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Using the mixture Rasch model to explore knowledge resources students invoke in mathematic and science assessments.

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Summary: The purpose of this study was to investigate whether mixture Rasch models followed by qualitative item-by-item analysis of selected Programme for International Student Assessment (PISA) mathematics and science items offered insight into knowledge students invoke in mathematics and science separately and combined. The researchers administered an assessment constructed from PISA released items to 516 15-year-old middle school students in China. The findings suggest that while PISA attributes showed promise for providing insight into how students were classified in mathematics and science, when combined these attributes were not found. Our findings suggest that students do not seem to be applying attribute strengths to the dataset as a whole (i.e., mathematics and science items combined) in ways that differentiate them from students who appear weaker for those attributes.

Classification: D63 D53

Keywords: PISA; assessment; test items

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