

**SAVE OUR SCHOOLS**  
**Research Paper**

**Small Schools and Education  
Outcomes**

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## Summary

*Smaller schools are generally better for most purposes in education. Many studies conducted during the past 20 years have found that small schools, particularly at the primary school level, have a positive effect upon student achievement, extra-curricular participation, student satisfaction, student behaviour and attendance. There is also evidence that closing schools is likely to lead to lower student achievement.*

*While curriculum breadth is an advantage of larger secondary schools, depth in learning is seen as more important nowadays and is achievable in small schools. There is evidence that curriculum breadth does not increase student achievement.*

### 1. Student achievement in small schools

There is a long established research literature which shows that small schools have a positive effect on education outcomes and deliver as good education outcomes as do bigger schools [Fowler & Walberg 1991]. Other reviews and research studies generally support the conclusion that students perform better in smaller elementary and middle schools while the findings for high schools are mixed [Cotton 1996, 2001; Howley 2002; Hicks & Rusalkina 2004; McMillen 2004; Newman et.al. 2006; Stevenson 2006]. Small schools bring a range of benefits to students [Jimerson 2006].

A more recent review of research studies found that small schools lead to better education outcomes than large schools [Leithwood & Jantzi 2009]. The review examined 57 studies conducted since 1990 which assessed the impact of school size on a variety of school outcomes, cost efficiency and teachers. The vast majority examined the relationship between school size and various measures of student outcomes. The review found that smaller schools were better suited to most purposes.

Of the studies reviewed, 10 provided evidence about the relationship between school size and the academic achievement of elementary (primary) school students. A majority of them found that achievement increases as school size decreases. None found evidence that achievement rises with increases in school size. These findings are consistent with those of earlier studies. The review concluded that studies consistently found that smaller primary schools benefit the academic achievement of students.

Similar conclusions about small schools and student achievement have been arrived at in reviews of primary schools in the UK. For example, the Office of Standards in Education (Ofsted) has made the following conclusion.

In terms of the overall quality of education, inspections show that pupils in small schools are not disadvantaged in comparison with those in larger schools because of the size of school. Small schools are equally capable of providing an effective education and many are among the most effective in the country. [Ofsted 2000]

The Ofsted review found that in the end-of-key-stage National Curriculum tests, small schools achieve on average higher scores than larger schools. The very small schools, while also achieving test results well above the average overall, are more variable in their performance.

Many more studies have been carried out on secondary schools and the evidence here is mixed. Some studies show found achievement increased with size, others that achievement increased up to a certain size and then begins to decline and yet others showed that student achievement declined as school size increased.

The review by Leithwood & Jantzi states that studies finding a positive relationship between high school size and student achievement may not have adequate regard to the higher drop-out rates typically associated with large secondary schools. It says that improved average school performance in large high schools may simply be a function of the increased drop-out rates found in such schools. Few of the studies reporting a positive relationship between school size and achievement took this into account. The authors state that the “lack of attention to dropout rates in studies favouring large schools seriously undermines the confidence we can have in their results” [p.470].

Despite the extensive literature on the relationship between school size and student achievement, there is little research evidence about the lower limits of school size [Lee & Smith 1997; Howley & Howley 2004].

A school serving 50 students cannot be judged to be “too small” on the basis of any research known to the authors. [Johnson et.al. 2002]

A review of school size issues in Australia by the Commonwealth Schools Commission [1984: 57] concluded that it is unclear how small primary schools can become before they become educationally disadvantaged.

Some years ago, the International Encyclopaedia of Education stated that the quality of education argument was rarely strong enough to justify closing small schools. The subsequent accumulation of evidence has only confirmed this judgement.

## **2. The interaction of school size and SES background on student achievement**

Much of the research literature on school size and student achievement has overlooked the possibility that school size may be associated with different outcomes for students from different backgrounds. This gap has been rectified by a range of state-wide and national studies in the United States since the mid-1990s.

Almost without exception, the studies show that small school size is unambiguously good for students from low socio-economic status (SES) backgrounds and communities with relatively high levels of disadvantage [Cobbold 2006; Leithwood & Jantzi 2009]. Students from low SES backgrounds achieve better results in smaller schools. Small schools with high concentrations of students from low SES backgrounds have higher average results than large schools with similar concentrations.

Students who traditionally struggle at school, students from disadvantaged social and economic backgrounds, for example, are the major benefactors of smaller schools. But smaller schools do not seem to be an impediment to the learning of more advantaged and/or high-achieving students, at least if those students have access to the specialized instruction they need to master complex subject matter. [Leithwood & Jantzi 2009: 484]

Thus, small schools mitigate the effect of low income and poverty on student achievement. In general, the impact of poverty on student achievement in small schools is estimated to be about half that in large schools. For example, a 2004 Ohio University study of national data

shows that students attending the smallest schools experience a 60 per cent reduction in the influence of SES on mathematics performance, a 39 per cent reduction on reading performance, a 50 per cent reduction for science, and a 45 per cent reduction for history [Howley & Howley 2004].

The benefits of small schools for students from low SES backgrounds appear to be particularly important in the middle years of schooling, when some students start becoming susceptible to dropping out of school in later years.

The methodology used in these studies has undergone rigorous assessment, most recently by a review at the University of Maine's College of Education [Coladarci 2006]. The findings have proved robust for different technical specifications of the modelling procedures used for the statistical analysis, which is a rare degree of consistency in educational research.

Many of the studies included statistical controls for a range of other factors that influence student achievement. For example, a 2001 study of Texas schools included controls for ethnicity, language, size, expenditure per student, and curricular composition factors including special education programs [Bickel et.al. 2001]. The inclusion of these factors did not significantly alter the results.

The range of school sizes included in the studies was variable. Some studies compared small and larger schools while others compared schools on a continuum from smaller to larger schools. Most of the studies included schools of less than 100 students while in some the minimum size of schools was about 200.

These studies offer no support for government proposals to close small schools, especially those serving communities with significant levels of socio-economic disadvantage. The following conclusion from one study is representative:

Findings from this study obviously offer no support for arrangements that work to increase the size of already small schools, especially those that serve impoverished communities....In light of the findings from this and other studies, concern for achievement and for reducing achievement gaps means that educators and policy makers must search for ways to meet these challenges without closing schools that are already appropriately small. [Howley & Howley 2004: 27]

These studies have clear policy implications. First, small schools should be maintained in low SES communities and the most impoverished communities should be served by the smallest schools. Second, government policies should strengthen the benefits of smaller schools serving low income families, rather than seek to close them. Third, large schools may not be as cost effective as is often assumed, especially if they lower outcomes for significant groups of students and increase inequity in education.

### **3. Attendance, retention and student engagement**

Most studies since 1990 have shown that student attendance, retention rates and student engagement are significantly better in smaller than larger schools [Littlewood & Jantzi 2009].

Some 13 studies have considered the impact of school size on attendance and dropping out of school, only two of which concerned primary schools. Only one study reported a positive relationship between retention and/or attendance and larger schools; 5 studies found that retention and attendance was better in small schools while 3 reported evidence favouring mid-size schools and 4 reported non-significant relationships.

There is a clear indication in the weight of this evidence, however, that smaller secondary schools have superior “sticking” power; student attendance and retention rates are significantly better in smaller than larger secondary schools. [Leithwood & Jantzi 2009: 474]

Six studies have examined the relationship between school size and student engagement in school other than simply attendance and retention. One of these studies included evidence from both elementary and secondary schools, the remainder were concerned only with secondary schools. All the studies indicate significantly stronger student engagement in smaller schools compared with larger schools. Several studies prior to 1990 reported similar results.

Four studies, all published between 1996 and 2007, examined school size effects on extra-curricular participation and all found that it decreases as secondary school size increases.

Five studies have examined the relationship between school size other student outcomes such as self-esteem, physical safety, and social behaviour. Two of the studies failed to find a significant relationship between student self-esteem and school size. Two studies, one in elementary schools and one in secondary schools, found reduced incidence of misbehaviour in smaller schools.

#### **4. Curriculum and small schools**

There are relatively few research studies on school size and curriculum and they largely focus on high schools, where breadth of curriculum is considered to be more important than in primary schools. However, while much school consolidation has been based on the belief that larger schools have higher-quality curricula, one of the key findings of Professor Caldwell’s summary of research on small schools is that this assertion is not necessarily true [Caldwell 2005].

Haller et. al. [1990] raise the important issue of what is meant by a more comprehensive curriculum. It is clear that large schools offer more courses than small ones. Proponents of planning larger schools and consolidating existing schools often point to this fact in support of their position. However, it is less clear that offering more courses is equivalent to offering more comprehensive programs. Secondary schools have sometimes been criticised for adopting a ‘shopping mall’ approach to curriculum provision by offering students choice among inconsequential and disconnected elective courses.

...if large size simply leads to more courses ungoverned by any larger view of purpose, the result can be a decrease in comprehensiveness of the curriculum actually experienced by students. Courses in Rock Poetry and Occult Literature are not patent improvements to the comprehensiveness of a school's English curriculum. Thus, arguments connecting school size with curricular comprehensiveness are problematic when they are based on the mere number of courses offered. [Haller et. al. 1990: 110]

Another consideration is the extent to which any relationship between size and comprehensiveness is the same across subject areas. Even if increasing size routinely promotes a more comprehensive program in foreign languages, for example, there is no reason to expect the same result in other program areas.

It is important to ascertain the extent to which benefits of size generalize across curricula. Studies that contrast the total number of courses offered by small and large schools miss the important possibility of such variation. [Haller et. al. 1990: 110]

Moreover, where deficiencies occur in the breadth of curricula it is necessary to establish the significance of such deficiencies. Some gaps will not be as of concern as others.

One review of research studies on school size and curriculum suggests that many small high schools maintain programs that are comparable in quality to curricula of larger schools [Roellke 1996]. In cases where deficiencies have existed, many small schools have achieved curricular adequacy through various restructuring efforts, including integration of curricula, innovative scheduling, higher education cooperatives, inter-district sharing, and use of instructional technologies.

Haller et.al. [1990] found that high schools enrolling as few as 100 to 200 students offer base courses in core curricular areas such as mathematics and science at rates comparable to high schools enrolling between 1,200 and 1,600 students. However, it also found that there is less incidence of advanced courses in the smallest high schools.

One recent review of research found only three robust studies of the relationship between school size and curriculum breadth and all of them relate to secondary schools [Leithwood & Jantzi 2009]. They show that curriculum options are more varied in larger secondary schools.

In the UK, Ofsted has found that it is well within the capacity of small schools to teach the full range of the National Curriculum [Ofsted 2000; see also Ofsted 1999]. Many do it well, making good use of their environment and the community. They often supplement the strengths of staff with outside help, which provides not only better provision for the National Curriculum subjects but also extends the range of curricular and extracurricular activities on offer. It found that the curriculum of small schools was generally as broad and as balanced as that of larger schools. Most small schools provide a range of extra-curricular activities.

An Australian study analysed the influence of enrolment size on the broad patterns of curriculum provision, specifically curriculum breadth and depth, in the Victorian system of government high schools [McKenzie 1992]. Schools ranged in size from 76 to 1234 students. It showed that at the whole school level, school size played a relatively small role in accounting for variation between schools in curriculum breadth. Almost all the schools provided some classes in the nine broad curriculum areas that were used to guide the analysis.

School size was more important in accounting for variation between schools in curriculum depth, that is, the average number of subjects provided per broad curriculum area. On average, each additional 100 students was associated with the provision of an extra subject, so that a school with 1200 students provided about nine more subjects than a 300 student school. Thus, the differences in curriculum depth between small and large schools are not all that significant. However, by providing multiple classes for subjects, large schools have the potential to offer students a greater chance to enrol in their subject of choice.

The study showed that enrolment size was a more important influence on curricular provision in Years 11 and 12 than in Years 7-10. It suggested that curricular gains from increasing school size begin to peter out above 800 students. Above that level, schools started to offer more of the same rather than a curriculum that was markedly more comprehensive. Even in regard to Years 11 and 12, the results suggested that schools with 700 students provided a curriculum that differed little in comprehensiveness from schools that enrolled half that number.

However, there is a body of evidence that curriculum breadth is not necessarily in the best interests of students. For example, some studies show that greater course variability is

negatively related to several measures of student outcomes [Lee & Smith 1995; Lee et.al. 1997]. Smaller secondary schools were found to offer a more constrained variety of courses with greater academic emphasis (or higher standards) and higher academic achievement for all students was the consequence. One study concluded that:

...high schools with constrained curricula, in which all students take a similar set of academic offerings, appear to increase the learning of all of their students. [Lee & Smith 1995: 8]

The emphasis on breadth as a means of helping students to identify areas that interest them needs to be balanced by a commitment to teaching fewer topics in depth thereby allowing students to grasp the core and defined concepts in each area. In-depth study sets students a demanding challenge that is valuable for developing their skills and abilities [Donovan et. al. 2000]. It requires them to engage with a degree of complexity and detail not found in breadth of study alone. Depth of study is therefore an important component of the secondary school curriculum.

Therefore, as long as small schools are engaging students in opportunities for in-depth learning, absence of a wide range of curriculum options is unlikely to be a significant detriment to their education. Indeed, there is evidence that As one study states:

Breadth of curriculum is no longer a justification for large schools... Such breadth, however, is now regarded as a threat to the academic progress of most students. [Leithwood & Jantzi 2009: 484]

## **5. School amalgamations and student outcomes**

Closing a school and moving students from the site where they have a sense of belonging and community to a new environment has varying effects on the lives of students and their families. Students are likely to experience loss, displacement and various degrees of difficulty settling into a new school environment [Churchill & Carrington 2001]. In particular, students are likely to experience something of a culture shock. They are often dispersed between receiving schools thus disintegrating friendship groups and patterns of collegiality. In effect, the culture in which these individuals have been successfully operating is dissolved. Furthermore, students enter environments where the culture is both firmly established and different to the culture they have known.

These experiences may have implications for student achievement in the new school. There is evidence that school closures and amalgamations are more likely to result in lower student achievement. A study by the Hay Group [2006], a major international consultancy firm, of school mergers in the UK shows that 55% of merged schools had a sustained decline in student performance in the three years after the merger compared to the average for the separate schools in the three years beforehand. It said that the number of merged schools that have lower student results 'is worryingly high.'

The findings varied between primary and secondary education, with 68% of merged secondary schools experiencing an ongoing drop in performance and half of all primary schools experiencing a sustained decline.

The Hay Group's findings were based on a detailed study of 73 full-scale school mergers across the UK prior to 2006, involving more than 200 schools in a broad range of socio-economic areas. The study collected data compared student achievement in the three years after the merger (for the combined school) with attainment in the three years before the merger (for the two or three separate schools).

The study found that there are three distinct groups developing among merged schools:

- 28% of schools experienced a one- or two-year dip and then recovered;
- 21% of schools immediately exceeded their pre-merger performance and continued to improve; and
- 51% of schools dipped, and did not recover to their pre-merger levels during the period studied.

A recent US study also found evidence that school closures and mergers have a negative effect on student achievement [Kuziemko 2006]. The study examined the effect of “shocks to enrolment” (increases and decreases, via either amalgamation with another school or by removing grades) in Indiana elementary schools and found that increasing the size of elementary schools (partly by school consolidations) lowered student achievement significantly. It found that the future economic cost of this loss far outweighed the marginal fiscal savings of sustaining smaller schools.

These studies cast doubt on whether the performance of under-achieving schools can be improved by mergers.

## **6. Conclusions**

Proposals to close schools are often justified on education grounds. It is claimed that small schools limit the curriculum and educational opportunities available for students and that transferring students to larger schools will improve student achievement.

There is very little research evidence to support such claims. They ignore the findings of the major research studies over the past 20 years. Small schools generally provide as good, if not better, education as larger schools. As one recent review of school size research concluded:

Smaller schools are generally better for most purposes. The weight of evidence provided by the review clearly favors smaller schools for a wide array of student outcomes and most organizational outcomes as well. [Leithwood & Jantzi 2009: 484]

The summary findings of another literature review effectively rebut the education rationale used by governments to justify closing small schools [Cotton 1996]. These findings are:

- Academic achievement in small schools is at least equal – and often superior – to that of large schools;
- Student attitudes towards school in general and toward particular school subjects are more positive in small schools;
- Student social behaviour – as measured by truancy, discipline problems, violence; theft, substance abuse, and gang participation – is more positive in small schools;
- Levels of extracurricular participation are much higher and more varied in small schools than large ones, and students in small schools derive greater satisfaction from their extracurricular participation;
- Student attendance is better in small schools than in large ones;
- A smaller percentage of students drop out of small schools than large ones;
- Students have a greater sense of belonging in small schools than in large ones;
- Student academic and general self-concepts are higher in small schools than in large ones;
- Interpersonal relations between and among students, teachers, and administrators are more positive in small schools than in large ones;

- Students from small and large high schools do not differ from one another on college-related variables such as entrance examination scores, acceptance rates, attendance, grade point average, and completion;
- Teacher attitudes toward their work and their administrators are more positive in small schools than in large ones.

In addition, the benefits of smaller school environments are particularly important for students from disadvantaged backgrounds.

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