

Peter Courtney: Research Statement

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I am a development economist working on education and public finance in South Africa. My question is how schools in Africa can raise learning quickly when there is little money to spend. The answer matters for growth: between 1960 and 2000, what students knew in mathematics and science explained three-quarters of the differences in growth across countries (Hanushek and Woessmann 2021), and South Africa's students learn too little for education to do that work. And where two in five people who want work cannot find it, what schools teach must match what employers need.

Much of the evidence in my field rests on proxies for learning: enrolment, grade progression, teachers per student. I start from a simpler rule: measure the thing you want to improve. Each of my three doctoral papers measures something the state does not, from the national records it already keeps: learning compared across schools without a common test; whether a border abolished three decades ago still shapes schooling; and why only about half of each extra teacher post reaches the classroom.

Measuring learning

My job market paper is “Making School-Set Marks Comparable: Test Difficulty and Hidden Learning Inequality”. Comparable testing goes with more learning (Bergbauer, Hanushek and Woessmann 2024), yet at most a quarter of countries test every primary student on a common instrument (Gustafsson 2019). Everywhere else, a 60 at one school need not mean what it means at the next.

I put these marks on one scale without a new test. A secondary school sets the same tests for all the students who arrive from its feeder primary schools. If two students arrive with the same mark and one then does better, that student's primary school set harder tests. Each primary school feeds several secondary schools, so a two-way fixed-effects estimator can chain these comparisons across 1.2 million South African students into a single scale. To my knowledge, no one has used this design on school-set marks before.

The common scale changes three things. Inequality is larger: the richest schools set the hardest tests, so raw marks show only about a third of the learning gap between rich and poor schools, and about three-quarters of primary schools change quintile. The trend is different: on raw marks the gap halved between 2018 and 2022; on the common scale it did not narrow at all. And the scale predicts better: five years on, it forecasts results in the national school-leaving examination better than raw marks do. The method works wherever students from many schools move into shared ones; I will release it as an R package. It also gives each secondary school a comparable intake, so I can estimate value added for 1,135 schools.

Why inequality persists

“Invisible Borders, Living Institutions” asks whether the former KwaZulu homeland border, abolished in 1994 and without legal existence for thirty years, still causes disadvantage, and why. A gap at an old border is usually read as the scar of a dead institution, but it also reflects who moves across. I follow each student who changes school across the border and compare them with themselves before and after the move, against students on the same path who changed school without crossing. Because the design never uses where the border was drawn, it separates sorting from place: to my knowledge, the first such decomposition at a historical border. Sorting explains one-half to two-thirds of the raw gap. The rest is causal and symmetric: crossing into the former homeland raises a child's chance of repeating a grade by 0.94 percentage points, and crossing out lowers it by 1.19.

The payroll points to a reason. All teachers are on one national pay scale, yet schools inside the border pay 9.2 per cent less per teacher, because the more senior teachers leave. One wage scale laid over unequal places reproduces the inequality it was meant to end, and across 21 birth cohorts the gap has not closed. The common scale now lets me ask the same question of learning itself.

Public finance in the classroom: what a teacher post buys

The homelands work also showed me how unevenly the state deploys its teachers, the largest item in any education budget. “Provision Meets Deployment: What a Teacher Post Buys in South African Schools” rebuilds timetables from national records, who teaches whom and in how large a class, for schools holding two-thirds of the country’s students. Provinces set each school’s posts a year ahead from last year’s enrolment, which, holding this year’s enrolment fixed, should affect this year’s classes only through the posts the formula grants; I use it as an instrument for staffing.

Only about half of a formula-funded post reaches the classroom as smaller classes; the rest is absorbed, largely as free periods. With the teachers they already have, schools could cut the average student’s class by up to a fifth. The state monitors a pupil–teacher ratio, 32.8 on average, but the average student sits in a class of 43.3; the gap is widest in the poorest schools, probably exists in most school systems, and has barely been measured.

Free periods might still be good for teaching, but testing that needed a comparable measure of learning. None existed, so I started an appendix to build one; it became my job market paper. Where the absorbed time is largest, I find no measurable return in learning.

Research and policy

The research governments need and the research that gets done are not the same thing, so I work on questions officials are already asking: I advise the Western Cape Education Department on reading-assessment data as testing scales to about 200,000 learners, and have built data pipelines and dashboards for Gates Foundation-funded assessments in Kenya and West Africa.

Next projects

This year I will submit the thesis papers to journals; two new projects follow.

The first follows learning into the labour market. National Treasury’s secure data facility, run with the South African Revenue Service and UNU-WIDER, has linked school-leaving examination results to tax records, and I have worked with UNU-WIDER through SA-TIED. I will ask where on the learning distribution an extra rand of education spending does most for employment, growth and the state’s own revenue.

The second asks how to find and keep the able students the system loses. Some of the strongest students in poor areas go on to secondary schools that add little. The common scale identifies these students at the end of primary school, and my value-added estimates show which schools appear to add more. I will count how many strong students enter low value-added schools and how far they then fall behind, then test one remedy: transport to a high value-added school. The Gates Foundation and Western Cape policymakers have shown interest in a randomised trial of such bussing.