



## UNDERSTANDING HOW LEARNERS THINK

South African learners have performed poorly in national and international assessments. There have been improvements over the years, but much remains to be done. What we need to understand is why learners answer questions the way they do. Diagnostic item analysis is a tool that can help us understand learners' thinking, enabling us to identify strategies which we can use to improve performance. The Trends in International Mathematics and Science Study (TIMSS) is an assessment of the Mathematics and Science knowledge of learners around the world. South Africa took part in this assessment in 2015 at the Grade 5 and 9 level. In consultation with curriculum and assessment specialists from the Department of Basic Education, the HSRC conducted a qualitative analysis of learners' responses to the TIMSS released items for Grade 5 Numeracy, and Grade 9 Mathematics and Science to uncover common errors and investigate how learners are answering questions in these subjects.

Three item diagnostic reports were developed as a resource, which highlight common learner strengths and weaknesses, and make recommendations to address those areas which learners struggle with, in order to improve planning at all levels of the education system.



[Grade 5 Numeracy](#)



[Grade 9 Mathematics](#)



[Grade 9 Science](#)

\*The documents are best viewed once downloaded. Please note these are large files.

### Error analysis- a learning opportunity?

Roelien Herholdt and Ingrid Sapire explore the use of quantitative [error analysis](#) in mathematics in an intervention project for Grade 1-4 learners. From this, they draw conclusions about the importance of interrogating and understanding the errors that learners make.

### What's happening in the classroom?

Teachers have a critical role to play in ensuring that learners receive a quality education. In a recent [article](#) in the South African Journal of Education, Fabian Arends, Lolita Winnaar and Mogege Mosimege investigate the association between learner achievement and selected teacher classroom practices.

## Interested in using TIMSS data for research?

If you are interested in working with us on publications based on the TIMSS data, please [contact us](#).