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Size Matters for EFA

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SIZE MATTERS FOR EFA

For millions of children worldwide the only type of schooling to which they will gain access will be in small schools. Economically and socially disadvantaged areas support disproportionate numbers of these schools. Although small schools have many advantages, they also face myriad problems. This policy brief explores the existing international research on school and class size and identifies a range of issues for policy and practice. It is based on the CREATE Pathways to Access Research Monograph, *Size Matters for EFA* (Little, 2008).

Does Size Matter?

CREATE is concerned with issues of access to and exclusion from basic education in South Asia and Sub-Saharan Africa. Universalising access to primary school means extending provision to reach unserved populations. Often but not always these are likely to be in areas where population density is low, geography challenging, and infrastructure poorly developed. In these situations small schools are inevitable.

Small schools can have many advantages. Because they are sited within reach of local communities they may be able to respond to local needs and conditions better than larger schools sited outside communities and to which children have to travel large distances. Small size also encourages the development of identity, makes it easier to track children's learning, and allow for more holistic approaches to child development. At the same time, smaller schools face myriad problems, including difficulties in recruiting teachers, and often incur higher unit costs. Small schools are also more likely to be located in rural communities which are isolated by geography and social differences, and populated by marginalised social groups who may lack any meaningful access to education. Teachers in these schools often lack sufficient access to teaching and learning materials, or opportunities for professional support and development. Students may also face a number of additional challenges, including the impacts of poverty, malnutrition, child labour, and exclusion based on social or economic prejudice.

However, for millions of children worldwide the *only* type of schooling to which they will gain access, *if they gain access at all,* will be small and multigrade, with one teacher responsible for learners in two or more curriculum grades at the same time (see CREATE policy brief #5).

Little (2008) underlined the scale of the quantitative challenge. Based on 2005 figures she estimated that, *if* universal primary education was to be achieved, around 216 million children in low income countries would be learning in small and multigrade schools in any one year in the foreseeable future. This figure represented 32% of all primary school–age children in poor countries. Quality provision in small schools is therefore key to achieving international and national education and development goals.

How Big is a Small School?

A reading of the comparative literature on small schools raises the question: *how big is small?* In England the official classification of a 'small'

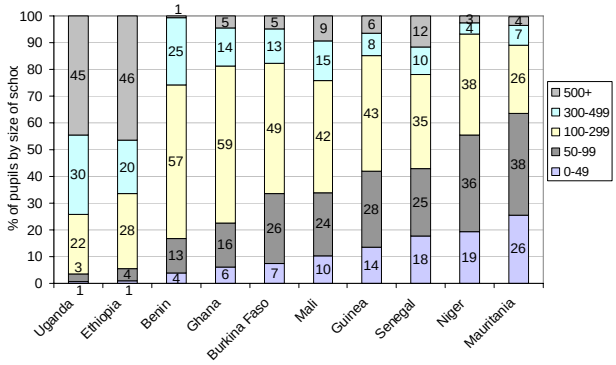
primary school is one with 100 or fewer pupils. 'Very small' is a school with 50 or fewer pupils. In the USA many elementary schools considered to be 'small' have 300-400 students. In India, small schools are classified in three groups: 1-25 students, 26-50 students and 51-100 students.

A range of work, often involving case studies, exists on the difficulties faced by small schools in low income country contexts, including such issues as costs and multigrade teaching and learning (see Bray, 1987; Blum and Diwan, 2007). In the context of high income countries, a more extensive literature exists on the efficiency and effectiveness of schools according to size, including quantitative studies which focus on 'optimum school size' and the relationships between school and class size and pupil level variables such as attainment. Some of the literature points to considerable advantages of smaller schools and smaller classes. The conclusions of studies of both school and class size vary greatly across countries, however.

How Many Very Small and Very Large Schools Are There?

Education systems in Sub Saharan Africa vary greatly in their proportions of small and large schools (see Figure 1).

Figure 1 Distribution of pupils by size of primary schools in ten African countries, 2005-2006



Source: UIS and national education ministries

In Uganda and Ethiopia, only 1% of pupils are enrolled in schools with less than 50 pupils. By contrast, in Senegal, Niger and Mauritania, 18%, 19% and 26% of pupils respectively are enrolled in schools with less than 50 pupils. For schools with less than 100 pupils enrolled, the figures vary even more, from just 4% and 5% in Uganda and Ethiopia to 42%, 43%, 55% and 64% in Guinea, Senegal, Niger and Mauritania, respectively. Conversely, in Uganda and Ethiopia, 45% and 46% of all pupils are enrolled in schools with enrolments more than 500. In Benin, Ghana, Burkina-Faso, Niger and Mauritania 5% or less of all pupils are enrolled in schools with more than 500 students.

Small schools are also a common feature of the educational landscape in South Asia. India has a very large system with many small schools. In 2005-2006, 56% of primary schools in the country had 100 or fewer pupils. Such is the scale of the school system in India that these percentages translate into extremely large numbers of schools. The total number of primary schools recorded in 2005-2006 was 738,150. Therefore the number of primary schools with 100 pupils or less was 415,357. In Sri Lanka the education system is polarising between very small and very large schools. In 1980, 19% of all schools had 100 or fewer students. By 1997 this had increased to 26.3% and by 2005 to 29.7%. Concomitantly, the proportion of very large schools had increased. In 1980 0.9% of all schools had more than 2,000 students. By 1997 this proportion had increased to 2.2% and by 2005 to 2.9%.

By comparison, in England the number of government maintained primary schools in 2006 was 17,504, of which 15% had enrolments of 100 pupils or less. In the USA in 2005-2006 the rural states of North Dakota, South Dakota, Wyoming, Montana and Nebraska had average school sizes of fewer than 200 pupils. By contrast the states of Florida, Georgia and Nevada had average primary school sizes of more than 600.

Does School Size Affect Achievement?

Schütz (2006) reports results from a secondary analysis of the 2003 Trends in International Mathematics and Science Study (TIMMS) of the relationship between school size and achievement in maths among grade 8 students in 51 countries. In some countries (Lebanon, South Africa, Bahrain, Indonesia and the Basque Country of Spain), larger school size and higher maths attainment were positively correlated across a certain range of scores, after which increases in size were associated with declining performance. However, in others (e.g. Singapore), the smallest and largest schools were associated with the highest student performance. In still others there was a linear relationship between school size and performance – positive in Ghana, Chile, Malaysia and Tunisia, and negative in England, Indiana (USA) and Macedonia.

The absence of a common 'optimal' size is hardly surprising since the characteristics of national education systems vary so much. In the complete sample the smallest school enrolled 21 pupils and the largest 9,960. In Ghana the smallest school size was 24 and the largest 1,500, while in South Africa the smallest was 68 and the largest 2,017. In Chile the spread was even larger, from the smallest school with 52 pupils and the largest with 6,410 pupils. The 'fit' between school size and achievement also depends on the overall range of performance. For example, in Ghana the school mean values for school performance ranged between 130 and 400; in Indonesia between 220 and 540; and in Singapore between 400 and 770.

In general, the findings of this study and others (see Little, 2008 for further discussion) provide a compelling reminder of several principles of international and comparative research. Firstly, within-country relationships vary enormously, and it is incautious for national policy makers to assume that findings from any one country can be transferred to another. Secondly, the range of salient values on key variables, in this case, size and achievement, vary from country to country. These in turn will influence the direction and size of within-country relationships.

Does Class Size Affect Achievement?

There is also a considerable literature on the relationship between class size and achievement. Many studies and several meta-analyses have been undertaken over recent years. The most recent review of class-size effects based on data from rich countries by Wößmann and West (2006), based on the 2003 TIMMS study among 13 year olds, report sizable beneficial effects of smaller classes in two countries (Greece and Iceland), no effect in four countries (Canada, Portugal, Singapore and Slovenia), and small effects in four others (French Belgium, the Czech Republic, Romania and Spain). The study revealed a significant interaction between class size and teacher education in some countries, indicating that class-size effects are smaller, absolutely, where teachers are of higher quality. Smaller classes appear to have beneficial effects only where the average capability of the teaching force is low. One implication is that it may be a better policy to devote limited resources to employing more capable teachers, rather than to reducing class sizes.

Studies in low income countries have revealed a similarly diverse range of relationships, both positive and negative, between class size and achievement (see Little, 2008 for further discussion). Clearly, the results are mixed. There appears to be no consistent relationship between pupil:teacher ratio (a proxy for class size) and achievement. Nevertheless, it is important to bear in mind that these studies focus on a very wide range of contexts and may not be strictly comparable. Rather, as with the research on school size, they suggest that within-country relationships should be established before national policies on class size are determined.

Does Size Affect Cost and Cost-Effectiveness?

It is commonly assumed and is confirmed in some countries that cost savings can be realised in larger schools. Bray (1987) challenges this conventional wisdom and suggests that the operation of several small schools can sometimes be cheaper than a single large school and that small schools can generate more resources from local communities.

Costs and cost-effectiveness are not the same thing. Research from the USA points to the beneficial effects of size on student attendance, reduced levels of dropout, teacher innovativeness, student activities, student behaviour, school culture and parental involvement. At the same time savings associated with school consolidation (i.e. the creation of larger schools) have not materialised. 'Penalties' (or diseconomies) of scale have replaced 'economies' of scale since large schools need more layers of support and administrative staff to handle increased bureaucratic demands. While costs per student enrolled can appear lower in larger schools, the costs per graduated student can be higher (see Little, 2008 for further discussion). .

Are Small Schools Equitable?

The literature on school size and social equity is not yet well-developed. Little (2006) has argued that in many remote habitations small schools often provide the *only* means of access to primary education for millions of children worldwide. In these contexts the policy choice is not between a small school, a medium size school or a large school. It is between a small school or *no school*. In these contexts the establishment of small schools is socially equitable. This logic lies behind many programmes for enrolment expansion.

Challenges to Teaching and Learning in Small Schools

Small schools face many challenges in the delivery of the curriculum, especially when 'small' signals enrolments of fewer than 100. In these contexts, teachers are typically faced with the challenge of delivering a curriculum whose designers have modelled it on larger schools with monograde classes in which one teacher is responsible for the teaching of a subject to a single grade group at any one time. Most national curricula are premised on such monograde classes. However, in small schools worldwide there are very large numbers of teachers and learners who work together in groups in which two or more 'official' grades are combined into 'multigrade' classes. A considerable amount of research has been undertaken in recent years on the challenges and opportunities posed by learning and teaching in multigrade settings in a range of low income countries (see Little, 2006; CREATE policy brief #5 and www.ioe.ac.uk/multigrade).

Implications for Research and Policy

- The distribution of schools by size varies greatly from country to country. The proportion of small schools within low income countries systems appears to be higher than in high income country systems. The limited evidence on class size in low income countries suggests that the range of class sizes is greater than that in rich countries. The range of variation and distribution of both school size and class size within a system are likely to have an impact on their respective relationships with achievement and other educational outcomes. Policymakers should wherever possible base decisions on evidence from school and class size studies located in-country.
- If it is found that reductions or increases in class or school size are associated with average student performance, it is necessary to understand why this occurs. Neither school size, nor class size *per se,* causes such changes. Some research has pointed to the interaction between levels of teacher education and class size. It may be that highly skilled teachers can manage a wide range of class sizes because they can deploy a range of teaching strategies. Less qualified teachers may find that large classes pose too many pedagogical challenges.
- Educational planners require information about the range and distribution of school and class size for the deployment of resources.
- Policies are needed to address the needs of small schools. Few national education policies explicitly address the challenges and constraints faced by teachers and students these schools.
- Studies of the relative costs of small and large schools should employ the concept of cost-effectiveness and explore a range of effectiveness measures, including achievement.
- More qualitative research is needed on teaching and learning in very small schools and classes. This work would help to deepen understandings of the particular challenges faced in these schools, and potentially lead to more appropriate policy development.
- Successfully universalising primary schooling depends on solving problems faced by small schools since, in many countries, much expanded access will be provided in smaller rather than larger schools. Related resource, infrastructure, logistic and training needs invite systematic review and considered strategy.

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This policy brief is based on:

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It has been developed by the author and the CREATE team.