



Research on Socio-Economic Policy

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# Is school based assessment in matric achieving its potential?

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## RESEP Policy Brief

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Matriculation results are vital for learners. Young people's options for university entry, bursaries, career choice and labour market prospects depend on them. Continuous assessment (CASS) provides learners with feedback about how well they have mastered the subject material. It is likely to affect how hard and how well they prepare for the matric exam. Weak and inconsistent assessment that is not properly aligned to the desired learning outcomes sends learners the wrong signals. It affects their learning strategies as well as their matric exam effort and career planning.

This brief is based on a study by Servaas van der Berg and Debra Shepherd that compared learners' marks according to the classroom based CASS with the marks obtained in the final, externally managed, matric exam, regarded as the 'correct' assessment of learner performance.<sup>1</sup> This comparison enabled us to assess the quality of CASS. We used data for various matric subjects for 2005, along with measures of assessment accuracy, to determine the extent to which CASS marks gave learners accurate signals as to their likely matric performance.<sup>2</sup>

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1 Van der Berg, S., and Shepherd, D.L., 'Signalling performance: Continuous assessment and matriculation examination marks in South African schools', *Stellenbosch Working Paper Series* No. WP28/2010.

2 Ideally we would have repeated this analysis with more recent data, but unfortunately these data were not available at the time of producing this brief.

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## 1. How is 'accurate' assessment defined?

The national curriculum sets clear standards and content for each subject. So we would expect a fair degree of consistency between the CASS results and the matric exam results. In well-functioning schools, we would expect the CASS to be:

- *valid*, with tests well designed to test curriculum knowledge,
- *reliable*, in that the tests measure learner knowledge consistently, with the same learner scoring roughly the same mark across different tests, and
- *well aligned* with the national standards, such that learning objectives, activities and assessments match up so learners learn what is expected.



**Unreliable & Invalid**



**Unreliable, But Valid**



**Reliable, Not Valid**



**Both Reliable & Valid**

**FIGURE 1: Reliability and validity**

Source: © Nevit Dilmen 2012

Two types of assessment inaccuracy in the CASS give unintended signals to learners:

*Assessment leniency* (CASS marks are much higher than exam marks)

- An inflated CASS mark gives learners a false sense of security.

*Low assessment reliability* (CASS and matric marks are weakly correlated)

- CASS marks are not a good predictor of matric marks.
- CASS may also be an unreliable indicator of class ranking. If CASS ranking of learners' marks is not reflected in the matric ranking, such that some learners in the class who did well in CASS do badly in matric while for others it is the reverse, then this indicates that the CASS marking is unreliable as regards not only absolute but also relative marks, i.e. it indicates unreliable marking not only at individual but also at class level.

Aligning the CASS with matric standards should reduce discrepancies between the two marks. For our study, if the average gap between the two was more than 20 percentage points and/or the average correlation between the CASS and matric exam marks was below 0.60 we regarded this as a warning of assessment leniency and low assessment reliability.

## What do we mean by 'correlation'?

A correlation coefficient, often written as  $r$ , measures the strength and direction (positive or negative) of the linear relationship between two variables, in this case the CASS marks and the matric marks. It can be used as an indication of reliability. A high positive correlation between Grade 12 learners' CASS and matric exam marks would show that the CASS is well matched with matric, and a low positive correlation would indicate the reverse. For example, if we have a strong correlation coefficient of +0.82, we will see marks in CASS and in the matric exam that are similarly high or similarly low, whereas if we have a weak correlation coefficient of +0.46 we will see a discrepancy between the two marks.

## 2. Strict or lenient, reliable or unreliable? How do individual CASS and matric marks compare?

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For every subject and across all provinces, we found the average CASS mark was consistently and substantially higher than the matric mark. Surprisingly, the gap for English (especially First Language but also Second Language), traditionally regarded as a 'less exact' subject, was smaller and showed less variation than for Mathematics, usually regarded as a 'more exact' subject. This may reflect a higher level of consensus amongst English teachers about performance standards, or a more precisely specified curriculum. The biggest gaps we found between CASS and matric marks were in Biology and Physical Science SG (standard grade), although we also found big gaps in History SG. The gaps in most subjects were larger than 10 percentage points. In Mpumalanga, many subject gaps were in excess of 20 percentage points, the most extreme case being Mathematics HG (higher grade), where the average CASS mark was 47% and the exam mark only 17%.

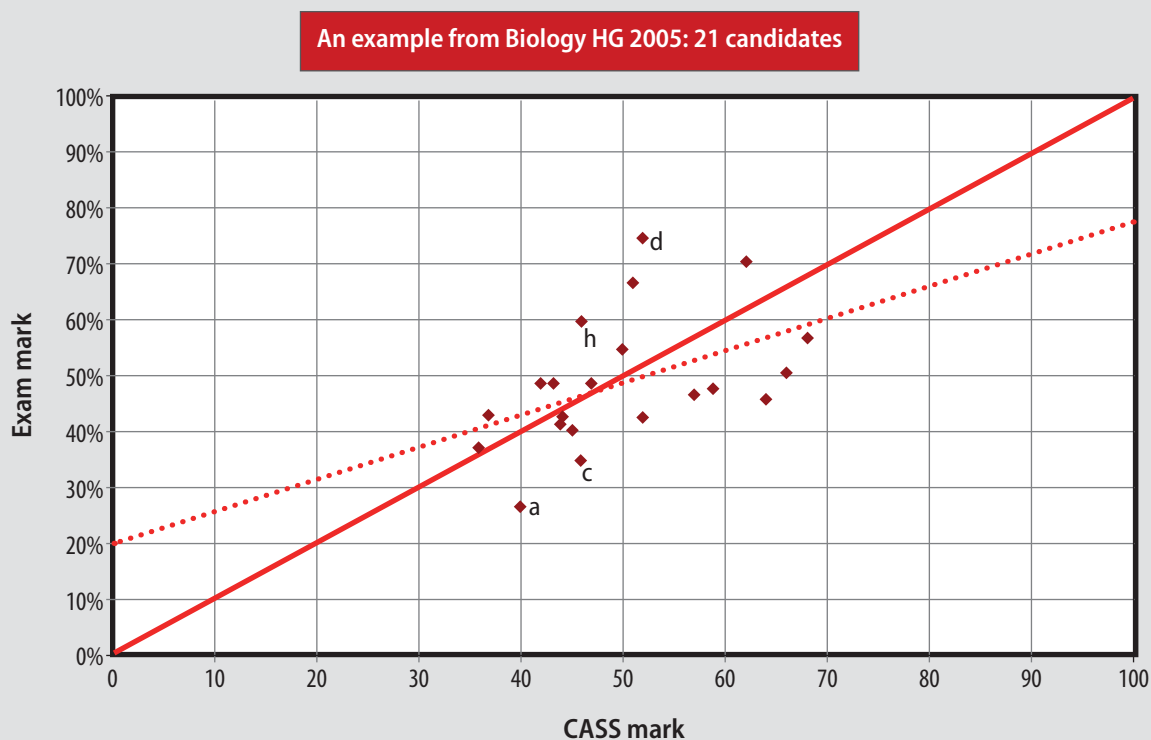
Alarming, we found that almost a quarter of the candidates who obtained 50% or more for a subject in CASS obtained less than 30% in matric.

We have to conclude that CASS is not doing very well.

### 3. How accurately are teachers assessing their classes?

The main aim of our study was to discover how accurately teachers assess. We confined our analysis to subjects where schools had entered more than 15 candidates for a matric subject. The average CASS marks were extraordinarily high in some schools, even where correlations indicated some reliability. For example, for Biology SG more than 200 schools out of 5300 had average CASS marks of more than 40 percentage points higher than the average matric mark. Yet even in these schools, more than a third had a correlation of 0.60 or higher between the two marks. It appeared that the tendency to give high CASS marks (leniency) was not necessarily always closely related to poor correlation with the matric mark (unreliability). This may point to a culture of setting marks too high in earlier grades in order to reduce failures or to deflect parent protests. Figure 2, drawn for a particular Biology HG classroom, where each dot shows the performance of a learner in the CASS and in matric, corresponds to the case of 'unreliable and not valid' in Figure 1.

A matric mark of 75% must come as quite a surprise to a learner with a CASS mark of 52% (dot 'd' below). And we may well imagine the shock of the reverse situation.



**FIGURE 2: CASS and matric performance of 21 learners in a Biology Higher Grade classroom**

Source: Van der Berg & Shepherd<sup>1</sup>

Note: The figure shows there is little difference between the average CASS mark and the average matric exam mark. The correlation between the two averages was 0.46. This indicates over-lenient and unreliable CASS.

Problems in assessing accurately were widespread in Biology SG and to an even greater extent in History SG (see Table 1). The very weak average correlations we found for these subjects across schools in all provinces indicate the lack of a reliable match between CASS and matric marks. This arouses three suspicions: that the teachers' subject knowledge may have been deficient, that the curriculum may have been under-specified, or that teachers set assessment tasks that did not constitute good preparation for the matric exam. Assessment accuracy tended to be unreliable and the assessments too lenient across the bottom three quintiles of schools, but we found better reliability and more strictness in the fourth and especially fifth quintiles, i.e. in schools serving richer communities.

**TABLE 1: Average correlations and gaps between CASS and matric marks in Biology SG and History SG, by province, 2005**

	Western Cape	Northern Cape	Free State	Eastern Cape	KwaZulu-Natal	North West	Mpumalanga	Gauteng	Limpopo	SA
Average correlation between CASS and matric marks										
Biology SG	0.61	0.54	0.73	0.68	0.56	0.52	0.49	0.65	0.59	0.59
History SG	0.54	0.50	0.48	0.52	0.54	0.56	0.49	0.52	0.54	0.53
Average gap between CASS and matric marks										
Biology SG	11.5	25.2	11.5	12.8	23.0	19.3	29.4	19.3	18.1	20.1
History SG	7.4	14.5	17.0	13.0	8.9	12.7	20.3	11.6	9.7	11.6

A disturbing finding of the study was that the discrepancy between the CASS and matric marks increased, in some cases substantially so, over the period 2005 to 2007. The gaps widened largely as a result of falling matric marks, perhaps due to tightening up of the NSC (National Senior Certificate), but also because of a larger number of under-prepared learners.

Properly conducted, CASS should provide important signals to learners to help them prepare efficiently for the matric exam. On the basis of our study, we make the following three recommendations.

### Provision of effective teacher training and support

It is clear from the results of this study and others<sup>3</sup> that many teachers simply do not have the expertise to carry out school based assessment competently. Curriculum and assessment policy should place more emphasis on practical teacher training.

### Reconsideration of the CASS weighting

Reyneke et al.<sup>4</sup> report that many teachers question why CASS constitutes such a small percentage of the final matric mark.<sup>5</sup> However, as this study showed, unreliable and invalid assessment coupled with a higher CASS weighting could prove disastrous and would increase the unreliability of the final marks. Furthermore, with the 25% weighting given to CASS marks in matric and the limit of an average deviation of 10% either way between CASS and matric marks imposed by Umalusi when these examinations were written, differences in strategic behaviour between teachers or between schools (such as lenient or strict assessment) can have serious consequences.<sup>6</sup> This type of strategic behaviour needs to be discouraged.

3 See for example Reyneke, M., Meyer, L., and Nel, C., 'School-based assessment: The leash needed to keep the poetic "unruly pack of hounds" effectively in the hunt for learning outcomes', *South African Journal of Education*, 30, 2010, pp. 277–92.

4 Ibid.

5 The final matric mark awarded to learners is a weighted average of the CASS (25%) and matric exam (75%) marks.

6 Umalusi ('shepherd') is the Council for Quality Assurance in General and Further Education and Training. It certifies the NSC in schools, develops and evaluates qualifications and curricula to set standards and moderates the NSC assessments to ensure that they are fair, valid and reliable.

## **A feedback mechanism for teachers and schools**

It is extremely worrying that differences between CASS and matric marks did not appear to lead to feedback and improved assessment in subsequent years. Teachers do not appear to be seriously re-evaluating their own assessment standards on the basis of the discrepancies. The link between CASS and curriculum standards thus remains weak. Information on weak assessment, though routinely available to the DBE (Department of Basic Education) and the provinces, is not systematically used nor even made available to schools and districts by the education authorities, so no corrective feedback is given. Information about weak signalling by teachers can also serve as feedback to the teachers to improve their assessment practices. The information for improving the signalling exists within the education system; it simply needs to be used.

We recommend that the DBE undertake the relatively straightforward task of comparing CASS and matric marks for each school and identifying schools where the average difference is in excess of 10 percentage points and 20 percentage points. The DBE can then notify these schools of their irregular or over-lenient marking, target assessment training and support to these schools and monitor trends in assessment validity and reliability. This type of analysis would be easy to do using existing data, understandable to most schools, and likely to narrow the gap between CASS and matric marks over time as schools are made aware of defects in their marking practices and how these relate to the matric exam.

Although it was not the focus of the present study, the same type of analysis could be conducted for earlier grades where school-based assessment is recorded, for example on the SA-SAMS (school administration and management system) together with end-of-year province-wide exams, for example the ANAs (annual national assessments) or the systemic evaluations in the Western Cape).