the 80s, demanded a new view of assessment in mathematics education. Since then, the world of assessing students’ mathematical understanding has changed remarkably and this process of rethinking assessment and developing better assessment tools is still going on.

The aim of this paper is to reflect upon the current state of this process and identify recent assessment approaches and directions for future developments. By reviewing recent assessment literature and considering my own experiences with assessing students’ performances in mathematics I found three lenses that give access to recent trends in assessment in mathematics education.

The first lens focuses on the *purpose* of assessment. This lens raises the question who is assessing and for what reason this is done. Answering this question reveals much support for re-conceptualizing assessment as “assessment for learning” and extending large-scale and standardized assessment with classroom assessment in which assessment is an integral aspect of instruction.

The second lens zooms in on the *content* of assessment. With the present movement towards setting challenging educational standards and evaluating students’ progress in meeting such standards, we are faced with the imperative necessity to rethink what we are assessing. For instance, having standards that incorporate the ability to mathematize – meaning using mathematical knowledge to solve problems – implies that an assessment should make this mathematical reasoning visible and that not only the answers should be considered as an output variable, but the strategies as well.

The third lens leads to the *format* of assessment. When looking at the possible means that provide us with knowledge about the mathematical performance of students, it is clear that advances in the information technologies bring in new opportunities for assessment. After oral assessment and written assessment, computerized assessment has made its entry in the history of assessment.

What these three lenses all have in common is that they each reveal the necessity of extending the psychometric approach to assessment with didactical approaches and establishing multidisciplinary collaboration of psychometricians and content domain didacticians.