Investing in our teachers: a new focus for government

Ben Jensen of the Grattan Institute writes that investing in education makes sound economic sense

Reforming the manner and level in which we invest in our teachers should be the number one priority of not only education ministers but also of premiers and treasurers around Australia.

An increase in teacher effectiveness of 10% would lift Australia's education systems into the highest performing group of countries in the world. In the longer–term, this improves the productivity of Australian workers, which increases long–run economic growth by $90 billion by 2050, making Australians 12% richer by the turn of the century. This is in addition to the other benefits to individual wellbeing and society of better education.

Current performance

There is no doubt that good quality education systems operate throughout Australia. Our performance on international assessments has continually placed us well above the OECD average. But our performance is heading in the wrong direction because our spending priorities are insufficiently focused on our greatest resource: our teachers.

Investing in more of the same is clearly not the answer

The latest results from the OECD Program for International Student Assessment (PISA) shows that school students in Shanghai are now the best performing in the world. On average, 15-year-old students in Shanghai have achieved the equivalent of more than an additional year of learning compared to 15-year-old students in Australia (OECD 2010). However, a smaller gap exists between the top tier of countries that are statistically significantly performing above Australia's students (Shanghai – China, Korea, Finland, Hong Kong – China, Singapore and Canada). The average score of these countries is 20 PISA points above that of Australia.

To illustrate the magnitude of this gap, 38 PISA points is equivalent to about one year's worth of learning. For simplicity, we calculate that joining the top performing countries in the world implies that Australian students would need to learn another half a year's worth of curriculum in their time at school by the age of 15.

Improved student progress is therefore required – and is achievable. Most Australian students have at least 10 years of school education before they sit the PISA assessments. Assuming that curriculum gains are additive, each grade needs to incorporate an extra 5% of a year's worth of learning.

But this requires reform because the latest assessments indicate that our performance is falling. Our students' reading literacy in PISA 2009 was about four months of education below that in PISA 2000. Yet, over this time period, public expenditure on education increased, in real terms, by 33%, and private expenditure by 51%. And this builds on longer–term trends. Investing in more of the same is clearly not the answer.

Greater investments in teachers needed

We need to alter the focus of our spending to improve student learning. In doing this we should follow the evidence. And the evidence is clear: the

impact of teacher effectiveness outweighs the impact of any other school education program or policy (Hanushek, Kain *et al.* 1998; Rockoff 2004; Hanushek, Kain *et al*. 2005; Aaronson, Barrow *et al*. 2007; Nye, Konstantopoulos *et al.* 2007; Leigh and Ryan 2010). In fact, the research findings on the relationship between teacher effectiveness and student performance are remarkably consistent. Australian research measuring how much teacher effectiveness improves student performance is similar to findings in other countries (Hanushek 1992; Sanders and Rivers 1996; Jordan, Mendro *et al.* 1997; Wright, Horn *et al.* 1997; Leigh 2010).

In the Australian context, conservative estimates suggest that a student with an effective teacher can achieve in three–quarters of a year what would take a full year with a less effective teacher ('effective' here means a teacher in the 75th percentile of teacher effectiveness, while 'less effective' means a teacher in the 25th percentile (Legh 2010)). To extend the comparison, a student with a teacher in the top 10% of teachers in the country could achieve in half a year what a student with a teacher in the bottom 10% of effectiveness achieves in a full year (Leigh, 2010). These estimates echo international research (Hanushek, 1992).

A greater focus on investing in teachers requires a change for many in public policy who have advocated that across-the-board class size reductions will improve student learning. Smaller classes are intuitively appealing and often appear to be considered politically popular. Unfortunately, the evidence shows that while class size reductions are expensive, they have a negligible impact on student learning. In fact, most studies find that despite spending significant resources on reducing class sizes, the effect on student performance is either negligible or there is no effect at all (Hoxby 2000; Bohrnstedt and Stecher 2002; Jepsen and Rivkin 2009; Chingos 2010).

The Florida experience

Reforms in Florida provide a more recent but typical example. Class size reductions focused on the early years but were mandated across school education (new class size maximums were introduced of 18 students in pre-kindergarten–3rd grade, 22 students in 4th–8th grade, and 25 students in 9th–12th grade (*www.fldoe.org/classsize*)). A recent analysis of this policy concluded that the program "had little, if any, effect on cognitive and non–cognitive outcomes" (Chingos, 2010). This included not only student performance measures (between grades 4–8) but also indicators such as student absenteeism, suspensions and factors associated with school bullying such as violence and crime.

Florida's class size reductions followed policies in other countries that concentrate on reductions in the early years of education.

The majority of studies examining class size reductions find no positive impact on students (even in the early years). Of the minority (15%–33%) of studies that find a positive impact on students, a greater proportion of these focus on the early years (Krueger 1999; Krueger 2002; Mishel and Rothstein 2002). However, the positive impact is small with students only showing marginal improvement (Hanushek 1997; Hanushek 2003).

Even if there were positive outcomes, the question remains whether reducing class sizes offers good value for money. Reducing class sizes, by just a few students, has a large impact on school budgets because more teachers are required to teach the greater number of smaller classes.

The costs of the Florida reforms were substantial. Average class size across school education reduced by about 2.5–3 students and cost the Florida Department of Education in excess of $US20 billion over eight years with additional ongoing costs of $US4 billion each subsequent year (Florida Department of Education, 2009).

Even if we ignore the substantial implementation costs of $US20 billion, the $US4 billion annual operating costs equate to over $US1,500 per student and approximately $US1.1 million per school per year (in 2009–10, Florida had over 2.6 million students in 2,600 schools; the average school had over 700 students (*www.fldoe.org*)). These are considerable costs for a program that had "little if any" impact on students.

While the precise costs of class size reduction vary depending on the system and the method by which class sizes are reduced, it will have a large impact on the costs of providing school education.

Improvements in student learning can be achieved if greater investments are made in teachers and quality teaching

Catching up with the world's best

The evidence shows that substantial improvements in student learning can be achieved if greater investments are made in teachers and quality teaching.

For Australian school education systems to be among the best in the world, students would need to learn 5% more in each year of their schooling. We estimate that this improvement would occur if all Australian teachers were 10% more effective, or if the least effective 14% of Australian teachers improved to the level of teachers at the 14th percentile.

In calculating this estimate, the evidence shows that:

- Australian students' performance would need to increase by 20 PISA points to be amongst the best in the world
- 20 PISA points equates to a 5% increase in student learning in each year of school
- A 5% increase in learning requires an improvement of 0.025 standard

deviations in test scores (based on Australian research showing that an entire year's learning is equivalent to one standard deviation in test scores)

- Improving test scores by 0.025 standard deviations requires the effectiveness of all of Australia's teachers to improve by 0.25 standard deviations (based on Australian research showing that a 0.1 standard deviation increase in test scores is associated with 1 standard deviation in teacher effectiveness (Leigh, 2010)).
- Improving teacher effectiveness by 0.25 standard deviations requires a 10% increase in teacher effectiveness (assuming that teacher effectiveness is normally distributed).
- If we improve the effectiveness of the least effective 14% of teachers (to the effectiveness of teachers at the 14th percentile) it would have the same effect, lifting Australia's students to amongst the best performing education systems in the world.

From a policy perspective, it is doubtless worthwhile both to improve teacher effectiveness generally and to respond to under– performing teachers. Meaningful investments in improving teacher effectiveness would develop all teachers and address issues of under–performance.

Economic impact

Investing in teacher effectiveness is the most potent reform to boost Australia's economic growth. A 10% increase in teacher effectiveness improves student performance and, in the longer– term, the productivity of the labour force.

Research emphasising the importance of student performance in creating economic growth has increased in recent years, particularly with work conducted by the OECD and the World Bank (Hanushek and Wößmann 2010; OECD 2010). This has built on research emphasising the importance of human capital

This would dwarf the impact of major reforms over the last few decades

and the creation of new ideas and technology in lifting economic growth (Lucas 1988; Romer 1994; Barro and Sala–i–Martin 1995).

Taking a conservative estimate of the impact of improved student performance on economic growth, increasing teacher effectiveness by 10% would increase long–run economic growth by $90 billion by 2050, making Australians 12% richer by the turn of the century (Jensen 2010). This would dwarf the impact of major reforms over the last few decades such as tariff reforms, the National Competition Policy, or the GST package.

And of course, better education has a whole series of important non–economic benefits such as contributing to wellbeing, health, environmental understanding, social mobility and reduced crime rates.

To achieve these gains requires increasing our investments in teachers. There are five main mechanisms to improve teacher effectiveness:

1 Improve the quality of applicants to the teaching profession
2 Improve the quality of teachers' initial education and training
3 Evaluate and provide feedback to develop teachers once they enter the profession and are working in our schools
4 Recognise and reward effective teachers
5 Move on ineffective teachers who have been unable to increase their effectiveness through development programs.

These objectives and their policy responses are related. For example, moving on ineffective teachers first requires that effective teachers are recognised. Meaningful evaluation is a critical initial step in increasing teacher effectiveness, particularly for mechanisms 3–5 above.

Much of the research analysed in this report uses quantitative analyses of teacher effectiveness. The focus is normally on measuring the "value-added" of teachers to student progress, with progress measured by improvements in student assessments.

This research is important and instructive, but it is not how education systems should measure the effectiveness of individual teachers. Measuring teacher effectiveness is the critical step in improving teacher effectiveness. It should not be skewed by a focus on student test scores. A variety of methods, both quantitative and qualitative, should be used to evaluate teachers' effectiveness and engage them in meaningful development. These should include student progress and other measures of student outcomes, student feedback, teamwork and peer evaluation, classroom observation from senior teachers and the school principal, self–evaluation, teacher development and improvement, and a variety of other factors that measure teachers' contributions to schools.

Most of these methods for evaluating and developing teacher effectiveness rely on school–based evaluations (these will be a focus of future Grattan Institute reports). Schools therefore need the autonomy to engage in meaningful teacher evaluation and development.

The finding that teachers have the greatest impact on student learning is not new. The research cited here is just part of a wealth of evidence showing the importance of teacher effectiveness. But it is apparent that either this has been slow to filter through to policy makers or they have been unable (or not prepared) to take steps to focus more on investing in Australian teachers.

Making greater investments in Australia's teachers should be the first priority of any education Minister or administrator. Given the economic impact, it should also be the first

priority of our political leaders. Improving teacher effectiveness is not only the key to creating the best school education systems in the world, it is essential for our future economic success.

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