Research studies show money matters for student achievement

By Trevor Cobbold



A new review of research studies conducted in the United States shows once and for all that money matters in education. The study provides a comprehensive review of research studies on the relationship between school expenditure and student outcomes. Its finding is conclusive – money matters. The review also reviews studies on how money matters by analysing mechanisms whereby more expenditure improves student results. It is the most comprehensive review for many years.

The key findings of the review are:

- Increased funding for schools yields improvements in test scores, school completion, tertiary attainment, lifetime earnings and other outcomes.
- Spending on both current operations and capital investment increase student outcomes.
- The benefits are particularly strong for economically disadvantaged students and districts where states have historically underinvested.

Its conclusion is emphatic: “This review shows that a consistent flow of analyses since the mid-2010s, using better data and more sophisticated methods, have confirmed and elaborated on decades of prior research on the importance of adequate and equitable funding in K-12 schools.”

The review comprehensively refutes the view that “money doesn’t matter”. Certainly, increased funding needs to be based on good research as to how it can best be spent, but there is little prospect for improving student results without more human and material resources that make a difference. These resources require funding.

The study is the go-to study on the impact of school expenditure on student achievement. It has timely relevance in the context of school funding agreements being negotiated between the Albanese Government and state/territory governments.

As discussed below, public schools in Australia are massively under-funded despite enrolling the large majority of disadvantaged students. The review gives confidence that fully funding public schools will do much to improve results for

disadvantaged students and reduced the huge achievement gap between rich and poor.

The study was published in January by the Albert Shanker Institute in Washington DC. Its authors are Professor Bruce Baker at the University of Miami and Associate Professor David Knight at the University of Washington.

Types of studies reviewed

The review considered three categories of studies: meta-analyses, national or multi-state studies and state-based studies.

Meta-analysis is a technique in which the results of multiple studies are analysed in order to synthesise the evidence on a particular intervention or phenomenon.

A key benefit of the national/multi-state studies is their broad capacity to be generalised. By estimating impacts across many states and over a substantial time period, the results more likely apply to a larger number of districts and are therefore more universally applicable.

State-specific studies leveraging state finance datasets have the strongest internal validity because they address many of the limitations in national cross-state studies. They provide more precision in isolating the effects of specific policy interventions and the types of state policy interventions that lead to substantive changes in funding, affecting student outcomes. State-specific studies also ensure more consistency of measurement of both schooling inputs and outcomes across schools and districts and over time.

Money matters in general

The overwhelming bulk of studies reviewed show that putting additional money into schools leads to improved student academic achievement and outcomes later in life. A few studies also show that funding cuts, resulting from major events like the 2007-09 recession, lead to a decline in student outcomes.

Since 2000, a steady stream of studies using more advanced statistical methods have been published. These studies settled the question of whether money matters – it does. The studies also add new information on key issues including the kinds of investments that matter, who benefits most from them and the impressive magnitude and consistency of their impact.

The most comprehensive peer-reviewed synthesis of evidence [Jackson and Mackevicius] linking increased school spending to improved student outcomes found that, on average, a policy increasing spending by $1,000 per student for four years improves test scores by a modest but significant amount and produce positive, statistically significant impacts on test scores over 90 per cent of the time. It would also increase tertiary participation by 2.8 percentage points. The review states: “… policymakers can be relatively confident that additional investment in schooling will yield positive outcomes of important magnitude.”

Another meta-analysis concluded that money clearly matters for both student achievement and attainment. It limited the meta-analysis to those with the strongest, causal research designs.

Fourteen of 16 studies linking spending to test scores identified positive effects while 18 of the studies examining educational attainment found positive impacts. Interestingly, a co-author of this study is Professor Eric Hanushek of Standford University whose studies in the 1980s and 1990s were highly influential in promoting the view that money has little to no effect on student achievement, although his findings were rebutted by other major studies.

This meta-analysis found that the magnitude of these effects varies widely across studies and therefore that the impact of more education expenditure varies widely across contexts.

The authors suggested that this variability gives policymakers little certainty about their expected impacts of investing more funding into K-12 education.

By contrast, the Jackson and Mackevicius meta-analysis also estimated the degree of effect variability across studies and reached a different conclusion. It found that funding increases will produce modest impacts over 90 per cent of the time, implying not only that “money matters” but that K-12 school spending represents a reliable investment of public funds. That is, that policymakers can be confident that additional investment in schooling will yield positive outcomes.

In addition, a whole series of national and multi-state studies, which were synthesised in the two meta-analyses show increased investment in operational spending or capital investment matters. The literature also shows that, on average, increases in educational spending improve outcomes for students.

A path-breaking national study in 2016 examined the impact on student outcomes from educational investments made

through court-mandated school finance reforms.

The study examined students for a full 12 years of public education and also included outcomes into adulthood. It recognised that the full impact of educational investments is cumulative and may take time to emerge.

The study found that students exposed to a 10 per cent increase in per-student spending for their entire time in K-12 public schools completed 0.31 more years of education, earned seven per cent higher wages and experienced a 3.2 percentage point reduction in the incidence of adult poverty. The study also found that the effects are especially pronounced for children from low-income families.

Several other studies have reached similar conclusions using similar research designs with different datasets and time periods.

The review indicates that many state-based studies also provide compelling evidence of the positive effects of school finance reforms.

Both recurrent and capital expenditure matter

The review of studies found that both recurrent and capital expenditure matter for student outcomes. It notes that the largest share of operating spending in public schooling goes toward the competitiveness of teacher and other school staff salaries and the quantities of school staff that can be hired. Competitive salaries are needed to maintain or improve the quality of the teacher workforce.

Expenditure on school facilities also improves student outcomes both directly and indirectly. For example, improvements to heating, ventilation and air conditioning systems offer a relatively large return on student achievement. Expenditure on better facilities also supports teacher recruitment and retention by offering high-quality, productive workspaces.

The Jackson and Mackevicius meta-analysis found that effects of capital spending are roughly similar to those of recurrent spending when amortised over the life of a typical capital project.

Money matters especially for disadvantage students

The Jackson and Mackevicius meta-analysis also found that the positive impact of educational spending is greater when new funds are targeted to students from low income families. A consistent finding across multi-state studies and state-specific studies is that effects are larger for students from lower income families. It yields greater returns on expenditure than spending where prior investment has been high and student need relatively lower. The difference in return on investment may be as high as 20-fold. The review notes: “These findings validate the importance of promoting funding progressiveness in state school finance systems, with the goal of equal educational opportunity for all.”

Specific investments that matter

Teacher salaries

Much of additional expenditure on schools goes to increasing teacher salaries and employing more teachers. The study reviews the empirical literature on whether and to what extent teacher compensation matters for improving school quality and student outcomes. It also considers the impact of performance pay on student outcomes.

An overwhelming conclusion of studies is that the level of teacher compensation relative to other labour market opportunities matters for recruitment and retention in the teaching profession. It directly improves student outcomes through a higher-quality and more stable instructional workforce.

Performance-based incentive programs were extensively adopted in the United States over a long period of time. They tied teacher pay directly to productivity, including performance bonuses based on student test results. These programs have been extensively reviewed with mixed results. Recently published studies of individual and group financial incentives continue to find mixed to nil effects.

Class size reduction

The review found extensive research evidence that students in smaller classes achieve better outcomes, both academic and otherwise: “…the preponderance of existing evidence suggests that the additional resources expended on class-size reductions do result in positive effects.”

Further, the research studies indicate that class-size reduction can be an effective strategy for closing racial and socio-economic achievement gaps.

The review cites a 2013 study which explored long-term outcomes of students randomly assigned to smaller class sizes versus their peers who were not. The study found that assigning students to smaller classes increases the probability of attending college by 2.7 percentage points, with effects more than twice as large among black students. For students enrolled in the poorest third of schools, the effect was 7.3 percentage points.

Class-size reduction is often characterised as a prohibitively expensive use of additional school dollars because of the need to employ more teachers. The question of whether it is too expensive must rely on detailed comparisons of alternative uses of the same dollars, or the effects on student outcomes of those alternative uses.

The review states that the 2013 study referred to above provides the most direct cost-effectiveness comparison of class-size reduction policies with other options for which sufficient data on costs and outcome benefits were available. The study found that the cost effectiveness of class size reductions targeted at the poorest one-third of schools are similar to those of other interventions.

However, the review cautioned that the large number of studies on the effectiveness of class-size reduction relies on data from a relatively small group of sources that focused on class-size reduction in K-3 grades and conducted on a relatively small scale.

It concluded there is insufficient evidence on the relative effectiveness of class size reductions and other interventions: "…while we are quite confident that higher teacher salaries lead to increases in the quality of applicants to the teaching profession and increases in student outcomes, we do not know whether the same money spent toward salary increases would achieve better or worse outcomes if it were spent toward class-size reduction."

The review states that there is clearly a need for a more precise cost-benefit analysis of class size reductions and other interventions.

Discussion

While the review is of studies conducted on the relationship between funding and student outcomes in K-12 schools in the United States, its key findings have immediate relevance to the state of school funding and student outcomes in Australia.

In Australia, very large proportions of students from low socio-educational advantaged (SEA) families are not achieving national standards. For example, 64 per cent of Year 9 students of parents who did not complete Year 11 and 52 per cent of students of parents in the lowest occupational group did not achieve the national reading proficiency standard in 2024. The proportions for writing are 63 per cent and 51 per cent respectively and for numeracy they are 65 per cent and 52 per cent.

A new study by Save our Schools shows that the large majority of low SEA students attend public schools. In 2023, 81 per cent of all students low SEA students attended public schools and 91 per cent of all schools with over 50 per cent of their students in the lowest SEA quartile were public schools. Nearly one-third of all students in public schools are from low SEA families.

Despite all this, public schools in Australia remain massively under-funded. In 2024, on average, public schools across Australia were funded at only 87.6 per cent of their schooling resource standard.

While the Prime Minister has announced that public schools will be fully funded in future, this will not occur until 2034 under new funding agreements with the NSW, Victorian, Western Australian and South Australian governments. [editor's note: the Queensland government came to an agreement with the Commonwealth government in late March].

The new review of studies on the positive relationship between school funding and student achievement highlights the imperative to fully fund public schools to improve school outcomes for disadvantaged students and reduce the huge achievement gaps between rich and poor.

Trevor Cobbold is the convenor of Save our Schools Australia. The opinions expressed in this article are that of the author and do not necessarily reflect any official policies or positions of the AEU or SSTUWA. This article was first published on the Save our Schools website and has been reproduced here with permission.

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