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Inquiry into school to work transition
House of Representatives Standing Committee on Employment, Education and Training
By email: ee.reps@aph.gov.au
2 August 2017

Dear Committee Secretariat

Re. Grattan Institute submission to the Inquiry into the school to work transition.

Australia faces three overarching challenges in school education:

- Challenge One is to improve the teaching of core academic skills and content.
- Challenge Two is to change parts of what we teach and how we teach it to help young Australians develop the skills and capabilities they need for their lives and careers.
- Challenge Three is to reduce the disparities between educational haves and have-nots.

Grattan Institute therefore welcomes the main focus of this inquiry being the school-to-work transition. This picks up on elements of Challenge Two that are often under-looked in policy discussions. Point one of your Terms of Reference, the focus on measurements of gain in school, is also relevant to all three challenges and particularly so to Challenge One.

To date, Grattan Institute's school education program has focused primarily on Challenge One, better teaching of core academic skills and content, rather than the broader sets of capabilities and skills implied by Challenge Two. Thus, our submission will focus on point one of the ToR.

The submission makes three observations about measuring learning gain in school: why it is important; why additional gain measures are needed; and how to use NAPLAN data better. The submission draws largely from three Grattan Institute reports, which are all available on our website www.grattan.edu.au/home/school-education:

- *Widening gaps: what NAPLAN tells us about student progress* (2016)
- *Targeted teaching: how better use of data can improve student learning* (2015)
- *Measuring what matters: student progress* (2010)

Please do not hesitate to contact me if I can provide any further assistance to the Committee.

Yours sincerely,

Dr Peter Goss, School Education Program Director

1. Why measurements of gain in school are important

Our 2016 report *Targeted teaching* opened with these words about student gain:

> *The best schools in Australia are not necessarily those with the best ATAR or NAPLAN scores. They are those that enable their students to make the greatest progress in learning. Wherever a student starts from on the first day of the year, he or she deserves to have made at least a year's worth of progress by the end of it. Any less, and our students will fail to reach their full potential. Sadly, that is too often the case. (p.1)*

This echoes what we wrote in our 2010 report *Measuring what matters*:

> *Accurate measures of school performance are vital to improvement. The measures need to focus on student progress so that schools and teachers can focus on improving all students – particularly those most in need. (p.1)*

We should judge the success of our education system by how much progress our students make. By definition, stronger progress would lift achievement.

But how do measures of gain contribute to supporting students to prepare for post-school education and training? First, because student mindset is linked to learning progress. Second, because the best way to make teaching more effective is by adaptive improvement, based on how much students learn – judged by measuring gain.

1.1 The link between learning progress and growth mindset

Defining student success in terms of progress reinforces the value of effort and persistence. It fosters a growth mindset in students, which has been shown to support future success in life. A growth mindset is a belief that talents and abilities are not fixed traits but can be developed through effort, learning and persistence.

A greater focus on measuring student gain in schools will send the signal that progress is valued, as well as achievement. It guards against the risk that students who stall in their learning might go unnoticed, a precursor to disengagement from school.

But does higher progress lead to better outcomes in the school to work transition? I don't know: I have not seen any longitudinal studies that try to isolate whether (all other things being equal) high-gain students do better in this transition than low-gain students. This analysis is well worth doing. But in the absence of a research answer, try a thought experiment.

Imagine an employer, faced with two recent school or university graduates with equally good (but not great) grades. Should they employ the student who had worked hard and improved their grades over time, or the student who used to have great grades but has been cruising? For most jobs, I would employ the former. If nothing else, I would be more confident that the first student understands the value of effort and persistence in life.

1.2 The value of measuring gain to improve teaching

Measuring student gain goes beyond creating a positive mindset. It forms a core element of adaptive improvement in the classroom. Again from *Targeted teaching*:

> *Teachers and schools can lift all students' performance if they are equipped to collect and use evidence of individual student achievement and progress. Working together, teachers should assess what each student knows now, target their teaching to what they are ready to learn next, and track each student's progress over time. Teachers should* ***then analyse their own impact****, keep what works and change what does not. (Targeted Teaching, p.1, emphasis added)*

Analysing impact is all about student gain. We shouldn't judge teacher impact by how much students know, but by how much students have learned.

The *Targeted teaching* report explains in considerable detail how schools and teachers can measure individual student progress and use that data to inform and improve their practice. It also explains why Targeted teaching is challenging in practice, and how education systems can help. The key recommendations for governments and system leaders are recommendations 4-7 in the report:

> ***Governments and system leaders should:***
>
> *4. Invest in assessment tools and related resources that help teachers collect and use high quality data about individual student learning. They should, as a priority, evaluate existing resources and make sure schools understand and can use what is already available.*
>
> *5. Strengthen teacher and school leader capacity to target teaching and track student progress: improve the training of new teachers around assessment and the use of data and provide on-the-ground support and professional development to existing teachers and school leaders.*
>
> *6. Set high expectations that schools will collect and use data to target teaching and track progress, showcase good practices, and monitor what happens in practice. Invest, where necessary, to accelerate change.*
>
> *7. Evaluate the impact and cost effectiveness of policies to improve targeted teaching and progress tracking and assess which school-led approaches work best.*
>
> *(Targeted Teaching, p. 2)*

One of the big challenges is about what to measure. That is covered in the next section.

2. Additional gain measures are needed

Skills and knowledge develop and grow over time, following a path that is broadly predictable, even though the exact steps along the pathway can differ for each student. That is what we call learning.

Given the value of measuring student gain, as discussed in section 1, it would seem as though we would want to measure learning as broadly as possible: the progress that students make in reading, the broadening of their knowledge about different subjects as well as how to apply that knowledge, and even the development of important non-cognitive traits like resilience and skills like collaboration.

The challenge for schools and teachers is that we know much more about how to measure and track progress in a small number of subjects – particularly literacy and numeracy – than in others. But successful transition from school to work depends on a complex blend of capabilities. There are many ways of describing this broad mix, but they typically include categories like:

- Foundational skills (especially literacy and numeracy),
- Academic knowledge (especially in STEM, humanities and social sciences, and foreign languages),
- Cognitive skills (such as critical thinking and problem solving), and
- Non-cognitive attributes (such as persistence, initiative and leadership).

To help set young Australians up for success in work (and life) teachers need access to a broader range of assessment tools that can help measure student gain in different categories. Given the difficulty of developing robust assessment tools, and the value that they have once developed, we recommend greater national investment in such tools. The alternative approaches, of state-developed or school-developed assessments, are likely to be less robust and involve more duplication.

We recognise and applaud the fact that national investment is already occurring in some domains, including collaboration between the NSW Department of Education and Communities and ACARA to build on the NSW Literacy and Numeracy Continuums.

3. How to use NAPLAN data to better understand student gain in school

NAPLAN is a powerful tool. It lets policymakers measure students' achievement in core literacy and numeracy skills. It provides data on the progress students make as they move through school. And, while it has limitations for Targeted teaching (as discussed in Section 1) it does provide a valuable cross-check for teachers and schools about how well groups of students are doing, and whether they are making adequate gains.

But there is a complexity that arises when policy makers or school principals try to assess student gain using the NAPLAN scale: it is hard to compare different groups of students. If students in remote areas score 40 NAPLAN points below their inner-city peers, what does this mean? Are they one year behind, or two? Does a 40-point gap even mean the same thing in Year 7 as it does in Year 5 or 9?

It would be easy to make these comparisons if students gained NAPLAN scores at a steady pace as they moved through school. But they do not. The Australian Curriculum, Assessment and Reporting Authority (ACARA) notes that:

> *students generally show greater gains in literacy and numeracy in the earlier years than in the later years of schooling, and that students who start with lower NAPLAN scores tend to make greater gains over time than those who start with higher NAPLAN scores. (ACARA, 2016, Interpreting NAPLAN Results).*

As we said in *Widening Gaps* (pp. 10-12), NAPLAN is a very sophisticated testing system, yet this non-linear growth curve makes it hard to compare gaps between different groups of students, or their learning progress. It is especially difficult to compare students of different backgrounds, who are likely to be at very different scores on the curve (in other words, at different stages of their learning), even though they are the same age and in the same year level.

This means that NAPLAN gain scores, the difference in NAPLAN scores between two points in time, do not tell the whole story. They provide a measure of student progress in NAPLAN points, but they need to be interpreted very carefully. In particular, gain scores have limitations when policymakers want to compare different groups of students from different starting points (i.e. answer questions of relative progress). In these cases, a face-value interpretation of gain scores can suggest students are catching up when they are actually falling further behind.

Figure 1 provides an example of this, comparing the progress of kids from the bush with kids from the city. The two charts have identical data, but the chart on the left hand side shows the gap between remote and metropolitan students in gain scores, while the chart on the right hand side shows the gap in time.

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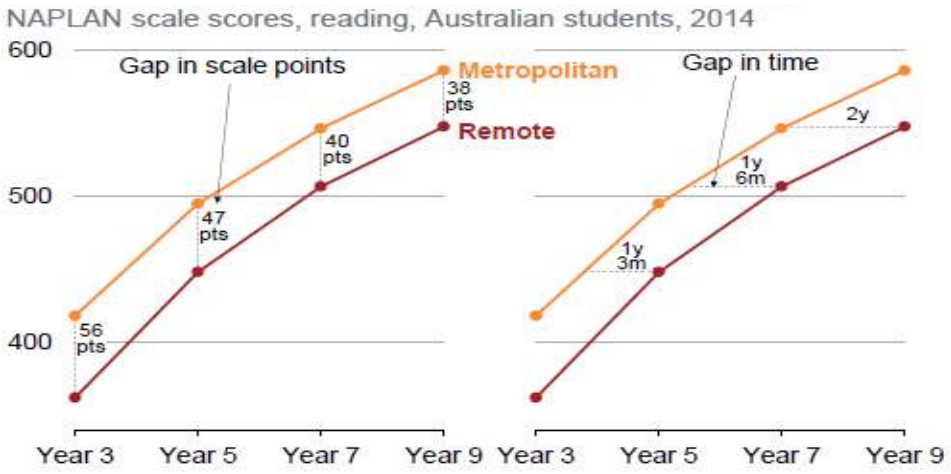
Figure 1: NAPLAN scale scores suggest remote students are closing the gap, but the gap in years shows the opposite



Gain scores

	Yr 3 – 5	Yr 5 – 7	Yr 7 – 9	Yr 3 – 9
Metro	+77	+51	+40	+168
Remote	+86	+58	+41	+185

Notes: points on both charts are identical.
Source: Grattan analysis of ACARA (2014)

Note: this chart was presented as Figure 2 in *Widening Gaps (2016)*

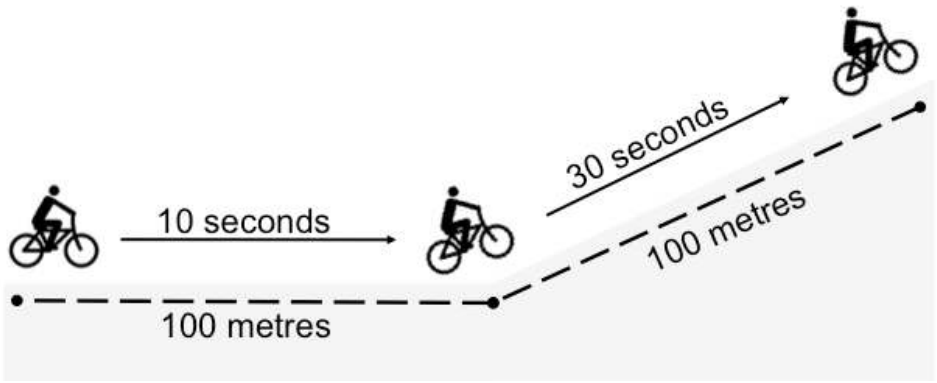
In NAPLAN points, the gap between remote students and metro students decreases with time, from 56 NAPLAN points in Year 3 to 38 points in Year 9. Looked at in another way, as shown in the table at the bottom of Figure 2, remote students make larger gains in NAPLAN between Year 3 and Year 9 (+185 points) than metropolitan students (+168 points).

But their higher gain should not be misinterpreted to mean that remote students are catching up to metropolitan students in a broader learning sense. Looking at the gap in years and months of learning (right hand side), it is clear that this gap gets wider over time. Remote students are 1 year 3 months behind in Year 5, and this gap grows to 2 years behind by Year 9. They are falling further behind.

In the face of challenges interpreting NAPLAN gain points, *Widening Gaps* introduced a new time-based measure, years of progress, to compare relative student performance. The measure estimates what a year of learning progress looks like on the NAPLAN scale. The easiest way to understand why this transformation is needed is to imagine a cycling race.

To gauge the gap between a rider and the main pack, we talk about minutes and seconds, not distance. That's because while a gap of 100 metres might not look like much, it really depends on the terrain. On the flat it might take 10 seconds; on a hill it might take 30 seconds (see Figure 2).

Figure 2: In cycling, it is better to estimate gaps using time rather than distance



Note: this was originally presented as Figure 3 in *Widening Gaps (2016)*

To extend the cycling analogy: students at low achievement levels in NAPLAN are on the flat and riding fast (big gain scores), while those at high achievement levels are on a steep hill and riding slowly (small gain scores). But riding faster on a flatter road does not necessarily mean riding better. When those on the flat hit the hills, they too will slow down. So distance alone does not tell us how well a rider is really doing; more information is needed.

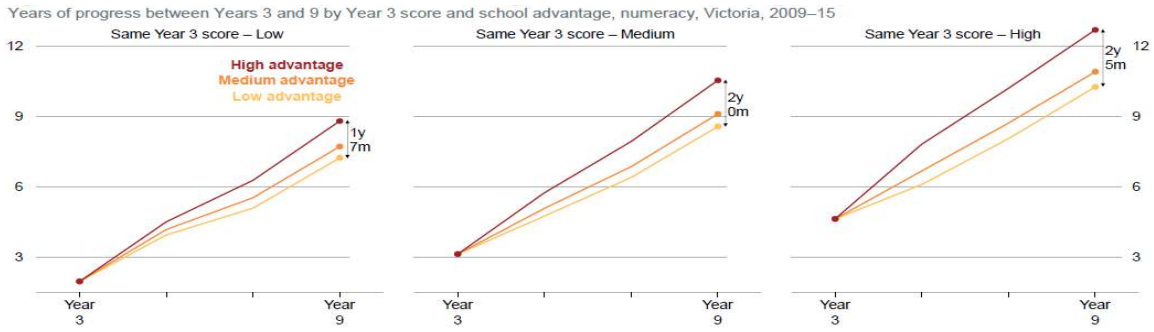
For NAPLAN, this non-linearity makes it hard to compare the relative progress of different groups of students, since both gain scores (speed) and prior NAPLAN scores (terrain) need to be taken into account.

To address this limitation, *Widening Gaps* presented a new measure, years of progress, which benchmarks student performance in NAPLAN to the typical student. It allows us to see if students are catching up or falling further behind relative to others.

The new measure does not mean the NAPLAN scale has to change: indeed, it relies on NAPLAN. But it does make the data easier to interpret, particularly by translating NAPLAN points into years and months of learning, which are far more intuitive. It also allows policymakers to compare students' progress at different stages in their learning. Policymakers can identify which groups of students are making slow progress, and set system-wide priorities accordingly. Using this new measure would also help schools and teachers, because they can more easily understand the spread of their students in NAPLAN, and compare their progress more meaningfully.

The report also shows that learning gaps widen alarmingly as students move through school, and highlights the gaps that open up between students from different backgrounds. For example, the gap between children of parents with low and high education grows from 10 months in Year 3 to more than two years by Year 9. Even if they were doing as well in Year 3, disadvantaged students make one to two years less progress (Figure 3). Bright kids in disadvantaged schools show the biggest losses.

Figure 3: From the same Year 3 score, students in disadvantaged schools make much less progress to Year 9



Notes: Results show the estimated progress of low, median and high achievers (students who scored at the 20th, 50th and 80th percentiles in Year 3) grouped by their school ICSEA (referred to as low, medium and high advantage schools).
Source: Grattan analysis of VCAA (2015) and ACARA (2014).

Note: this chart was presented as Figure 14 in *Widening Gaps (2016)*

These findings mean that better analysis of student progress and learning gaps should be put at the centre of education policy. NAPLAN offers a valuable way to do this, but taking the non-linearity of typical student progress into account rather than directly using gain scores.

Two recommendations from the *Widening Gaps* report remain relevant today:

> *Adopt Grattan's new 'years of progress' approach to better understand relative student progress and learning gaps.*
>
> *Use analysis of relative student progress to inform system priorities, resource allocation and needs-based funding policies.*

Full details of our approach are presented in the *Widening Gaps* report. We would be delighted to discuss further with the Inquiry how our years of progress measure could potentially be adopted more widely.