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RESEP POLICY BRIEF

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# Comparing learning across South Africa's primary schools, without a new test

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# Policy brief: Comparing learning across South Africa's primary schools, without a new test

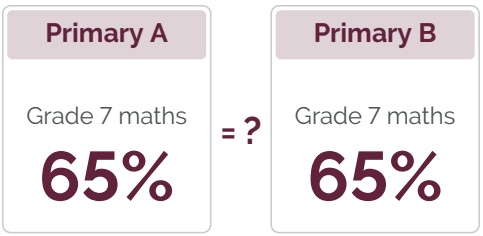
A 65% at one school does not mean the same as a 65% at another. Using records the education department already keeps, this research puts every school's grades on one scale.

## The problem

Every primary school in South Africa sets and grades its own assessments. Some schools set harder assessments. Others set easier ones. So the same grade can stand for very different amounts of learning.

Before matric, no assessment is the same for every school. The Annual National Assessments, which tested every primary school, were discontinued. International tests such as TIMSS reach only a sample of schools.

**So nobody can compare learning between primary schools**: not parents, not districts, not provinces and not the national department.




**Same grade. Same learning?**

If A's assessments are harder than B's, the student from A knows more maths. Today nobody can tell.

## What this research does

When students finish Grade 7, almost all of them move to a high school. There, students from many primary schools write the same Grade 8 assessments. Comparing how they do shows how hard each primary school's assessments are, and puts every school's grades on **one common scale**.

The research used students' records from **six provinces** (Eastern Cape, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga and North West), and no new test was needed. Most results below are for Gauteng, whose schools are measured most precisely.

**1.2 million**
students' records used, from Grade 7 into Grade 8.

**72.5%**
of Gauteng primary schools move to a different fifth of the school rankings on comparable scores.

**16.1 points**
the real gap between Gauteng's least poor and poorest schools. Their own grades show 4.6.

**14 of 14**
checks in which comparable scores predict matric results better than schools' own grades.

### Words used in this brief

**School's own grade.** The grade a school gave, on its own scale. Some figures call it the *raw* grade.

**Comparable score.** The same grade moved onto one scale shared by every school in a province. The research paper calls it the *calibrated* score.

**Harder or easier assessments.** An assessment is easier if a given grade takes less learning to earn on it. A school's *difficulty* is the correction that turns its own grades into comparable scores.

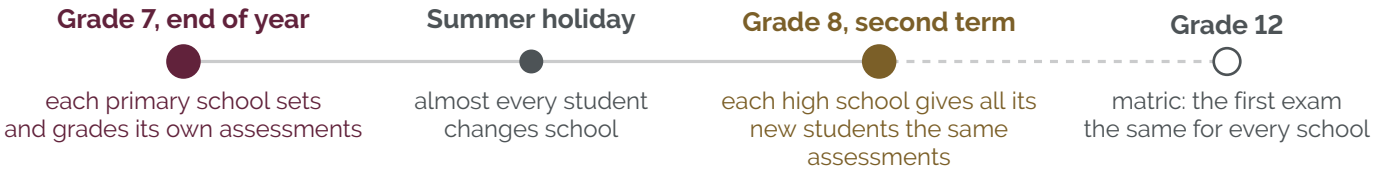
**A fifth of the school rankings.** Rank schools from lowest to highest grades and cut them into five equal groups. A school that *moves to a different fifth* lands in another group once grades are comparable.

**Poverty quintile.** The government's grouping of schools by the poverty of their community, used to fund them: Quintile 1 is the poorest, Quintile 5 the least poor. Quintiles 1 to 3 are no-fee schools.

**SD and correlation.** An SD (standard deviation) is the usual spread of students' grades around their average. A correlation is how closely two things move together: 0 means no link, 1 means a perfect match.

HOW IT WORKS

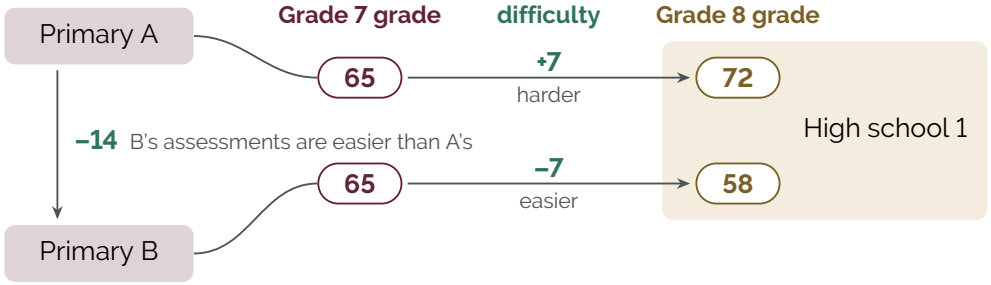
# The move to high school lets us compare primary schools




Two moments matter. At the end of Grade 7, each primary school sets and grades its own maths assessments. A few months later, each high school gives all its new Grade 8 students the same assessments, at the same time. In between, almost every student changes school, so one Grade 8 class mixes students from many primary schools. The method uses this mixing in three steps.

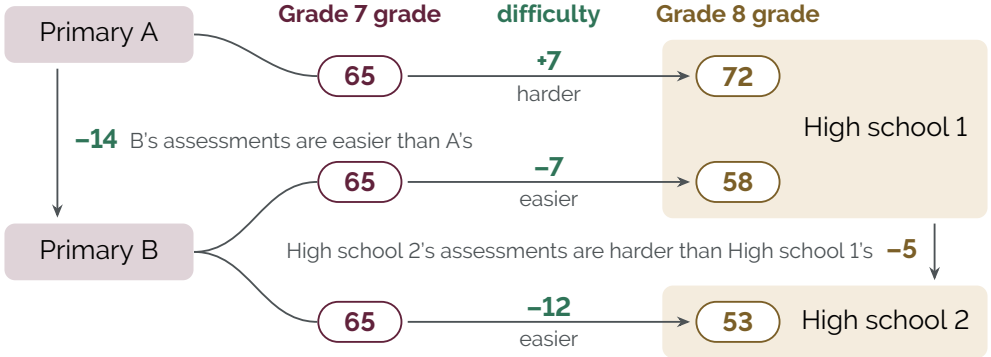
## 1 Same high school, same test

Two students both got 65% in Grade 7, at different primary schools. At the same high school they write the same Grade 8 test: one scores 72%, the other 58%. Seen again and again across many students, this gap shows that **Primary B's assessments are easier than Primary A's**.




## 2 Same primary school, two high schools

How do we compare the high schools? Students from Primary B also go to a second high school. There, a student with the same 65% scores 53%, not 58%. So **High school 2's assessments are harder than High school 1's**, and the two high schools can be compared too.

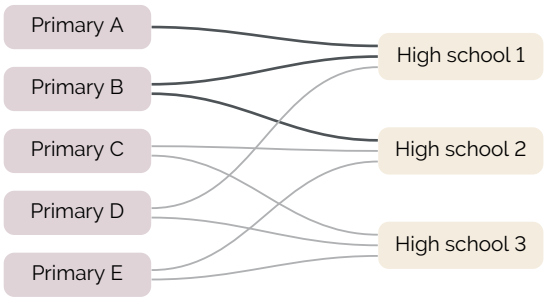



The grades in both pictures are an illustration. Maroon: a primary school's own grade. Green: its difficulty. Gold: the high school and its Grade 8 grade.

# Chaining every school onto one scale

### 3 Link every school

Every student who moves links a primary school to a high school. Students scatter widely, so the links join up into one network. Two schools that never share a student can still be compared, **through the schools in between**.




**6**
high schools take the students of the typical primary school

**10**
primary schools feed the typical Grade 8 class

**98.8%**
or more of schools are linked into one network, in every province and year

### 4 One calculation does all of this at once

A standard statistical model, borrowed from research on workers and firms, estimates every school's difficulty at the same time. In words, it says:

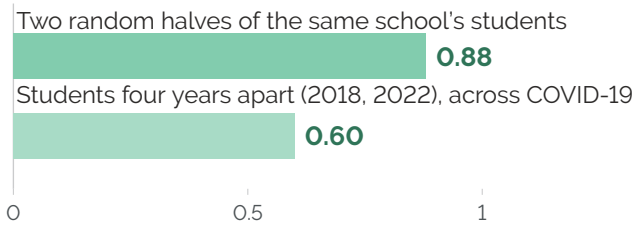
what we need to know

| **Her Grade 8 grade** | = | her **Grade 7 grade**, carried forward | + | her primary school's **difficulty** | + | her high school's **own grading** | + | **luck** on the day |
|---|---|---|---|---|---|---|---|---|
| $g^{8}_{ijk}$ | | $\beta_0 + \beta_1\, g^{7}_{ij}$ | | $\alpha_j$ | | $\gamma_k$ | | $\varepsilon_{ijk}$ |

**Comparable Grade 7 score** = her Grade 7 grade, carried forward + her primary school's **difficulty**

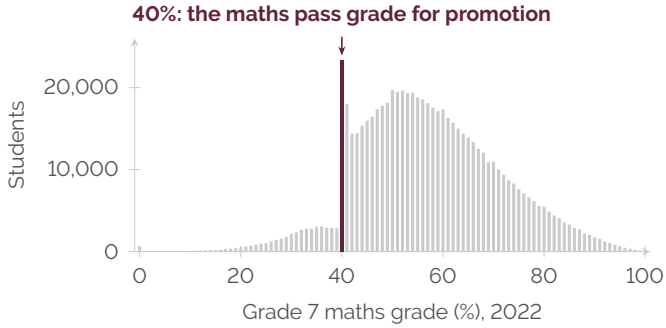
## Why we trust the result

### Assessment difficulty is a lasting habit of each school




Correlation of each school's difficulty, measured twice on different students. 0 means no link, 1 means identical. New students, new tests, yet the same schools come out hard: difficulty belongs to the school.

### Many schools push grades onto the 40% pass line



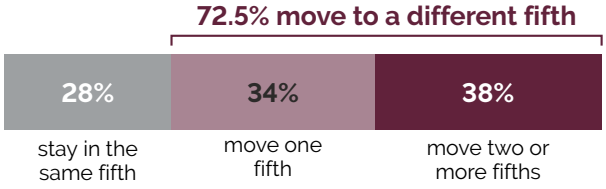

Eight times as many students scored exactly 40% as scored 39%. Smoothing out these pile-ups barely moves any school's difficulty (the two versions correlate at 0.997 or more).

- **The two assessments are months apart.** The method needs only that the holiday affects students in the same way, whatever primary school they came from. The research tests the likeliest ways this could fail, such as poorer students forgetting more over the holiday, and the results hold.
- **Comparable scores predict matric better**, five years later, in every province (Figures 4 and 5). The method was never tuned to matric results, so this is an independent check.

WHAT WE FOUND

# On one scale, the picture changes

## 1. Nearly three in four schools move to a different fifth of the school rankings

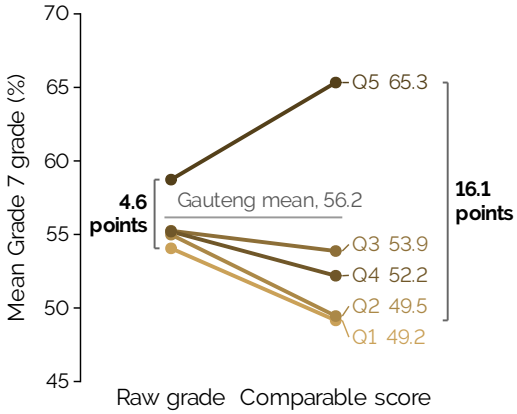



**42%** of schools that look like the **top fifth** on their own grades really are in the top fifth.

**27%** of schools that look like the **bottom fifth** really are in the bottom fifth.

Gauteng primary schools ranked twice, by their own grades and by comparable scores, each cut into fifths (2,903 schools, the 2018 and 2022 Grade 7 groups together). Rankings, league tables and targeting built on schools' own grades put most schools in the wrong group.

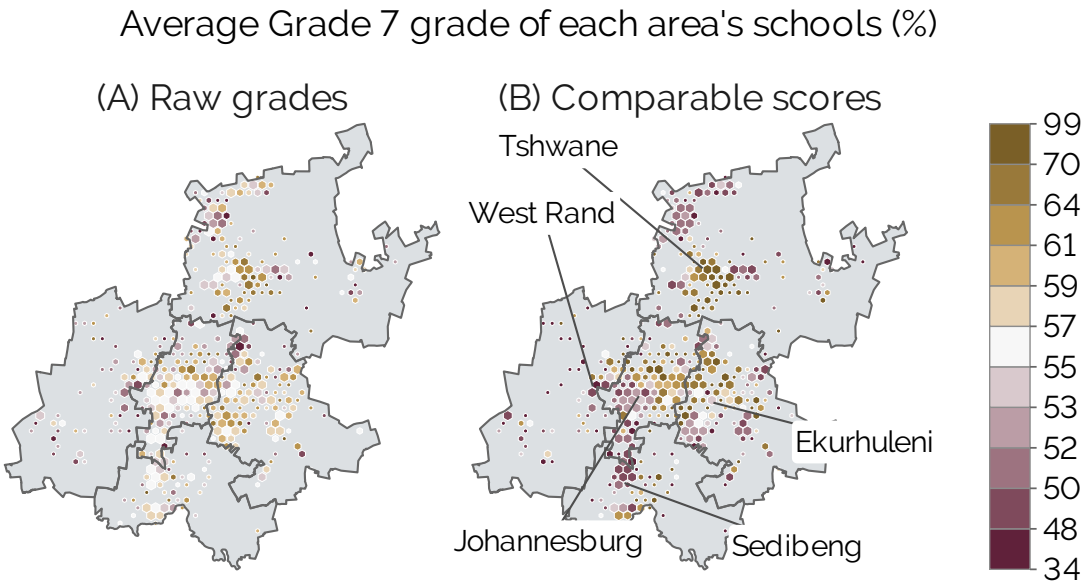
## 2. Own grades hide most of the gap between the least poor and poorest schools




Average Grade 7 maths grade of Gauteng primary schools in each poverty quintile, on their own grades (left) and on comparable scores (right); 2018 and 2022 groups together.

**Why:** schools in Quintiles 1 to 4 set easier assessments than Gauteng's average school, and Quintile 5 schools harder ones. **Over time:** on own grades the gap fell from 6.8 points (2018) to 2.6 (2022), by more than half. On comparable scores it went from 15.4 to 16.8: it did not narrow.

## 3. Comparable scores show where Gauteng is strong and where it is weak

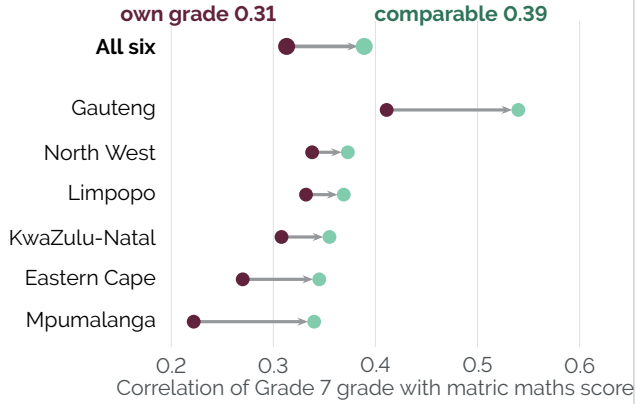



Each hexagon is an area 4 km across, coloured by its primary schools' average Grade 7 maths grade, 2018 and 2022 groups together: maroon below the middle, gold above. A colour means the same value on both maps.

On their own grades most of Gauteng looks average. On comparable scores the strong and weak areas separate: a district office can see where learning is weak.

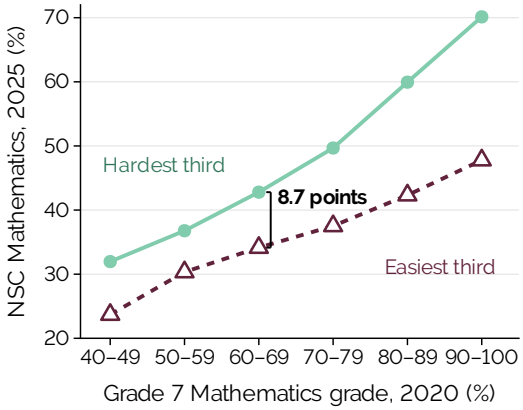
# Comparable scores predict matric, and students sort on them

## 4. Comparable scores predict matric better, in every province




Students in Grade 7 in 2020, followed to matric in 2025 (70,790 students in maths across six provinces). The comparable score wins in all 14 checks: two subjects (Mathematics and Mathematical Literacy) in each province and all six together, and again with Grade 8 grades (0.29 to 0.36).

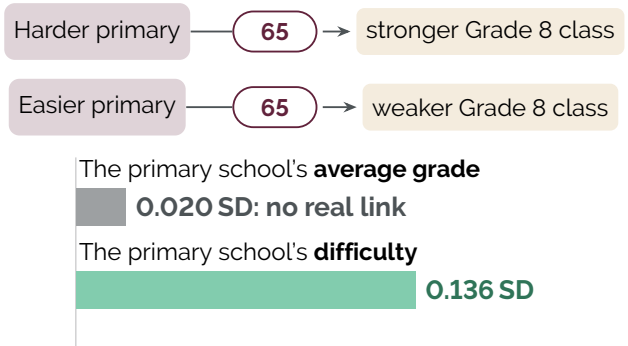
## 5. At the same Grade 7 grade, students from schools with harder assessments do better in matric




Gauteng students in Grade 7 in 2020, followed to NSC Mathematics in 2025; primary schools split into thirds by difficulty. Only students who wrote NSC Mathematics are counted (17.0% of the group).

At a Grade 7 grade of 60–69%, students from the hardest third average 42.8% in NSC Mathematics and those from the easiest third 34.1%. Places and bursaries awarded on own Grade 7 grades treat these students as equals. This shows prediction, not cause: schools with harder assessments do not raise matric scores; their grades understate what their students know.

## 6. At the same grade, students from schools with easier assessments join weaker peers




How much stronger her new peers are (in standard deviations of Grade 8 grades) for each step up in her primary school's average grade or difficulty, her own grade held fixed. Peers from her own primary school are left out.

Students sort as if someone knew which schools set easier assessments, though this is published nowhere. The data cannot say who does the sorting.

## What this means

Judged on their own grades, South Africa's primary schools are ranked wrongly, the gap between rich and poor schools looks far smaller than it is, and the poorest schools look better than they are.

Yet students are already sorted into high schools as if their grades had been put on one scale: the information exists in the system, but nobody can see it.

WHY IT MATTERS

# What South Africa can do with comparable scores

- **Families choose high schools on grades that mean different things.** Nothing published tells parents which primary schools set easier assessments.
- **Testing helps only where results can be compared.** International evidence shows that assessment raises learning where results are compared between schools (Bergbauer, Hanushek and Woessmann 2024). This method gives South Africa comparable results from grades it already collects.

### 1. Judge programmes by learning

Measure whether a programme, a policy or a change in how schools are run improves learning, at every school, without a new test.
For example: when schools create free periods for teachers, does learning change?
Today such questions are often judged on proxies such as class size, because learning cannot be compared.

### 2. Judge high schools fairly

Matric results mostly reflect which students a high school admits. With comparable Grade 7 scores, we can see how much each high school **adds**.



**40% of high schools move to a different fifth** of the rankings when judged against a comparable intake rather than schools' own Grade 7 grades.

### 3. Measure inequality and target support

See the real learning gap between rich and poor schools, and whether it is closing (Figure 2).
Find the areas that most need help (Figure 3). Districts can direct support on learning rather than on grades, which flatter the poorest schools most.

## Where the work goes next

DONE
**Method built and tested**
Maths grades from six provinces, checked against matric five years later.

NEXT PHASE
**Scale up and confirm**
All nine provinces, every year. A second group of students followed to matric. More subjects.

GOAL
**A routine tool**
A yearly report of comparable learning for provinces and districts, from records already held.

## What comparable scores cannot tell you

- **Whether students meet the curriculum.** Comparable scores show how far one school's students are ahead of or behind another's, not whether either group meets the curriculum.
- **How well a primary school teaches.** A school's level reflects which students it enrols as well as how well it teaches. It is not a league table of teaching.
- **Comparisons across provinces.** Each province has its own scale, because few students cross provincial borders between Grade 7 and Grade 8.

## The bottom line

South Africa already records a maths grade for almost every Grade 7 student. This research turns those grades into what the system has lacked since the Annual National Assessments ended: a way to compare learning at every primary school. The next step is a tool that provinces and districts can use every year.

**About this brief.** Summarises a forthcoming working paper: P. Courtney, *Making School-Set Assessments Comparable: Test Difficulty and Hidden Learning Inequality*, Stellenbosch University. Data: the Department of Basic Education's learner records (SA-SAMS and LURITS), Grade 7 and Grade 8 mathematics grades for students in Grade 7 in 2018 and 2022, and in 2020 for the matric check. Results are for Gauteng unless stated; Gauteng's students mix most across schools, so its schools are measured most precisely. Contact: p.sr.courtney@gmail.com.