AGA KHAN FOUNDATION

Improving Learning Achievement in Early Primary in Low-Income Countries

A Review of the Research

AN AGENCY OF THE AGA KHAN DEVELOPMENT NETWORK

Cover: Primary school girls participate in classroom activities in Gujarat, India. ***Photographer: Amit Pasricha***

Table of Contents

Foreword

The Aga Khan Foundation (AKF) is part of the Aga Khan Development Network (AKDN), a group of non-denominational development agencies whose mandates range from the fields of health and education to architecture, culture, rural development and the promotion of private-sector enterprise and civil society. Its agencies and institutions, working together in some of the poorest parts of South and Central Asia, Africa and the Middle East, seek sustainable solutions to long-term development problems. Such solutions develop and draw upon the capacity of people to shape and improve their own lives and as such education is the foundation for AKDN's undertakings and for positive social change. It is integral to the well-being of individuals, communities and nations.

AKF aims to increase access to and improve the quality of education. It does this through building capacity and developing local systems and institutions in partnerships with AKDN agencies, governments, various civil society organisations and academic institutions. AKF also prioritises analysis and learning, both from its own and others' programmes (this review is a good example), and seeks to use this learning to influence both policy and practice.

Since 2006, AKF has highlighted four cross-cutting themes:

- *Transition (into and between different educational levels);*
- *Reaching marginalised or excluded groups (including girls and children from disadvantaged Muslim, minority, remote rural or urban slum communities);*
- *Pluralism and respect for diversity;*
- *Community-public-private partnerships promoting quality education.*

The current publication focuses on the first of these – Transitions. Why is it important?

Completion of primary school is a key goal within the Millennium Development and Education for All (EFA) Goals. Yet, there has been little attention to where education efforts break down: right at the beginning. Analysis of grade-disaggregated data indicates the highest drop-out and repetition rates are in Grade 1. In too many countries in Sub-Saharan Africa and South Asia nearly half the children who enrol either repeat first grade or drop out. Of those who stay many become established in persistent patterns of under-achievement and leave school with no useful skills. This is costly in both human and financial terms, and represents a serious inefficiency within education systems that has received far too little attention. A growing number of the Foundation's programmes and research studies now focus on the issue of early transitions – not only as it relates to expanding provision of a range of early childhood supports to children and families but also, and critically, to improve the quality of learning in early primary classrooms.

Transition is closely linked with another of AKF's cross-cutting themes – the work with marginalised or excluded groups. Not surprisingly, it is precisely these children who are most at risk during the key transitions in the education system. Given competing demands, unless the education on offer seems relevant and useful to both the children themselves and their families, early drop-out is near certain. Children growing up in the countries where AKF works need to develop multiple skills during the course of their lives. Key competencies which are needed in addition to the vital literacy and numeracy skills are adaptability, innovation, problem-solving and communication as well as responsible citizenship and respect for diversity. Whether or not expanded educational opportunities translate into meaningful development – for either the individual or the society – depends on child rearing and teaching practices which fosters this.

AKF staff have written a number of papers and reports highlighting the issues involved in transitions including for the 2007 EFA Global Monitoring Report. AKF commissioned Dr. Sheridan Bartlett to undertake this literature review in order to learn more about what does and does not happen during the early years of primary and what we know (and don't know) about what works in different contexts. The current document draws on available evidence from programme evaluations and research studies (mostly from low-income countries) and is a synthesis of the original longer review. In addition to making use of a wide range of research literature, the paper also draws on two companion papers. One, by a University of Cambridge team, Dominic Wyse and Helen Bradford, looks more closely at policy and progress within sub-Saharan countries. The other, by Colette Chabbott, from George Washington University, focuses on early grade reading. Both of these were co-funded by AKF and a grant from the Hewlett Foundation for a new programme starting up in East Africa.

Caroline Arnold & Kathy Bartlett
Co-Directors, Education
Aga Khan Foundation
Geneva, Switzerland

Introduction

This paper reviews some of the available evidence on a range of interventions for primary education in low-income countries. It considers the effectiveness of these interventions for children's learning achievement and the contexts within which they have proven to be effective – or not. Particular attention is given to the earliest years of school.

Access to school has continued to improve in low-income countries over recent years, especially for girls; but there are still widespread problems with school quality. Overcrowded classrooms, poor infrastructure, a lack of materials, acute teacher shortages and inadequate contact time are endemic.[1] Ironically, the very gains in school access have exacerbated the quality issue. The influx of children following successful enrolment drives has in many countries put added pressure on already under-resourced schools. The impoverished background of many new learners explains why just providing more school inputs can fail to show any effect.[2] High rates of malnutrition and ill health; low rates of parental literacy and an absence of pre-school education – in combination with poorly trained teachers and under-resourced schools – create significant barriers to the achievement of basic competence. Literacy is the most neglected of the EFA goals; most children in low achieving countries are unable to comprehend grade-level texts. This has direct implications for achievement in all areas of study.[3]

These challenges are widely recognised to be greatest in sub-Saharan Africa, where both access and quality remain critical problems.[4] The region has the highest proportion of out-of-school children, the greatest gender disparities, the highest ratio of pupils to teachers and the lowest primary completion rates. Less universally recognised is the widespread disregard, worldwide, for the earliest years of schooling. There is compelling evidence of the cost-effectiveness of good Early Childhood Development (ECD) and early grade programming, and of their critical importance for children's learning and general development.[5] Yet these years continue to be the most neglected on every front.

This review attempts to sort through some of the research evidence on interventions in the early grades in low-income countries and to assess their value. It also draws on two additional papers commissioned by AKF.[6] However, some important constraints must be acknowledged:

- Most of the available research comes from high-income countries and the findings are not always relevant in other contexts;
- The recognised inadequacies of achievement tests for younger children limit the extent to which early grade learning can be evaluated;
- Most research is on more easily measurable interventions that can be isolated in terms of their effects. Yet experience tells us that vibrant

classrooms that promote growth and learning are a product of many things working together in synergy;

- From much of the available research, we learn about outcomes, but not the processes through which they have been reached.

This review takes a pragmatic approach, drawing on everything from large-scale production-oriented research and randomised trials on specific interventions to more fine-grained case studies. Especially in low-income countries, any studies that make use of reliable methods and valid tools, qualitative or quantitative, are extremely valuable. Even less rigorous work, put into context, can contribute to an overall picture. But the evidence calls for careful reading. Where a broad consensus exists, it can provide valuable guidance. Where there are discrepant results, we are forced to think critically about what might have made the difference. On topics where little research exists, findings can provide insight, but not grounds for generalisation.

There is compelling evidence of the cost-effectiveness of good Early Childhood Development (ECD) and early grade programming, and of their critical importance for children's learning and general development. The Aga Khan Foundation's Madrasa Early Childhood Programme in East Africa has helped establish over 200 community pre-schools and taught over 70,000 children.

Resource Investments

In high-income countries, research does not point to a close or consistent relationship between resources and learning outcomes.[7] In some cases, higher investment has even been accompanied by lower achievement.[8] In low-income countries, limited evidence suggests a closer relationship between resources invested and children's achievement. However, this relationship is neither significant on a consistent basis, nor does it vary systematically across countries. Results on cost-effectiveness are often ambiguous, most likely because of the subtleties that get lost when data is aggregated in large cross-country comparisons. What does come through clearly is that what makes the most difference is not how much money is spent, but how it is spent. Evaluations in Kenya, for instance, make it clear that de-worming in primary schools was more cost effective in increasing attendance than the provision of school uniforms. De-worming programmes in another context might be a waste of money.[9]

What Children Bring to School

Home and parents

In the USA and other high-income countries, family background is a major determinant of academic achievement; in low-income countries the impact does not appear to be as strong,[10] most likely because of numerous other school-related factors that also challenge children's performance. This does not mean that the connection does not exist – a study from Brazil, for instance, found meaningful correlations between various factors in the home and children's learning achievement.[11] (See Box 1.) Parents, even illiterate parents, can make a significant difference to children's school achievement especially when there are active measures to involve them. Pressure from parents can be very effective in ensuring more proactive attention to children within schools.[12]

Parents, including illiterate parents, can make a significant difference to children's school achievement, especially when there are measures to involve them. AKF is experimenting with establishing small "libraries" for children to encourage greater parental involvement. Here mothers in Cabo Delgado, Mozambique, are reviewing books in their new community learning space.

In most countries, even if tuition is free, families still pay for books, supplies, uniforms and entry fees. Various interventions to cut these costs have had good results for enrolment and retention,[13] but there is less evidence with regard to their effect for learning achievement, except in the presence of other supports. A study in Nepal, for instance, indicated that the positive impact of subsidies for dalit (or "untouchable") children depended on the quality of the school.[14] Various studies have looked at the effect of cash transfers to families that are conditional on keeping children in school, but in general, evaluations have focused more on the impacts for enrolment and family poverty than on children's achievement.[15]

Box 1: The influence of home and family on children's achievement in Northeast Brazil

A study in Northeast Brazil looked at the specific effects of various home factors related to the literacy scores of Grade 1 and 2 children. Mothers' education had a powerful effect. When mothers had completed four years of primary, their children's scores went up 7.5 percent; they went up to 10 percent when mothers had been through eight years of school. The effect was stronger for girls than for boys. Fathers' occupation had no effect, but children with absentee fathers scored higher, a difference that came close to reaching significance. (It has been found in a number of situations that children of single mothers do better on various fronts, most likely because of mothers' tendency to allocate more resources towards their children's needs.) The presence of books in the home pushed scores up an additional 5 percent, again with a stronger effect for girls. Children in crowded houses did less well, and the presence of running water was significant for girls, who presumably carried more water than boys. Children's scores dropped 2.5 percent for every additional chore they handled each day. All these effects taken together, however, explained less than 10 percent of the total variance in scores, a small share compared to that typically related to home factors and family background in high-income countries.

Source: Fuller, Bruce; Lucia Dellagnelo; Annelie Strath; Eni Santana Barretto Bastos; Maurício Holanda Maia; Kelma Socorro Lopes de Matos; Adélia Luiza Portela; Sofia Lerche Vieira (1999) "How to Raise Children's Early Literacy? The Influence of Family, Teacher, and Classroom in Northeast Brazil," *Comparative Education Review* 43 (1):1-35.

Children's Health and Well-being

Poor health and malnourishment are facts of life for many children in low-income countries. Among the endemic challenges that erode their chances are malaria, diarrhoeal diseases, worms and parasites, malnutrition and a lack of specific nutrients. In sub-Saharan Africa, for instance, more than 40 percent of children under five are physically stunted.[16] The effects for learning are both immediate and long-term.[17] Children who are sick or malnourished lack the energy and interest to be active learners.[18] An abundant literature relates lower cognitive performance to illness and under-nutrition. Children, who are sick or stunted at an early age, have been found repeatedly to demonstrate later cognitive deficits, along with lower school achievement and higher rates of drop-out.[19]

Better health and nutrition have been positively linked not only to better test scores, but to better attendance, lower repetition and better grade completion.

Evidence on the overall efficacy of health and nutritional supports in enhancing children's capacity for learning is clear, although not copious. Better health and nutrition have been positively linked not only to better test scores, but to better attendance, lower repetition and better grade completion.[20] The most conclusive research is on the effects of supplementary feeding programmes in early childhood, both short and

longer term.[21] In Bangladesh, for instance, the provision of eight fortified biscuits a day to about 1 million children in 6,000 primary schools, at a cost of US $.06 a day, resulted after a year in over 15 percent higher test scores than those in control schools – in mathematics over 28 percent higher – as well as improving health, retention and attendance.[22] Feeding programmes generally show the greatest effects for children who are significantly undernourished, and for younger children.[23]

A number of studies have pointed to the positive effects of de-worming on school attendance and performance.[24] There is less evidence available on the effectiveness of malaria treatment for performance, although some studies have shown improvements in attention and in examination scores.[25]

A growing body of literature demonstrates how poverty-related stress erodes the cognitive capacity of children. This is increasingly being associated with the physiology of brain development, especially where poverty is of long duration.[26] Stress causes the secretion of hormones which are potentially most damaging to the immature brain, altering anatomy and function over the long term,[27] and showing particular effects for the development of language, memory and cognitive control.[28]

Children's age

The enormous challenges facing teachers posed by classes where there is a wide range of ages of children as well as very large class sizes have not been sufficiently addressed in many countries, and the consequences of the same not well understood.

Children's age is widely assumed to be an important determinant of both their school achievement and social adjustment, yet research in the USA finds only modest and temporary advantages for those who start school later.[29] The situation in lower income countries is far more complex. It is not simply a matter of the relative merits of starting school at age 5, 6 or 7. Grade 1 classrooms can often include children as young as 3 or 4 and as old as 14 or 15. At stake are not just the relative benefits for individual children, but also the complexity for teachers of dealing with children across such a wide age range.

Evidence on the effects of age is scanty however. For Grade 1 children in Balochistan, Pakistan, promotion to Grade 2 was closely related to age.[30] Research from Northeast Brazil with much larger numbers of Grades 1 and 2 students found that age was positively related to children's scores on an early literacy exam, which increased for every additional year of age.[31]

On the other hand, research from Mozambique, drawing on census and education records, found that children who start school late have higher drop-out rates than younger students.[32] More than one explanation may come into play here. Where children's development has been delayed by malnutrition and disease, another year or two can make a great difference.

On the other hand, the evidence pointing to diminishing results for older children could reflect the possibly lower socio-economic status of children whose families enter them in school late, and who may be expected to contribute more household work.

No research has been identified that compares the effect of a narrow versus wide range of ages in the classroom for children's achievement in the low-resourced schools of developing countries. This is arguably a more important factor than the average age within a class and calls for more research attention.

ECD programmes

ECD programmes are an invaluable contribution to learning and school achievement (as well as overall well-being), especially for children from disadvantaged backgrounds.[33] A substantial number of studies from a range of low-income countries demonstrate significant advantages for children who have participated in ECD programmes in terms of basic cognitive skills, social development, retention in school and pass rates in the early years.[34] Research also draws attention to the positive social qualities in these children.[35]

The research shows that it is the interaction between the facilitator and the children which is associated most strongly with enhanced child development rather than structural features such as class size, staff-child ratio and staff training.

Specific programme features or approaches have been found to have specific effects. For instance, a review of programmes in 15 countries noted that children's language performance at age 7 was correlated to the degree of autonomy they were given during pre-school and to the pre-school's teacher's educational level.[36] Aboud's work in Bangladesh is interesting as it found that the Early Childhood Environment Rating Scale (ECERS)[37] sub-scale indicators, which were key to learning achievement, were activities, interaction and programme structure. Changes such as more free play time and a greater emphasis on small group and individual work resulted in higher school readiness scores and in better non-verbal reasoning.[38] The ECERS sub-scale indicators for space and furnishings were not associated with children's learning outcomes.[39] The same findings applied in Aboud's more recent research which looked at actual performance in Grade 1. Children with pre-school experience did better than those without and there were clear correlations between the quality of the programme and first grade competencies.[40]

Similarly, a review of US research indicates that programme quality correlates strongly with children's development and well-being.[41] The research shows that it is the interaction between the facilitator and the children which is associated most strongly with enhanced child development rather than structural features such as class size, staff-child ratio and staff training. In other words, it is the dynamics which really count.[42] The above findings are somewhat comforting given that many of

the structural features are hard to address in situations which have access to only minimal resources. The relationship between ECD curricula and achievement in the early grades remains an unexplored area. The tension between formal preparation for school and a more active play-based approach to early learning is evident in many countries, with parents most often opting for the academic approach, which they see as most likely to help their children succeed within competitive test-driven school systems.[43] Yet almost no research from low-income countries has been found that specifically compares later school outcomes for children who attended pre-schools focused on formal school preparation versus those who attended more play-based programmes – or the relationship of these programmes to different approaches within the early grades.

The most powerful determinant of children's achievement in low-income countries is what actually goes on within the classroom – the way teachers teach and how much they teach. When the Aga Khan Foundation learned that many rural Kyrgyz children were missing out on kindergarten during the annual migration to the "jailoo", or high pastures, for four to five months a year, it supported a programme to bring early childhood education to the mountains.

Some studies remind us that not all ECD interventions are equally effective. A World Bank evaluation of India's Integrated Child Development Services (ICDS) programme indicated only modest cognitive gains for children, because of inadequate attention to this area and a focus on nutrition, low funding and too little training and almost no support for overworked community ECD workers.[44] The very successful Nepal programme described in a 2003 study[45] a few years later did not show the same dramatic gains for children because the rapid and substantial growth of the programme was not accompanied by a corresponding increase in technical support.[46]

However, overall, early childhood programmes offer outstanding social and financial returns and the evidence regarding improved school achievement is impressive. ECD programmes are especially important in improving enrolment, retention and learning achievement for disadvantaged groups. Whatever the factors underlying exclusion or marginalisation – be they gender, poverty, ethnicity, caste, religion, disability or rural isolation – studies from Turkey, India, Nepal, Brazil, Colombia, Uganda, Guinea and Cape Verde all confirm that early childhood programmes are remarkably effective in countering disadvantage.[47]

A review of the literature on ECD in low-income countries points to seven "critical success factors". These include community-based knowledge and experience; programme models of proven high quality; supportive work environments for teachers; flexible training for teachers; ensuring that government is supportive, financially engaged and able to take leadership; multidisciplinary research, especially longitudinal studies; and mobilisation of the public and of policymakers.[48]

There are now many publications which highlight the significance of ECD for school achievement.[49] However, only a few[50] examine the importance of what goes on when children enter school. Moreover, only a small

percentage of children and their families have access to ECD programmes of any kind. Pre-school enrolments stand at just 14 percent in Sub-Saharan Africa for example. The South Asia GER pre-primary is 39 percent with wide variation between countries. Moreover, disadvantaged children who would benefit the most are the least likely to access ECD services. For this reason, it becomes even more critical to look at what happens as children go into Grade 1 and move through their initial primary school years. This is therefore the focus of the second half of this review.

Overall, early childhood programmes offer outstanding social and financial returns and the evidence regarding improved school achievement is impressive. However, the majority of children in developing countries do not have access to ECD programmes.

What Happens in School

What teachers bring to the classroom

The most powerful determinant of children's achievement in low-income countries is what actually goes on within the classroom – the way teachers teach and how much they teach.[51] In contrast to the situation in the USA and other high-income countries, this outweighs home and community factors as a predictor of achievement.[52]

Teacher capacity

Research in India and Brazil finds that teachers' level of education is a significant predictor of their students' achievement, even in the early grades.[53] Given the minimal education of many early grade teachers in low-income countries, good supplementary training and professional development is critical, and can be extremely effective. However, too often training reflects the same rote practices that take place in the classroom, with little attempt to ensure understanding or provide hands-on experience.[54] Teachers often find it hard to reject what is familiar, adapt flexibly to new demands and internalise the import of new ideas.[55] They may, for instance, place students' desks together, in theory to encourage mutual learning and support, but then continue to assign exercises involving no cooperative work.[56] Teachers appear to learn new methods best when they are clearly structured, supported and accompanied by community backing.[57] (See Box 2.)

Another useful approach is the creation of learning communities of teachers, often in combination with teachers' resource centres, through which more experienced teachers can mentor newer teachers, and teachers can work together to take shared ownership of the practices they are working to master.[58] School networks or clusters can also improve cost-effectiveness, enhance monitoring and supervision of the teaching and learning environment, promote professional development, and provide a forum for teachers and school leadership to engage in professional dialogue and discuss problems and solutions.[59] The role of head teachers is also critical in managing school improvement.[60]

Box 2: Support for teachers

When teachers are trained in new and unfamiliar methods, their natural inclination in many cases is to revert to familiar models when pressures either within or outside the classroom are too great. The level of support they receive can make all the difference. In Bangladesh, the Dirha Suchana programme, an intervention that emphasised more active teaching methods in the early grades, was highly successful in one out of three districts. In the other two, the impact was negligible or non-existent. The successful area was more remote, which made it necessary for programme support staff to live together close by the schools. As a result they were more intimately and regularly involved, able to support and consolidate the teachers' learning as well as encourage community support for the new methods. Their time together also enhanced their own growth. These young support people had received only limited training. In this more successful programme area, the initial suspicions that experienced teachers felt towards these raw recruits gave way to an appreciation of their interest and commitment, and to greater interest and commitment on their own part.

Source: Bartlett, S (2005) Dirha Suchana: A summary of final research results. Unpublished report for Save the Children US, Bangladesh

Teacher motivation

High absentee rates of primary teachers throughout low-income countries is a significant problem,[61] along with a lack of engagement when they are in school.[62] In Nepal, it is not uncommon for teachers to hand over their duties (and a small fraction of their pay) to untrained substitutes, often the school janitor, while they tend to other obligations or teach at their own private schools.[63] A number of observers have argued for teacher incentive programmes (essentially paying for results) as a productive, cost-effective alternative to teacher training.[64] But evidence on their success has been mixed. Results from Africa have not been encouraging on the whole.[65] More evidence of success has been noted in India, in a few experiments,[66] making it clear that context is critical.

The quality of interactions

The way teachers interact with students can clearly affect performance; evidence from Brazil, Nepal and Uganda demonstrates the benefits of warmer and more encouraging teacher responses.[67] (See Box 3.) However, the quality of interaction is not independent of the mode of instruction. Rote learning approaches promote a one-way interaction between teachers and students, and a more constrained atmosphere. Approaches that encourage problem solving or cooperative work with other students (as opposed to only a passive relationship with the teacher) have clear implications for the

quality of interaction. The question then becomes not only how effective teaching methods are, but to what extent they promote practices that may mediate their success.

Use of time

In low-income countries, scheduled time for Grade 1 children averages only 700 hours a year (compared to 850 in higher income countries).[68] However, many factors reduce actual class time (poor attendance, teacher absenteeism, in-service training, multiple shifts, local conditions such as hostilities), and there may be 200-300 fewer hours of instruction than officially indicated.

Children's attendance can be affected by a number of factors including work responsibilities at home, lack of a uniform, or reluctance to face punitive teachers.

Children's attendance can be affected by a number of factors including work responsibilities at home, lack of a uniform, or reluctance to face punitive teachers. Increasing numbers from AIDS-affected households do not wish to attend because of the associated stigma.[69] Although not all research finds connections between attendance and achievement, Indian studies in a number of states have found strong correlations.[70] A number of factors have been found to positively affect children's attendance including cash grants, the presence of toilets, de-worming programmes and feeding programmes.
Children's learning is also a function of how effectively time in school is used. Many teachers spend significant amounts of school time outside the classroom,[71] or on such routines as taking attendance, or collecting and

Box 3: Friendlier teachers in Nepal

Schools can be extremely stressful places for children, adding to the more general burden of stress imposed by poverty. Physical punishment and humiliation, for instance, are common teaching tools, and can undermine any joy that children might find in learning. In Nepal, the significantly higher performance of Grade 1 programme children over control children in standardised tests of reading and math was related in no small part to the greater warmth from teachers. While teachers had little success in fully adopting the active teaching-learning methods that were a focus of the programme, they were very responsive to the objective of changing the quality of interaction, and were found to be far less likely to use physical discipline and harsh methods with children, and more likely to be friendly, encouraging and responsive. Children showed significantly higher levels of confidence and satisfaction with their lives and lower levels of fear and anxiety than their peers in control schools. These differences extended even to their sense of social support outside of the school setting. They were far more likely, for instance, to feel that they were valued by their family members, and that their neighbours would help them if they had a problem.

Source: Save the Children (2007) *Finding Hope in Troubled Times: Education and Protection for Children in Nepal*, Save the Children Norway and Save the Children US, Kathmandu, Nepal

grading homework, while children sit idle.[72] Kaul and colleagues point out that children in India may spend more time in class doing nothing than being "on task".[73]

Numbers and grouping of children

• Class size and pupil-teacher ratio: Evidence on the effects of class size for children's learning remains mixed and a reflection of the number of variables that can come into play. Reductions in class size definitely appear to make the most difference in the early grades, especially where classes are very large.[74] (See Box 4.) An analysis of 100 studies of class size, for instance, found the strongest effects for K-3.[75]

Fortunately, the evidence suggests that classes of up to 40 or 50 are practically manageable, and that teachers can create vibrant environments for learning even without the potential for one-on-one interaction.

Although in the high-income world, Grade 1 and 2 classes of more than 25 children would commonly be considered large, the chances of this becoming a standard within most of the majority world is remote. Fortunately, the evidence suggests that classes of up to 40 or 50 are practically manageable, and that teachers can create vibrant environments for learning even without the potential for one-on-one interaction.[77] However, in many majority world classrooms, 50 children is a small class. Extra para-professional support appears to be the most promising alternative, and experience in India has shown excellent results with the assistance of minimally trained young women from the community to assist with lagging members of a class.[78]

• Grouping children: The way teachers group and mix students can theoretically help them to cope with large numbers as well as with diverse abilities in their classrooms. Students in groups of like ability can provide

Box 4: Evidence of the value of smaller classes from Kenya

A randomised controlled study from Kenya provides strong evidence in favour of the positive effects of reduced class size in the early grades, where classes are large. World Bank funds were used to hire extra teachers, in order to be able to split 140 Grade 1 classes of close to 100 children each on average.[76] Children remained in these split groups through Grade 2, and were then compared to children from control schools, where class size had not been reduced. Children in the reduced size classes scored significantly better (0.22 standard deviations) than the control children on externally administered tests. This was especially the case in classes that had been ability grouped or, interestingly, in classes with contract rather than regular teachers. Classes in the treatment schools were also found to be more interactive and participatory.

Source: Duflo, Dupas, Kremer (2008) Unpublished study, Poverty Action Lab

challenge and support to one another; while mixed groupings or pairs make it possible to draw productively on the skills of more able students.[79] When groups are used effectively, they can have strong learning benefits for children. In Kenya, as described in Box 4, children assigned to ability grouped classes had higher test scores than those who were randomly assigned to classes.[80] However, most reviews of studies from low-income countries have shown only modest benefits in general from small group work, most often because teachers lack the skills to make productive use of such arrangements.[81] (See Box 5.)

• Ability streaming children: A related issue is that of assigning children to classes based on their achievement, on the assumption that teachers can teach more effectively with children of similar abilities. Evidence from the minority world has in general pointed to mixed benefits, although a recent experimental study in Kenya indicated solid advantages to ability streaming, both in terms of children's achievement and the involvement and motivation of teachers.[83]

Box 5: Why small group work fails to produce results

The major reason for the failure of small group work is the failure of teachers to change their practices sufficiently to take advantage of these different classroom arrangements. There is a danger, in fact, that teachers will believe that simply by placing children in small groups, they have accomplished something educational. The reality is far more complicated. Schoenfeld points out, *"Structuring and supervising student interactions so that students can make progress on the problems, learn from each other, and know when they need more expert advice, is very hard. When these things are done well, students can learn a great deal. When superficial aspects of reform are implemented without the underlying substance, students may not learn much at all. The logistical problems of supporting reform in substantive ways should not be underestimated."* [82]

Source: Schoenfield, Alan (2004) "The Math Wars", Educational Policy 18 (1,) 253-286, page 272.

The nature and quality of instruction

• Pedagogy: Different approaches to teaching and learning have been intensely debated in the minority world. On the more traditional side is an emphasis on "basics" and the acquisition of solid skills, with structured teaching methods, pre-specified objectives and measurable results. On the more progressive side the focus is less on knowledge and more on understanding, less on drill and more on problem and project-oriented

learning; more on provision of support to learners than explicit instruction. This debate has filtered into classrooms in low-income countries, where different conditions may change the terms of success. In many countries, there is currently a shift back to an emphasis on basic skills and structured approaches, which has been contested by many educators.[84]

Few of the same conditions prevail in most classrooms in the poorest countries, and an emphasis on structure may have added relevance here. The taken-for-granted supports available to middle-class children almost anywhere, but especially in higher income countries, are mostly absent for the new learners in poorer countries. Too many have to cope with poor health, illiterate families, overcrowded classrooms, a lack of supportive materials and under-motivated teachers – the usual overwhelming litany of challenges. The arguments in favour of more carefully structured approaches take on added weight in this context. These methods must be carefully evaluated, however, to ensure that they do not in their own way perpetuate the disadvantage of poorer students.[85]

Immersion in the world of print is strongly related to later success in reading with understanding. In the remote Kalash Valley of Chitral, Pakistan, girls study in a community school supported by AKF, which uses the government curriculum and also respects and draws on aspects of the unique local culture.

• Approaches to reading and literacy: Literacy is a particular concern in terms of this debate in low-income countries – both the weakest point in terms of children's achievement, and the set of skills most critical for mastery in all subject areas. The "phonics" and "whole language" approaches to literacy can be roughly equated here with the traditional and progressive schools of pedagogy. The phonics-based approach views reading as a set of discrete skills, sequentially acquired like building blocks; a certain level speed or fluency in decoding syllables is seen as an essential step in achieving comprehension.[86] The whole language approach sees reading as something that children, as active learners, can pick up more spontaneously from an everyday immersion in the world of print and literacy.[87] The first stresses structure over meaning and the second meaning over structure. Students from poor, often illiterate backgrounds, in the low-resource environments of many classrooms, may be seriously short-changed by both of these approaches, especially those children functioning in a second language.

There is a broad consensus that literacy begins long before school does – at least for children who grow up in literate environments.[88] Early immersion in the world of print is strongly related to later success in reading with understanding. Most children in high-income countries have, with little effort, acquired many of the skills and much of the print awareness that are essential precursors to reading with understanding. What happens when they enter the classroom matters, but it matters less. In low-income countries, "whole language" approaches have too often failed to result in strong skills for children who lack the requisite background in print rich, literacy rich environments. Far more explicit

and systematic instruction in reading appears necessary, especially for children struggling with a second language.[89] (See Box 6.)

Box 6: Whole language approaches may provide little traction for children

For children from illiterate and disadvantaged backgrounds, being taught through constructivist, self-directed methods may actually add to their difficulties when they start school. A report from Vanuatu offers an example: *"In the Pacific a 'whole language approach' is used, which has little or no instruction and children are expected to learn by being immersed in literacy experiences. However, there are few books and little printed material for children to immerse themselves in and few literacy experiences available in the home, pre-school, and school, such as discussion of words, use of rhyme, teaching about different forms of writing, etc. Therefore, this approach may be setting these children up to fail, especially in rural areas, which are poor literacy environments."*

Source: Hughes, Desma (2004) "Reflecting on Early Literacy Development in the Context of Vanuatu", *Contemporary Issues in Early Childhood*, 5(3) 2004, 349-361 page 357.

This recognition has led to a strong emphasis on phonics, decoding and fluency. A school of thought currently espoused by some researchers and education specialists suggests that attention to comprehension may be irrelevant for poor children in low-income countries, and is something that can be put off until they achieve fluency in de-contextualised words and even nonsense syllables.[90] This view ignores the fact that children are complex meaning-making creatures. For children with little exposure to the pleasures of reading, working on de-contextualised skills may fail to generate any enthusiasm. There is also, in fact, little evidence of a link between these basic "building blocks" and the ultimate goal of reading with understanding. Even children who successfully acquire basic decoding skills may not go on to become skilled readers. Comprehension, argues Catherine Snow, must be a focus of instruction from the beginning.[91] More grounded research is called for to explore the modalities that are most effective in different settings and in the face of different challenges.

In low-income countries, "whole language" approaches have too often failed to result in strong skills for children who lack the requisite background in print rich, literacy rich environments.

Neither purely skills-based, de-contextualised approaches to reading, nor unstructured whole language approaches, then, have markedly improved children's capacity to read with understanding in the early grades within low-income countries. This failure translates into poor achievement across the board as children move on in school without comprehending what they read in any subject area.

Compensatory reading-aloud programmes for children who have had less exposure to the printed word seem essential. This provides familiarity with the printed word, exposing children to story structures and to the greater complexity of written over conversational language, and providing an orientation towards literacy. Children in Bangladesh, for instance, whose newly literate mothers were provided with storybooks to read to them, had increased vocabulary and verbal skills, and a greater interest in attending school.[92]

A few studies from low-income countries have pointed to the strong success of programmes that provide attention to both structure and meaning. The Australian-based Scaffolding Literacy approach, for instance, provides a highly structured approach to meaningful texts. It starts from an immersion in print and narrative, and moves from the oral understanding of a text down to the understanding and mastery of its component parts – rather than the other way around. This has shown significant and sometimes astonishing results among indigenous students for whom school success has traditionally been very low, providing them with structured and supported means to actually catch up to grade level, rather than remaining consistently behind even when progress is being made.[93]

A few studies from low-income countries have pointed to the strong success of programmes that provide attention to both structure and meaning.

In Ghana, another scaffolding approach, Break Through to Literacy (BTL), supported teachers in very specific structured approaches, similar to those in Australia. Classrooms were print-rich environments, with "talking walls" filled with reminders of past lessons, and with desks grouped for cooperative work. Instruction was focused simultaneously on listening, reading and writing, and there was a mix of whole class, group and one-on-one instruction. When Grade 1 children's reading skills were assessed and compared to those of children in control schools, the BTL children outperformed others on all fronts, with the most marked differences in the advanced test sections on oral reading and comprehension.[94]

- Numeracy: Many of the same issues apply to emerging numeracy as to literacy. As Schoenfeld argues, *"An exclusive focus on basics leaves students without the understandings that enable them to use mathematics effectively. A focus on "process" without attention to skills deprives students of the tools they need for fluid, competent performance. The extremes are untenable."*[95]

A number of priorities, both skills-based and process-based, are increasingly agreed upon as important to the emerging numeracy of young children. As with literacy, it is accepted that children are already becoming numerate before they reach school,[96] building up considerable knowledge in the course of everyday experiences in such skills as sorting,

matching and counting.[97] The Piagetian assumption that mathematical concepts are spontaneously acquired by children is being called into question, however, and there is growing emphasis on the critical instructional role of the teacher.[98] Yet teachers often underestimate the knowledge with which children come to school, rather than building on it.[99] The continuity of experience is critical for optimal gains, and many children without responsive support from teachers may fail to make connections between what they learn at home or in their play, and what is taught at school.[100] Activities should build on the strategies that children have generated, rather than overruling or ignoring them, and should be related to their everyday use of mathematical concepts.

There is wide recognition of the potential for concrete materials to aid children's understanding of mathematical concepts. In this community-based Grade 1 class in Bamiyan, Afghanistan, AKF supports a young teacher with training and relevant learning materials.

There is wide recognition of the potential for concrete materials to aid children's understanding of mathematical concepts. Many teachers confuse the recognition of written numbers with a capacity to understand their meaning. In classrooms across the world there are children who recognise numerals – the numeral 7, for instance – but are unable to count out seven pebbles from a pile.[101] Yet meaningful counting is critical in developing number understanding, and, especially in situations relevant to them, children can use their counting skills to support mental calculation.[102]

Controlled studies find that children supported through play to move into more abstract thinking achieve higher scores in tests than control children given only routine instruction in the same areas.[103] At the same time, experts warn about the dangers of over-reliance on concrete materials for understanding.[104] Rose explains: "Children will not be able to rely forever on the use of concrete materials to help them understand maths concepts as these become more abstract or as they become more impractical to demonstrate in a concrete way."[105] Simply understanding the conceptual basis of what they are doing is not, as Rose points out, a substitute for being able to move into abstract thinking; and work in oral math and mental calculation should be a fundamental part of early grade activity. This should not be confused with rote procedures and mental drill. [106]

There are important links between mathematical competence and language. Children need to learn and internalise the language that describes numerical concepts, in order to be able to move towards abstraction.[107] Scaffolding mathematics means providing children with ways to describe and express the thought processes they are undergoing. Talking about mathematics builds precision in thinking and in language use. Sarama and Clements describe the many ways stories can be used to support awareness of mathematical concepts; one of the best predictors of children's mathematical skill, they claim, is their ability to understand and tell stories.[108]

Mother tongue

A critical component of children's success is the language used in the classroom. According to a World Bank report, 50 percent of the world's out-of-school children live in families and communities where the language of instruction is rarely used.[109] Those most penalised tend to be children who are already most marginalised and disadvantaged. Children who come to school unfamiliar with the language of instruction are challenged cognitively, but also in terms of their confidence and sense of identity, and are more likely to end up repeating and dropping out of school.[110]

Research indicates the importance to children's educational success of a strong foundation in their first language during the early years of school. Achieving real competence in the mother tongue takes longer than the first five or six years of life, and children's competence is likely to be threatened if this language is dropped when school begins. While some may argue that the dominant language should be learned early, in fact, according to Bloch, there is no proven "critical period" beyond which it is less effective to introduce a second language. In addition, the skills needed in the second language to manage effective academic learning are estimated to take several years to develop.[111] For children whose first language is not the language of instruction, the amount of formal schooling in the mother tongue has been found to be the strongest predictor of achievement in the second language.[112]

Research indicates the importance to children's educational success of a strong foundation in their first language during the early years of school. Achieving real competence in the mother tongue takes longer than the first five or six years of life, and children's competence is likely to be threatened if this language is dropped when school begins. In a primary school previously supported by AKF and the EC, in Andhra Pradesh, India, children work in small groups creating words and sentences in their local language.

Although the benefits are clear, implementation of mother tongue programmes can be complex. Practical issues include the absence of suitable materials, the fact that teachers are often not proficient in the local language, the presence of more than one language group in the same classroom.[113] Sometimes minority children are excluded from what is going on in the classroom because "sympathetic" teachers feel it is kinder to ignore them than expect them to keep up.[114]

The mother tongue issue is often framed as an either-or dilemma, presenting a choice between the initial disadvantage of learning in a foreign tongue and the long-term disadvantage of lacking facility in a language which opens more doors. Numerous programmes, however, have shown the effectiveness of a gradual transition to the use of a dominant language. There is also growing evidence in favour of the longer term use of both languages for best results, adding the dominant language rather than replacing the mother tongue.[115] A number of reports from Africa and Latin America describe successful bilingual literacy programmes.[116] (See Box 7.)

Curriculum

Closely related to the language issue is the curriculum used in the classroom which, in many countries, still reflects their colonial origins.

Box 7: Bilingual classrooms in South Africa

In the Battswood Biliteracy Project in the Western Cape in South Africa, researchers followed an experimental class of Xhosa and English speaking children through six years of primary school. The Xhosa speakers came from a print-scarce environment. One goal was to motivate them to want to read and write for personal reasons. The class had both a Xhosa and an English speaking teacher, and both languages were used equally. An "emergent literacy" approach was used. Stories were read to children in both languages (although it took some effort to find sufficient and adequate Xhosa texts) and children learned from the start to write in both languages. By the end of Grade 6, children were becoming enthusiastic and competent readers and writers, in both Xhosa and English. Although some children preferred using one language, and some the other, they were able to perform confidently in both languages. Their competence in English was not affected by the fact that much of their instruction and learning had taken place in Xhosa. In contrast, an official government literacy assessment shows most children in the Western Cape unable to read by Grade 6. They learn to decode but not to understand what they are reading.

Source: Bloch, C (2006) *Theory and Strategy of Early Literacy in Contemporary Africa with Special Reference to South Africa*, PhD thesis submitted to Faculty of Education, Carl van Ossietzky Universitat Oldenburg.

Although there are impressive examples of curricula based on local knowledge, skills and experience,[117] no specific evidence has been found comparing the achievement of children using more and less locally relevant curricula.

Learning materials

The availability of basic learning materials has demonstrated effects for children's school achievement, most strongly felt in places where material assets are low, both within schools and at home.[118] However, the impact of materials is clearly mediated by their quality and the way teachers use them. It is not uncommon, for instance, to find new materials unused or even locked away in cupboards.[119] A study in Ghana points to the critical importance of adequately linking materials with training for teachers on their use.[120]

Most of the materials-related research in low-income countries has been on the availability of textbooks, which are in direly short supply in many countries and especially in Africa.[121] The provision of textbooks is widely considered to be fundamental to students' achievement, and a number of studies, especially from the 1980s and 1990s, pointed to impressive gains in test scores when textbooks were made more widely available.[122]

Less encouraging, however, is a more recent randomised controlled study from Kenya of a programme supplying textbooks to rural primary Grade 3 classrooms. Test scores rose for high achievers, but not for average students, for whom the material was too difficult; also, the programme did not reduce repetition or increase attendance.[123] Research from India has also pointed to the routine use of textbooks that are inappropriately difficult for children.[124] Chabbott points out that in many countries, reading curricula and textbooks may not provide sufficient access to properly levelled reading material, or to the range of reading skills that need attention.[125]

In the studies on the language of instruction, cited above, the critical need for reading material in local languages comes up repeatedly. An immersion in print and the opportunity to be able to read for pleasure are seen as key to the development of skilled readers. Yet in many low-income settings, almost nothing appropriate is available.[126]

Tutoring

Reviews of over 100 studies of individual tutoring programmes, primarily in the USA, indicate that, while tutoring is not a guarantee of improved learning, it tends to lead to gains in achievement, and to be most effective in the lowest grades and in mathematics. Comparative studies suggest, however, that tutoring is no more effective than other classroom-based enrichment interventions.[127]

Box 8: Benefits from tutoring in India

A frequently cited study on the effects of supplementary tutoring comes from urban India, where the Balsakhi Programme provides government schools with a young woman from the community to work with low achieving children from Grades 3 and 4. These young women have completed secondary school, and have received two weeks of training. Typically they meet with groups of 15 to 20 children for two hours daily during school hours and use a standardised curriculum that addresses core competencies. A randomised control evaluation found the programme had significant effects for test scores, but not for attendance or drop-out. The average increase in scores in the treatment schools was 0.28 standard deviation over two years, most of which was accounted for by the increase of 0.6 standard deviation for the treated children. One year later, this gain had faded to 0.1 standard deviation but remained significant.

Source: Banerjee, Abhijit V., Cole, Shawn Allen, Duflo, Esther and Linden, Leigh L. (2006), "Remedying Education: Evidence from Two Randomized Experiments in India" CEPR Discussion Paper No. 5446.

Few studies have looked at the effects of tutoring in low-income countries, but these few offer valuable insights. Costa Rican research found a tutoring programme in reading skills for kindergarteners to be more effective than a family support programme or extra materials for teachers and improved in-class instruction – although the combination of interventions had the most sustained results.[128] In urban India, group tutoring for low-achieving 3rd and 4th graders also had significant impacts for achievement.[129] (See Box 8.)

A common phenomenon in developing countries is that of extra tuition classes often conducted outside of school by teachers themselves, and in many cases, more of a substitute for classroom teaching than a supplement to it.[130] A number of observers have pointed to the destructiveness of this practice, which can often involve teachers making it necessary for families to pay for this extra service in order for children to complete the curriculum.[131] Although students may do better as a result of the tutoring, the practice is costly, it cuts into free time, it diminishes the value of what children get in the classroom, and it penalises heavily the children whose families cannot afford the extra help.[132] For extra tutoring to be equitable as well as effective, it should clearly take place within the context of the school programme, and should not be entrepreneurial in nature.

Little research has been found on the benefits of peer support strategies. In general, it is assumed that peer tutoring, like other forms of student grouping, are dependent for their success on how effectively they are planned and supported.

The physical environment of the school

It has long been recognised that the physical environment has measurable effects for cognition (as well as social and emotional development), both through its direct effects on such factors as attention, behaviour, stimulation, exploration and comfort, but also indirectly through its effect on social interactions.[133] Considerable evidence from high-income countries on school environments points to relationships as narrow as the effect of noise on reading comprehension,[134] and as broad as the impact of school design on the social interactions within that school.[135]

There is relatively little research on this topic from low-income countries, however, although it is clear that such factors as ventilation, light, warmth, noise levels and comfort in classrooms will have an effect on children's capacity to pay attention wherever they are. One area that has received considerable attention is the role that adequate sanitation plays in attracting and retaining girls. In Bangladesh, the provision of a separate toilet for girls was also a significant predictor

One area that has received considerable attention is the role that adequate sanitation plays in attracting and retaining girls. In Bangladesh, the provision of a separate toilet for girls was a significant predictor of higher test scores.

of higher test scores.[136] Fuller and colleagues also point to the indirect effect that the quality of school facilities may have – for instance, in encouraging parents to send children to school and keep them there, and in attracting higher quality teachers.[137]

Whole school interventions

Most research on improved learning achievement examines the effect of a particular intervention – textbooks, teacher incentives, subsidies and so on. Yet there is broad acceptance of the importance of an integrated approach to improved education, and of the difficulty of taking successful interventions out of context. Many school improvement efforts around the world started with attention to teachers and teaching materials introducing active, child-friendly, inclusive teaching/learning approaches. Work with head teachers and School Management Committees was then highlighted because of their crucial role in setting the school climate and ensuring healthy and safe environments for children. Attention to increased engagement of parents and community members was also emphasised. The fact that the school is situated in a wider school system that can enable or prevent positive change then came into sharp relief. This led to increased emphasis on system reform. While it is essential for programmes to give attention to the multiple levels which affect quality, education reforms may have sometimes made too many assumptions about the impact of these measures for children and their learning.[138] They have also been almost uniformly weak in systematically addressing learning needs and key issues in early primary.

Large-scale school reform efforts have been almost uniformly weak in systematically addressing children's learning needs in early primary.

Given the plethora of "whole school" and "child-friendly" programmes and the numerous descriptions, there is remarkably little research assessing their effects – especially on actual learning.

Research findings from the "Escuelas Nuevas" programmes in Colombia and Guatamala, from a whole school programme in Tajikistan and a child-friendly school programme in Nepal point to the general success of these interventions. When compared to results from control schools, these programmes demonstrate better retention rates for children and higher academic achievement.[139] The psychosocial effects are also noteworthy. The Escuelas Nuevas children rated much higher than control children in such non-academic areas as mutual support and civic awareness. The Nepali children showed greater resilience in the face of the tensions and hostilities related to the country's civil war. The Escuelas Nuevas research also looked at cost effectiveness and the decrease in repetition was demonstrated to have made the schools more cost effective.

Broader Issues – Equity, Quality, Context

Access, retention and the Grade 1 drop-out crisis

Although this review is primarily concerned with learning achievement, research regarding access and retention is also relevant, if only because high levels of achievement for just the most advantaged and capable children cannot truly be considered a success story. High rates of achievement mean far less if many children have already been filtered out, or never had access in the first place.

Better analysis of grade disaggregated data demonstrates beyond doubt that the real crisis in education is right at the beginning of primary school.[140] In Uganda, one-third (32 percent) of those who enrol drop out during their first year.[141] Even in Latin America, where good progress towards the EFA goals has been made, 19 percent dropped out in Colombia before completing Grade 1. Drop-out rates are highest in Grade 1[142] and usually at least double those in Grade 2. Children in South Asia are three times more likely to drop out of Grade 1 than Grade 4. In many countries, high levels of drop-out are often combined with even worse repetition rates. In Guinea-Bissau, Rwanda, Equatorial Guinea, Madagascar and Nepal more than half the children who enrolled either repeat first grade or drop out.[143] The implications for learning achievement are enormous. The vast numbers of children who are in school for a year or less have boosted enrolment figures but will clearly have learnt nothing that will be of use to them. Of those who stay many more repeat classes and become established in persistent patterns of under-achievement and leave school unable to read fluently, calculate or problem-solve.

A number of interventions have been found to contribute to better retention as well as better attendance. For girls, the availability of female teachers is helpful, especially if these female teachers also share the status of under-represented groups.

Some of the children who run the highest risk of exclusion are those with disabilities, ethnic minorities, AIDS orphans or those in families afflicted by HIV/AIDS, and children in urban poverty whose severe disadvantage is often masked by higher aggregate enrolments in urban areas. School enrolment rates in Dhaka, Bangladesh, for instance, are only 58 percent, as compared to 73 percent for Bangladesh villages.[144] The 2008 EFA Global Monitoring Report reviews a number of factors that improve access, including increases in education expenditure, compulsory education laws, enrolment drives, the elimination of school fees and the availability of non-formal programmes.

Exclusion extends well beyond who is and is not enrolled, and a number of factors, economic, cultural, social and institutional, can conspire to deny genuine inclusion.[145] Despite generally encouraging global figures on access and inclusion for girls, for instance, there is sobering evidence in many regions of discriminatory teaching practices, and even harassment and abuse.[146]

A number of interventions have been found to contribute to better retention as well as better attendance. For girls, the availability of female teachers is helpful, especially if these female teachers also share the status of under-represented groups. The presence of adequate and separate latrines, as noted above, can increase both girls' enrolment and their willingness to stay in school. Exposure to early childhood programming can lead to dramatically better completion rates.[147] Cash grants to families to pay for schooling costs have also resulted in improved retention and attendance.[148] School feeding programmes have been found to reduce both drop-out and absenteeism,[149] and de-worming has been found in Africa to be a most cost-effective way of improving attendance. Treatment for 30,000 Kenyan children resulted in a 25 percent drop in absenteeism, with the greatest increases for the youngest children.[150]

Students attending higher quality schools are also less likely to drop out.[151] Even illiterate parents are aware of what schools are providing, and are far less likely to keep their children in school when they feel they are not learning anything.[152]

Many interventions that have been successful on a small scale with intensive support may be more challenging to implement and sustain more broadly. A critical question is the degree of support necessary for sustained success. This remote Grade 1 class, supported by AKF, takes place in a mosque in Bamiyan, Afghanistan. The use of sticks and other concrete materials is indispensable to developing basic math skills.

Repetition and automatic promotion

High repetition rates, especially in the lowest grades, are a significant problem for many low- and middle-income countries, increasing overcrowding and raising costs. There is much debate, but little hard evidence, on the relative benefits of repetition and automatic promotion. Those in favour of repetition argue that it gives slower learners a second chance to master material, and helps to maintain higher standards within school systems. Proponents of automatic promotion argue that repetition has little effect in improving achievement,[153] and that it may damage children's self-esteem and increase the probability of drop-out.[154] Even if more hard evidence were available on the relative benefits for individual students, it is clear that the issue of automatic promotion cannot productively be taken up outside the context of the system within which it occurs. Automatic promotion, as Motala points out, is only workable when accompanied by other measures.[155]

Sustainability, replication and scale

Many interventions that have been successful on a small scale with intensive support may be more challenging to implement and sustain more broadly. A critical question is the degree of support necessary for sustained success. An ECD programme in Nepal, for instance, which initially showed dramatic results for children when they started school,[156] demonstrated far less success several years later when the programme had grown dramatically without an increased level of organisational support.[157] Colombia's Escuelas Nuevas, successful on so many fronts, also did not do as well when taken to scale with World Bank funding during the 1980s. This was attributed to teacher training days being cut, materials not being delivered to schools, but most importantly to the fact that components designed to be flexible and responsive to local conditions became codified and rigid.[158] The Guatemala programme, learning from the Colombian experience, maintained the flexibility of the programme, allowing teachers and communities to take greater ownership.[159] This experience points to the importance of local involvement and control even in a centrally run programme, if that programme is to retain relevance and vitality.

Where innovations are practical and effective, there is some evidence that they can spread even in the absence of support – and perhaps in a form that is more responsive to local needs than if they were formally implemented.

An effective programme that has successfully gone to scale is the Balsakhi programme in India (described in the section on tutoring) which reaches hundreds of thousands of children. Its success at going to scale is related to low cost, simple pedagogy and the ease with which it can be replicated.[160]

An interesting phenomenon is the potential for practical and effective interventions to have a ripple effect. Where innovations are practical and effective, there is some evidence that they can spread even in the absence of support – and perhaps in a form that is more responsive to local needs than if they were formally implemented.[161]

This partial picture, with all its ambiguities, is an important reminder of the critical role of context, and the fact that there are no "silver bullets" to solve the enormous problems faced by poorly resourced schools and school systems. Effective solutions have to build on local strengths, interest and involvement.

What emerges most clearly from the available research are realities that come as no surprise – the fact that hungry, debilitated children are unlikely to achieve well no matter how well they are taught; the handicap imposed by a background of illiteracy and the imposition of a new language; the failure of existing training to provide teachers with the skills they need; the impossibility of achieving results in classes of 100 young children; the critical importance of what takes place between teacher and student. Until these issues are addressed in integrated and locally effective ways, real progress is unlikely.

Feeding and de-worming children, where it is needed, is clearly a moral and practical imperative – a cost-effective way to ensure that learning is possible. High-quality early childhood programming remains another imperative, indisputably cost effective over the shorter and longer term, and a proven way to bring both children and parents more gently and successfully into the realm of formal schooling.

Research on the use of children's mother tongue for instruction deserves close attention, given its implications for both their immediate capacity to cope in school and their long-term cognitive development. Ensuring that instruction can take place in both local and dominant languages throughout primary school has shown promising results and has critical implications for children's success.

The reality of over-large early grade classrooms is a dilemma calling for creative solutions. The effective use of para-professionals and community people can have a significant impact. More work is needed to explore the most productive ways of attracting, training and compensating committed teacher aides.

Long-standing concern about the failure to provide children with basic literacy and numeracy has resulted in the unsurprising conclusion that what takes place within the classroom is most critical for success. Focused attention to improve the teaching of reading and math in enjoyable, systematic and structured ways can ensure success for children who often may not come from literate contexts. Carefully structured approaches to learning – going beyond both rote memorisation and open-ended self-directed learning – offer real promise. There is a vast difference, however, between structured methods that are meaningful to children and that enrich

their lives, and those that focus on de-contextualised skills. Such methods require equally systematic training for teachers, with levels of support that ensure their growing capacity to understand and adapt the underlying principles in responsive ways.

It is critical that large school improvement programmes across the majority world be re-conceptualized to give greater priority (both in terms of time and resources) to addressing the crisis in the early grades. Focused attention is needed both to reduce drop-out and repetition and to ensure that firm foundations for learning are laid. This would include finding ways to change the status of lower primary education, so that experienced and capable teachers can be recruited and assigned to the lower grades.

Finally, it is clear that the policy routes to success within larger school systems are too often drawn into a dichotomy between access, equity, and inclusiveness on the one hand and quality, rigour, and achievement on the other. Yet "quality" that is achieved by virtue of excluding or filtering out the majority is not a true success. Equity may challenge quality, but there is also considerable evidence that quality, when viewed in less mechanistic ways, promotes equity, and that it is most often poor quality that leads children to drop out of school. The analysis of school practices, suggest Fuller and colleagues, *"must be situated in a democratizing society's debate over how young children should be socialized, not only how policy makers are to mechanically raise children's test scores."*[162] A focus on genuine equity for children – the chance not only to attend school, but to achieve real competence – must be the basis for policy, but should also drive the research agenda.

Notes

[1] UNESCO (2008) *Education for All: Global Monitoring Report* , Paris: UNESCO

[2] Banerjee, Abhijit V., Cole, Shawn Allen, Duflo, Esther and Linden, Leigh L. , "Remedying Education: Evidence from Two Randomized Experiments in India" (January 2006). CEPR Discussion Paper No. 5446 Available at SSRN: http://ssrn.com/abstract=897926

[3] Chabbott, Colette (2008) Accelerating early grades reading in high priority EFA countries: a desk review. Supported by the EQUIP1 project, American Institutes for Research

[4] EFA Global Monitoring Report 2008, Regional Overview: sub-Saharan Africa.

[5] Karoly, L.A., Greenwood, P.W., Everingham, S.S., Hoube, J., Kilburn, M.R., Rydell, C.P., Sanders, M., and Chiesa, J. 1998. *Investing in Our Children: What We Know and Don't Know About the Costs and Benefits of Early Childhood Interventions*. Washington, DC: RAND Corporation; Barnett, W.S. 1993. Benefit-cost analysis of pre-school education: Findings from a 25-year follow-up. *American Journal of Orthopsychiatry* 63(4):25-50.

[6] Wyse, Dominic and Helen Bradford (2008) Early Primary Learning in Sub-Saharan Africa, unpublished literature review for Aga Khan Foundation; and Chabbott, Colette (2008) Early grades reading initiatives, Background note prepared for Aga Khan Foundation

[7] UNESCO (2005) "Chapter two: The importance of good quality: what research tells us", *EFA Global Monitoring Report,* Paris: UNESCO

[8] UNESCO (2005) "Chapter two: The importance of good quality: what research tells us", *EFA Global Monitoring Report,* Paris: UNESCO

[9] Duflo, E, R Glennerster and M Kremer (2007) "Randomized evaluations of interventions in social science delivery", *Development Outreach,* November 2007, http://www1.worldbank.org.devoutreach/article.asp?id+239, accessed March 10 2008.

[10] UNESCO (2005) "Chapter two: The importance of good quality: what research tells us", *EFA Global Monitoring Report,* Paris: UNESCO

[11] Fuller, Bruce; Lucia Dellagnelo; Annelie Strath; Eni Santana Barretto Bastos; Maurício Holanda Maia; Kelma Socorro Lopes de Matos; Adélia Luiza Portela; Sofia Lerche Vieira (1999) "How to Raise Children's Early Literacy? The Influence of Family, Teacher, and Classroom in Northeast Brazil", *Comparative Education Review* 43 (1):1-35.

[12] See, for instance, Save the Children (2003) *What's the Difference? The Impact of Early Childhood Development Programs: A Study of the Effects for Children, their Families and Communities,* Save the Children US and Norway: Kathmandu, Nepal; Banerjee A and E Duflo (2006) "Addressing absence", *Journal of Economic Perspectives* 20(1) 117-132; Lipson, Marjorie and Karen Wixson (2004) *Evaluation of the BTL and ASTEP Programs in the Northern, Eastern and Volta Regions of Ghana,* Prepared for The Education Office, USAID, Ghana

[13] Schultz, Paul (2004) "School subsidies for the poor: evaluating the Mexican Progresa poverty program", *Journal of Development Economics* 74(1) 199-250

[14] Bartlett, S, Pradhananga U, Sapkota P and Thapa, N (2004*) Everyone Counts: Dalit Children and the Right to Education in Nepal,* Save the Children US: Kathmandu, Nepal.

[15] Skoufias, Emmanuel & Parker, Susan W., 2001. "Conditional cash transfers and their impact on child work and schooling," FCND briefs 123, International Food Policy Research Institute (IFPRI); Rawlings, Laura and Gloria Rubio (2005) Evaluating the Impact of Conditional Cash Transfer Programs, The World Bank Research Observer 2005 20(1):29-55; doi:10.1093/wbro/lki001; Chaudury, Nazmul and Dilip Parajuli (2006) Conditional Cash Transfers and Female Schooling: The Impact of the Female School Stipend Program on Public School Enrollments in Punjab, Pakistan, World Bank Policy Research Working Paper No. 4102

[16] Cited by Chabbott, http://www.childinfo.org/eddb/malnutrition/database2.htm, accessed 10/26/06.

[17] See various overviews, for instance: Engle, P L, MM Black, J R Behrman, M Cabral de Mello, PJ Gertler, L Kapiriri, R Martorell, ME Young and the International Child Development Steering Group (2007) "Strategies to avoid the loss of developmental potential in more than 200 million children in the developing world", *The Lancet* 369, 229-242; Chang SM, Walker SP, Grantham-McGregor S, Powell CA (2002) "Early childhood stunting and later behaviour and school achievement*", Journal of Child Psychology and Psychiatry* **43:** 775–83; Walker, Susan, Theodore D Wachs, Julie Meeks Gardner, Betsy Lozoff , Gail A Wasserman, Ernesto Pollitt, Julie A Carter, and the International Child Development Steering Group (2007) "Child development: risk factors for adverse outcomes in developing countries", *The Lancet,* 369 (145-157).

[18] Grantham-McGregor, S, YB Cheung, S Cueto, P Glewwe, L Richter and B Strupp (2006) "Developmental potential in the first five years for children in developing countries," *Lancet* 369, pp 60–70.

[19] Walker, Susan, Theodore D Wachs, Julie Meeks Gardner, Betsy Lozoff, Gail A Wasserman, Ernesto Pollitt, Julie A Carter and the International Child Development Steering Group (2007) "Child development: risk factors for adverse outcomes in developing countries", *The Lancet* 369, pp 145-157; Sakti, H, C Nokes, W S Hertanto, S Hendratno et al. (1999), "Evidence for an association between hookworm infection and cognitive function in Indonesian school children", Tropical Medicine & International Health 4 (5)322–334; Holding, PA and RW Snow (2004) "Impact of *Plasmodium falcipraum* malaria on performance and learning: review of the evidence", *American Journal of Tropical Medicine and Hygiene* 71(2) supplement, pp 68-75.

[20] Myers, Robert (1992) *The Twelve Who Survive: Strengthening Programs of Early Childhood Development in the Third World,* New York: Routledge _

[21] Engle, P L, MM Black, J R Behrman, M Cabral de Mello, PJ Gertler, L Kapiriri, R Martorell, ME Young and the International Child Development Steering Group (2007) "Strategies to avoid the loss of developmental potential in more than 200 million children in the developing world", *The Lancet* 369, 229-242 ; Greenhaigh, T, E Kristiansson and V Robinson (2007) "Realist review to understand the efficacy of school feeding programmes", BMJ 335: 858-861, downloaded from bmj.com on 26 March 2008

[22] Ahmed, Akhter (2004) *Impact of Feeding Children in School: Evidence from Bangladesh*, International Food Policy Research Institute: Washington DC

[23] Greenhaigh, T, E Kristiansson and V Robinson (2007) "Realist review to understand the efficacy of school feeding programmes", BMJ 335: 858-861, downloaded from bmj.com on 26 March 2008

[24] Nokes, C, ST McGarvey, L Shiue, G Wu, H Wu, DA Bundy, and GR Olds (1999) **"**Evidence for an improvement in cognitive function following treatment of Schistosoma japonicum infection in Chinese primary schoolchildren," *American Journal of Tropical Medicine and Hygiene*, Vol 60, Issue 4, 556-565; Michael, Edwin (2000) "Misinterpretation of the evidence", *BMJ Rapid Responses*, 11 July 2000.

[25] Clarke, Siân E , Matthew C H Jukes, J Kiambo Njagi, Lincoln Khasakhala, Bonnie Cundill, Julius Otido, Christopher Crudder, Benson B A Estambale, Simon Brooker (2008) "Effect of intermittent preventive treatment of malaria on health and education in schoolchildren: a cluster-randomized, double-blind, placebo-controlled trial", *The Lancet* 372, 127-138; Fernando SD, De Silva D, Carter R, Mendis KN, Wickremasinghe R (2006). "A randomized, double-blind, placebo-controlled, clinical trial of the impact of malaria prevention on the educational attainment of school children." *American Journal of Tropical Medicine and Hygiene* 74: 386–93.

[26] Farah, Martha, Kimberley Noble and Hallam Hurt (2005) "Poverty, privilege and brain development: empirical findings and ethical implications", in J. Illes (ed) *Neuroethics in the 21st Century*, New York: Oxford University Press; Evans, GW and Kim, P (2007). "Childhood poverty and health: Cumulative risk exposure and stress dysregulation." *Psychological Science* 18, 953-957.

[27] Bruce S. McEwen (2002) The neurobiology of stress: from serendipity to clinical relevance. *Brain Research* 886 (1-2) 172-189.

[28] Farah, Martha, Kimberley Noble and Hallam Hurt (2005) "Poverty, privilege and brain development: empirical findings and ethical implications", in J. Illes (ed) *Neuroethics in the 21st Century*, New York: Oxford University Press;

[29] Stipek, D (2002) "At what age should children enter kindergarten? A question for policy makers and parents", *Society for Research in Child Development Social Policy Report* 16, 1-16; NICHD Early Child Care Research Network (2007) "Age of entry to kindergarten and children's academic achievement and socioemotional development", *Early Education and Development* 18(2) 337-368.

[30] Preliminary evidence, retention study, Aga Khan Foundation, Pakistan

[31] Fuller, Bruce; Lucia Dellagnelo; Annelie Strath; Eni Santana Barretto Bastos; Maurício Holanda Maia; Kelma Socorro Lopes de Matos; Adélia Luiza Portela; Sofia Lerche Vieira (1999) "How to Raise Children's Early Literacy? The Influence of Family, Teacher, and Classroom in Northeast Brazil", *Comparative Education Review* 43 (1):1-35.

[32] Wils, Annababette (2004) "Late entrants leave school earlier: evidence from Mozambique", *International Review of Education* 50 (1) 17-34

[33] Engle, P L, MM Black, J R Behrman, M Cabral de Mello, PJ Gertler, L Kapiriri, R Martorell, ME Young and the International Child Development Steering Group (2007) "Strategies to avoid the loss of developmental potential in more than 200 million children in the developing world", *The Lancet* 369, 229-242; UNESCO (2008) "Chapter two: The six goals: How far have we come?", *EFA Global Monitoring Report,* Paris: UNESCO

[34] See for instance Grantham-McGregor Sally , Cheung, Y, Cueto, S, Glewwe P, Strupp B, and the International Child Development Steering Group (2007) "Developmental potential in the first 5 years for children in developing countries",

Lancet , 369, 60-70; Taiwo, AA and JB Tyolo (2002) "The effect of pre-school education on academic performance in primary school: a case study of grade one students in Botswana", *International Journal of Educational Development* 22, 169-180; Aboud, Frances E (2006) "Evaluation of an early childhood pre-school program in rural Bangladesh", *Early Childhood Research Quarterly* 21(1) 46-60; Kagitçbasi, Ç, D Sunar and S Bekman (2001) "Long term effects of early intervention: Turkish low income mothers and children", *Applied Developmental Psychology* 22, 333-361; Save the Children (2003) *What's the Difference? The Impact of Early Childhood Development Programs: A Study of the Effects for Children, their Families and Communities*, Save the Children US and Norway: Kathmandu, Nepal; Save the Children (2004) Early Childhood Care and Development: a Positive Impact, Myanmar. Save the Children Myanmar Field Office, http://www.unicef.org/early childhood/index_resources.html

35 Save the Children (2003) *What's the Difference? The Impact of Early Childhood Development Programs: A Study of the Effects for Children, their Families and Communities*, Save the Children US and Norway: Kathmandu, Nepal; Save the Children (2004) Early Childhood Care and Development: a Positive Impact, Myanmar. Save the Children Myanmar Field Office, http://www.unicef.org/early childhood/index_resources.html; Aboud, Frances E (2006) "Evaluation of an early childhood pre-school program in rural Bangladesh", *Early Childhood Research Quarterly* 21(1) 46-60.

36 Weikart, D.P.; Olmsted, P.; Montie, J (eds.) (2003) *IEA Preprimary Project, Phase 2: A World of Experience. Observation in 15 Countries.* Ypsilanti, MI, High/Scope.

37 Harms, T., Clifford, R., and Cryer, D (1998) Early Childhood Environment Rating Scale: revised edition. New York Teachers' College, Colombia University

38 Moore, A, S Akhter, F E Aboud (2008) "Evaluating an improved quality pre-school program in rural Bangladesh, *International Journal of Educational Development* 28, 118-131

39 Aboud, Frances (2006) "Evaluation of an early childhood pre-school program in rural Bangladesh" Early Childhood Research Quarterly 21, 46-60

40 Aboud, Frances, Hossain, Kamal and O'Gara, Chloe (2008) "The Succeed Project: Challenging school failure in Bangladesh" Research in Comparative and International Education Vol 3, No.3

41 Love, Schochet and Meckstroth (1996) Are they in any real danger? What research does – and doesn't- tell us about Child Care Quality and Children's Well-being; Child Care Policy and research papers; Princeton; Mathematica Policy research Inc.

42 Arnold, Caroline (2004) "Positioning ECCD in the 21st Century" Coordinators' Notebook: No. 28. The Consultative Group on Early Childhood Care and Development. Toronto, CGECCD Secretariat.

43 Prochner, Larry (2002) "Pre-school and playway in India," *Childhood* 9 (4) 435-453

44 World Bank (2002) *India: challenges of development. Overview of sectoral assistance evaluations.* Washington DC.

45 Save the Children (2003) *What's the Difference? The Impact of Early Childhood Development Programs: A Study of the Effects for Children, their Families and Communities*, Save the Children US and Norway: Kathmandu, Nepal

46 Save the Children (2007) *Finding Hope in Troubled Times: Education and Protection for Children in Nepal,* Save the Children Norway and Save the Children US, Kathmandu, Nepal.

47 Arnold, Caroline (2004) "Positioning ECCD in the 21st Century" Coordinators' Notebook: No. 28. The Consultative Group on Early Childhood Care and Development. Toronto, CGECCD Secretariat.

48 Bertrand, Jane and Jane Beach (2004) *A Guide to International Early Childhood EducationCritical Success Factors Report,* prepared for the Egypt Program, American and Middle East Branch, Canadian International Development Agency

49 Consultative Group on Early Childhood Care and Development, Co-Ordinators' Notebook, No. 29, 2007; EFA Global Monitoring Report 2007, Strong Foundations , UNESCO.

50 For example Arnold, Caroline, Bartlett, Kathy, Gowani, Saima and Merali, Rehana (2007) *Is Everybody Ready? Readiness Transition and Continuity* Aga Khan Foundation and Bernard Van leer Foundation, The Hague, Netherlands

51 EFA 2005

52 Fuller, Bruce; Lucia Dellagnelo; Annelie Strath; Eni Santana Barretto Bastos; Maurício Holanda Maia; Kelma Socorro Lopes de Matos; Adélia Luiza Portela; Sofia Lerche Vieira (1999) "How to Raise Children's Early Literacy? The Influence of Family, Teacher, and Classroom in Northeast Brazil", *Comparative Education Review* 43 (1):1-35.

53 Rangachar, G and NV Varghese (1993) *Quality of Primary Schooling in India- A Case Study of Madhya Pradesh.* Paris: International Institute Of Educational Planning; New Delhi: National
Institute Of Educational Planning And Administration; Fuller, Bruce; Lucia Dellagnelo; Annelie Strath; Eni Santana

Barretto Bastos; Maurício Holanda Maia; Kelma Socorro Lopes de Matos; Adélia Luiza Portela; Sofia Lerche Vieira (1999) "How to Raise Children's Early Literacy? The Influence of Family, Teacher, and Classroom in Northeast Brazil", *Comparative Education Review* 43 (1):1-35.

[54] Tolhurst, Frances (2007) Teaching and learning in Afghanistan June 2005- June 2007, Internal programme notes, AKDN

[55] Leu, Elizabeth and Alison Price-Rom (2006) *Quality of Education and Teacher Learning: A Review of the Literature,* USAID and EQUIP1

[56] Fuller, Bruce; Lucia Dellagnelo; Annelie Strath; Eni Santana Barretto Bastos; Maurício Holanda Maia; Kelma Socorro Lopes de Matos; Adélia Luiza Portela; Sofia Lerche Vieira (1999) "How to Raise Children's Early Literacy? The Influence of Family, Teacher, and Classroom in Northeast Brazil" , *Comparative Education Review*

[57] Li, Yuen Ling (2004) "The culture of teaching in the midst of western influence: the case of Hong Kong kindergartens", *Contemporary Issues in Early Childhood,* 5(3)330-348; Juma, Audrey (2004) "Improving practices in early childhood classrooms in Pakistan: issues and challenges from the field", *Contemporary Issues in Early Childhood* 5(3) 402-407; Bartlett, S (2005) Dirha Suchana: A summary of final research results. Unpublished report for Save the Children US, Bangladesh.

[58] Leu, Elizabeth and Alison Price-Rom (2006) *Quality of Education and Teacher Learning: A Review of the Literature,* USAID and EQUIP1

[59] Asia and the Pacific Primary Programme of Educational Innovation for Development (1985). Grass Roots Networking for Primary Education: Case Studies- Thailand, Sri Lanka, Philippines, Japan. Bangkok: UNESCO. Herriot, A., Crossley, M, Juma, M., Waudo, J., Mwirotsi, M., & Kamau, A. (2002). The development and operation of headteacher support groups in Kenya: a mechanism to create pockets of excellence, improve the provision of quality education and target positive changes in the community. International Journal of Educational Development, 22, 509-529. Wheeler, C. W., Chuaratanaphong, J., Bhumirat, C., Eamsukkawat, S., Shinatrakool, R., Sirijirakal, V., Pumsa-Ard, S., Sookpokakit, B., & Kunarak, P. (1992). School clusters in Thailand: a management strategy for improving primary school quality. International Journal of Education Research, 17(2), 199-218.

[60] Wheeler, C. W., Chuaratanaphong, J., Bhumirat, C., Eamsukkawat, S., Shinatrakool, R., Sirijirakal, V., Pumsa-Ard, S., Sookpokakit, B., & Kunarak, P. (1992). School clusters in Thailand: a management strategy for improving primary school quality. International Journal of Education Research, 17(2), 199-218. Raudenbush, S. W., Eamsukkawat, S., Di-Ibor, I., Kamali, M., & Taoklam, W. (1993). On the job improvements in teacher competence: policy options and their effects on teaching and learning in Thailand. Educational Evaluation and Policy Analysis, 15(3), 279-297. Bearne, E. (1996). Raising reading standards: what is the headteacher's role? Literacy, 30(1), 2-8.

[61] World Bank (2003) World Development Report 2004: Making Services Work for Poor People. Washington, D.C.: World Bank.

[62] Centre for Development Economics (1999) *PROBE: Public Report on Basic Education for India,* Oxford University Press, accessed from http://www.ashanet.org/stanford/links/probe.html April 6 2008

[63] Save the Children (2007) *Finding Hope in Troubled Times: Education and Protection for Children in Nepal,* Save the Children Norway and Save the Children US, Kathmandu, Nepal

[64] UNESCO (2005) "Chapter two: The importance of good quality: what research tells us", *EFA Global Monitoring Report,* Paris: UNESCO

[65] Glewwe, P, Nauman, I and Kremer, M (2003) *Teacher Incentives.* Cambridge, MA, National Bureau of Economic Research (NBER Working Paper 9671, May.); Banerjee A and E Duflo (2006) "Addressing absence", *Journal of Economic Perspectives* 20(1) 117-132

[66] Duflo, E, R Hanna and S Ryan (2008) "Monitoring works: getting teachers to come to school", Centre for Economic Policy Research, Discussion Paper No. 6682; Muralidharan, K and V Sundararaman (2006) Teacher Incentives in Developing Countries: Experimental Evidence from India, Job Market Paper, Department of Economics, Harvard University, http://www.people.fas.harvard.edu/~muralidh/Karthik_Muralidharan_JMP_Teacher_Incentives_In_Developing_Countries.pdf, accessed April 5 2008.

[67] Fuller, Bruce; Lucia Dellagnelo; Annelie Strath; Eni Santana Barretto Bastos; Maurício Holanda Maia; Kelma Socorro Lopes de Matos; Adélia Luiza Portela; Sofia Lerche Vieira (1999) "How to Raise Children's Early Literacy? The Influence of Family, Teacher, and Classroom in Northeast Brazil" , *Comparative Education Review* 43 (1):1-35; Save the Children (2007) *Finding Hope in Troubled Times: Education and Protection for Children in Nepal,* Save the Children Norway and Save the Children US, Kathmandu, Nepal ; Kakuru, D, M. (2003). Gender Sensitive Educational

Policy and Practice: Uganda Case Study. Research report prepared for International Bureau of Education

68 UNESCO (2008) *EFA Global Monitoring Report 2008*, Paris: UNESCO

69 Ibid

70 Cited in World Bank (2004) *Reaching out to the Child: An Integrated Approach to Child Development* Human Development Sector, South Asia Region, World Bank.

71 Duflo, Esther, Pascaline Dupas, and Michael Kremer (2008) Peer effects and the impact of tracking: evidence from a randomized evaluation in Kenya, Poverty Action Lab. http://www.povertyactionlab.com/papers/Peerpercent20Effects.pdf, accessed April 11 2008; Centre for Development Economics (1999) *PROBE: Public Report on Basic Education for India,* Oxford University Press, accessed from http://www.ashanet.org/stanford/links/probe.html April 6 2008

72 Fuller, Bruce; Lucia Dellagnelo; Annelie Strath; Eni Santana Barretto Bastos; Maurício Holanda Maia; Kelma Socorro Lopes de Matos; Adélia Luiza Portela; Sofia Lerche Vieira (1999) "How to Raise Children's Early Literacy? The Influence of Family, Teacher, and Classroom in Northeast Brazil", *Comparative Education Review* 43 (1):1-35; Field notes, Dirha Suchana project, Save the Children US.

73 Kaul V, C Ramachandran and G C Upadhayay (1993): *Impact of ECE on Retention in Primary Grades, a Longitudinal Study*, NCERT, New Delhi

74 Wossman, Ludger and Martin West (2006) "Class size effects in school systems around the world: Evidence from between-grade variation in TIMSS," *European Economic Review* 50: 695-736

75 Robinson, G E (1990) "Synthesis of research on the effects of class size," *Educational Leadership*, *47* (7*),* 80-90.

76 Duflo, Dupas, Kremer (2008) Unpublished study, Poverty Action Lab

77 Gupta, Amita (2004) "Working with large class size: dispositions of early childhood teachers in India", *Contemporary Issues in Early Childhood* 5(3): 361-376; Save the Children (2007) *Finding Hope in Troubled Times: Education and Protection for Children in Nepal,* Save the Children Norway and Save the Children US, Kathmandu, Nepal

78 Banerjee, A, Cole, S, Duflo, E and Linden, L (2003) *Remedying Education: Evidence from Two Randomized Experiments in India.* Cambridge, MA, Massachusetts Institute of Technology , Poverty Action Lab Paper No. 4

79 Calhoon, MB, S al Otaiba, D Greenberg, A King and A Avalos (2006) "Improving reading skills in predominantly Hispanic Title 1 first grade classrooms: the promise of peer-assisted learning strategies", *Learning Disabilities Research and Practice* 21(4) 261-272.

80 Duflo, Dupas, Kremer (2008) Unpublished study, Poverty Action Lab

81 Hattie, John AC (2002) "Class composition and peer effects", *International Journal of Educational Research* 37: 449-481; Wilkinson, Ian AG and Irenen YY Fung (2002) "Small group composition and peer effects", International Journal of Educational Research 37: 425-447;

82 Schoenfield, Alan (2004) "The Math Wars", Educational Policy 18 (1,) 253-286
page 272.

83 Duflo, Esther, Pascaline Dupas, and Michael Kremer (2008) *Peer Effects and the Impact of Tracking: Evidence from a Randomized Evaluation in Kenya*, Poverty Action Lab http://www.povertyactionlab.com/papers/Peerpercent20Effects.pdf, accessed April 11 2008.

84 Chabbott, Colette (2008) Accelerating early grades reading in high priority EFA countries: a desk review. Supported by the EQUIP1 project, American Institutes for Research.

85 Tolhurst, Frances (2008) Learning to Read, Aga Khan Foundation

86 Tolhurst, Frances (2008) Learning to Read, Aga Khan Foundation

87 Wyatt-Smith, Claire and Stephanie Gunn (2007) "Evidence based research for expert literacy teaching", Paper No. 12, Education Policy and Research Division, Department for Education and Early Childhood Development, Melbourne, Australia

88 Chabbott, Colette (2008) Accelerating early grades reading in high priority EFA countries: a desk review. Supported by the EQUIP1 project, American Institutes for Research, page 5

89 Rose, David (2006) Democratising the Classroom: a literacy pedagogy for the new generation, *Journal of Education* 37, 2006, 127-164

90 Abadzi, H (2006) Efficient Learning for the Poor: Insights from the Frontier of Cognitive Science. World Bank Publications: Washington DC

91 Snow, Catherine (2002) *Reading for Understanding: Toward an R&D Program in Reading Comprehension*, Rand Corporation; Tolhurst, Frances (2008) Learning to Read, Aga Khan Foundation

92 Mahmud, Talat and Tahsinah Ahmed (2001) *Reading for Children: Action Research for a Post-literacy Intervention*,

Save the Children US, Dhaka, Bangladesh

93 Schools and Community Centre (2005) The Scaffolding Literacy in Indigenous Schools Project, 1999-2003, Schools and Community Centre, University of Canberra

94 Lipson, Marjorie and Karen Wixson (2004) *Evaluation of the BTL and ASTEP Programs in the Northern, Eastern and Volta Regions of Ghana,* Prepared for The Education Office, USAID, Ghana

95 Schoenfeld, Alan page 281

96 Munn P and R Schaffer (1993) "Literacy and numeracy events in social interactive contexts", *International Journal of Early Years Education* 10(2) 61-79

97 Scottish Consultative Council on the Curriculum (1998) Numeracy in the Early Years: What the Research tells Us, Scottish Consultative Council on the Curriculum.

98 Balfanz, R. (1990). Elementary school quality, the mathematics curriculum and the role of local knowledge. *International Review of EducationVol.36(1):* 43-56, cited in Wyse**,** Dominic and Helen Bradford (2008) Early Primary Learning in Sub-Saharan Africa, page 10 Unpublished literature review for Aga Khan Foundation

99 Aubrey, C (1997) "Re-assessing the role of teachers' subject knowledge in early years mathematics teaching", *Education* 13(3) 55-60

100 Vincent, Jill (2004) "The Numeracy Research and Development Initiative projects", *Australian Primary Mathematics Classroom* 9(4) 4-9; Ezeife, AN (2003) "Using the environment in mathematics and science teaching: an African and Aboriginal perspective", *International Review of Education* 49 (3-4):319-342

101 Save the Children (2007) *Finding Hope in Troubled Times: Education and Protection for Children in Nepal,* Save the Children Norway and Save the Children US, Kathmandu, Nepal

102 Aubrey, C (1993) "An investigation of the mathematical knowledge and competencies which young children bring into school", British Educational Research Journal 20(1) 105-120

103 Opel, Aftab, Ferdousi Khanom, Syeda Sazia Zaman and Frances E Aboud (date not given on publication) "Effectiveness of a mathematics program for 3 to 4 year old children in urban Bangladesh",; Pasnak, Robert, Julie K, Kidd, Melissa Ferral-Like, Marinka K. Gadzichowski, Deborah Gallington and Rovert Saracina (2007) "Nurturing developmental processes in early abstraction", The Journal of Developmental Processes 2(1) 90-116 http://www.ecd-bangladesh.net/ECDpercent20Researchpercent20 report/Report4.pdf, accessed April 4 2008; Ramani, G. B., & Siegler, R. S. (2008). Promoting broad and stable improvements in low-income children's numerical knowledge through playing number board games. *Child Development, 79*, 375-394.

104 Threfall, I (1996) "The role of practical apparatus in teaching and learning of arithmetic", *Education Review* 48(1) 3-12

105 Rose, David (2007) Notes taken from *Reading to Learn Book 10, Scaffolding Maths,* page 1

106 Scottish Consultative Council on the Curriculum (1998) Numeracy in the Early Years: What the Research tells Us, Scottish Consultative Council on the Curriculum

107 Rose, David (2007) Reading to Learn. Book 10, Scaffolding Maths

108 Sarama, Julie and Douglas H Clements (2006) Math and literacy: a powerful pair, *Early Childhood Today* 21(1) 93-109

109 World Bank 2004, cited in MacKenzie, Pamela (2006) "The use of mother tongue languages in education: global pressure, local response, Presentation at World Learning Nov 9 2006

110 UNESCO (2002) *Education in a Multilingual World, UNESCO Position Paper* October 2002

111 Bloch, C (2006) *Theory and Strategy of Early Literacy in Contemporary Africa with Special Reference to South Africa,* PhD thesis submitted to Faculty of Education, Carl van Ossietzky Universitat Oldenburg

112 Thomas, W P and V P_Collier (2002) *A National Study of School Effectiveness for Language Minority Students' Long-Term Academic Achievement* (Final report. Executive Summary). Berkeley, CA: Centre for Research on Education, Diversity & Excellence.

113 Kishindo, PJ (1998) Politics of language in contemporary Malawi, in Phiri, KM and KR Ross (eds) *Democratisation in Malawi: a Stocktaking,* Blantyre: CLAIM, pp 252-280, cited in Chimombo 2005.

114 Tolhurst, Frances (2007) Teaching and learning in Afghanistan June 2005- June 2007, Internal programme notes, AKDN

115 MacKenzie, Pamela (2006) "The use of mother tongue languages in education: global pressure, local response, Presentation at World Learning, Nov 9 2006; Eakle, AJ and AM Garber (2003) International reports on reading literacy, *Reading Research Quarterly* 38(4) 524-528; Bloch, C (2006) *Theory and Strategy of Early Literacy in Contemporary*

Africa with Special Reference to South Africa, PhD thesis submitted to Faculty of Education, Carl van Ossietzky Universitat Oldenburg,

116 Eakle, A.J., & Garber, A.M. (Compilers) (2003) International reports on literacy research. *Reading Research Quarterly, 38*(1), 142-144; Bloch, C (2006) *Theory and Strategy of Early Literacy in Contemporary Africa with Special Reference to South Africa,* PhD thesis submitted to Faculty of Education, Carl van Ossietzky Universitat Oldenburg.

117 Wyse**,** Dominic and Helen Bradford (2008) Early Primary Learning in Sub-Saharan Africa Unpublished literature review for Aga Khan Foundation

118 Fuller, B and P Clark (1994) "Raising school effectiveness while ignoring culture?" *Review of Educational Research* 64(1) 119-57

119 Fuller, Bruce, Lucia Dellagnelo, Annelie Strath, Eni Santana Barretto Bastos, Maurício Holanda Maia, Kelma Socorro Lopes de Matos; Adélia Luiza Portela, Sofia Lerche Vieira (1999) "How to Raise Children's Early Literacy? The Influence of Family, Teacher, and Classroom in Northeast Brazil" , *Comparative Education Review* 43 (1):1-35; Bartlett, S, Pradhananga U, Sapkota P and Thapa, N (2004*) Everyone Counts: Dalit Children and the Right to Education in Nepal,* Save the Children US: Kathmandu, Nepal; Lipson, Marjorie and Karen Wixson (2004) *Evaluation of the BTL and ASTEP Programs in the Northern, Eastern and Volta Regions of Ghana,* Prepared for The Education Office, USAID, Ghana

120 Lipson, Marjorie and Karen Wixson (2004) *Evaluation of the BTL and ASTEP Programs in the Northern, Eastern and Volta Regions of Ghana,* Prepared for The Education Office, USAID, Ghana

121 UNESCO (2008) *EFA Global Monitoring Report 2008*, Paris: UNESCO

122 Rangachar, G and NV Varghese (1993) *Quality of Primary Schooling in India- A Case Study of Madhya Pradesh*. Paris: International Institute Of Educational Planning; New Delhi: National Institute Of Educational Planning And Administration; Wolff L, E Schiefelbein and J Valenzuela (1994) *Improving the Quality of Primary Education in Latin America and the Caribbean – Towards the 21st Century,* Washington DC: World Bank Discussion Paper No 257; Heyneman, SP et al (1984) "Textbooks in the Philippines: evaluation of the pedagogical impact of a nationwide investment", *Educational Evaluation and Policy Analysis* 6,2,139-150.

123 Glewwe, P.; Kremer, M.; Moulin, S (2007) *Many children left behind: textbooks and test scores in Kenya*., Working Paper. Cambridge, MA, Harvard University. http://post.economics.harvard.edu/faculty/kremer/files/kntxtb18_2007July10.pdf

124 Cited in World Bank (2004) *Reaching out to the Child: An Integrated Approach to Child Development* Human Development Sector, South Asia Region, World Bank.

125 Chabbott, Colette (2008) *Accelerating early grades reading in high priority EFA countries: a desk review*. Supported by the EQUIP1 project, American Institutes for Research.

126 Chabott, Colette (2008) *Recent Activities, Organisations and Issues in Early Grades Reading,* Memorandum for Aga Khan Foundation

127 Elbaum, B, MT Hughes, SW Moody and S Vaughn (2000) How effective are one-to-one tutoring programs in reading for elementary students at risk for reading failure? A meta-analysis of the intervention research, *Journal of Educational Psychology* 92(4) 605-619; Shanahan, T (1998) "On the effectiveness and limitations of tutoring in reading", *Review of Research in Education* **23**, 217–234.

128 Rolla San Francisco, Andrea, Melissa Arreas, Renata Villiers and Catherine Snow (2006) "Evaluating the impact of different early literacy interventions on low-income Costa Rican kindergartners", *International Journal of Educational Research* 45 (3) 188-201

129 Banerjee, Abhijit V., Cole, Shawn Allen, Duflo, Esther and Linden, Leigh L.(2006) , "Remedying Education: Evidence from Two Randomized Experiments in India" CEPR Discussion Paper No. 5446 Available at SSRN: http://ssrn.com/abstract=897926

130 Glewwe, Paul and Seema Jayachan (2006) *Incentives to teach badly? After-school tutoring in developing countries* , Working paper , http://www.stanford.edu/-jayachan/tutoring.pdf

131 Bray, Mark (2003) *Adverse Effects of Private Supplementary Tutoring: Dimensions, Implications and Government Responses*, Paris: UNESCO, International Institute for Educational Planning

132 Glewwe, Paul and Seema Jayachan (2006) *Incentives to Teach Badly? After-school Tutoring in Developing Countries* , Working paper , http://www.stanford.edu/-jayachan/tutoring.pdf

133 Evans, GW (2006). "Child development and the physical environment." *Annual Review of Psychology* 57: 423-451; Wohlwill, J and H Heft (1987) "The physical environment and the development of the child", In D Stokols and I Altman (eds).*Handbook of Environmental Psychology*. New York, Wiley

[134] Clark, C, R Martin, E van Kempen, T Alfred (2006) "Exposure-effect relations between aircraft and road traffic noise exposure at school and reading comprehension - The RANCH project", *American Journal of Epidemiology* 163(1) 27-37

[135] Moore, Gary T and Jeffrey A Lackney. (1993). "School Design: Crisis, Educational Performance and Design Applications." *Children's Environments* 10(2): 1-22.

[136] Ahmed, Akhter (2004) *Impact of Feeding Children in School: Evidence from Bangladesh*, International Food Policy Research Institute: Washington DC

[137] Fuller et al

[138] Arnold, Caroline, Bartlett, Kathy, Gowani, Saima and Merali, Rehana (2007) *Is Everybody Ready? Readiness, transition and continuity: Reflections and moving forward* Aga Khan Foundation and Bernard Van Leer Foundation. Working Paper 41. The Hague, Netherlands

[139] Kline, Rachel (2002) A model for improving rural schools: Escuela Nueva in Colombia and Guatemala, *Current Issues in Comparative Education* 2(2) 170-181; Save the Children (2007) *Finding Hope in Troubled Times: Education and Protection for Children in Nepal,* Save the Children Norway and Save the Children US, Kathmandu, Nepal; Kurahashi, Alison and Nazarkhudoeva, Firuza Follow up study of the learning cluster strategy unpublished study Aga Khan Foundation Tajikistan

[140] Arnold Caroline, Bartlett Kathy et al. 2006 *Is Everybody Ready? Readiness, transition and continuity: Reflections and moving forward* Paper commissioned for the EFA Global Monitoring Report 2007.

[141] (UNESCO, 2007).

[142] (Global Monitoring Reports , 2007, 2008, 2009 UNESCO)

[143] (Arnold, et al, 2006).

[144] Begum, Sharifa and Binayak Sen (2005)" Pulling rickshaws in the city of Dhaka: a way out of poverty?" *Environment and Urbanization, 17:. 11 - 25.*

[145] Lewin, KM (2006). Why Some EFA and Millennium Development Goals Will Not Be Met: Difficulties with Goals and Targets. Paper for DBSA/HSRC/Wits NEPAD Conference "Investment Choices for Education in Africa" September 19-21. Johannesburg, Cited Wasswa Matovu, Joseph (2008) *How Can Disadvantaged Children Be Made to Benefit from Universal Primary Education (UPE)? The Case of Uganda*, paper presented at 4th Annual International Conference Rethinking Poverty: Making Policies that Work for Children, The New School, New York, April 21-23, 2008.

[146] Ibid, Wasswa Matovu, Joseph (2008)

[147] Mingat A and A Jaramillo (2003) Early Childhood Care and Education in Sub-Saharan Africa: What would it take to meet the Millennium Development Goals, World Bank: Washington DC

[148] Schultz, Paul (2004) "School subsidies for the poor: evaluating the Mexican Progresa poverty program", *Journal of Development Economics* 74(1) 199-250; Kremer, Michael, Sylvie Moulin and Robert Namunyu (2003) "Decentralization: a cautionary tale" , Poverty Action Lab paper #10

[149] UNESCO (2008) EFA Global Monitoring Report 2008, Paris: UNESCO Ramachandran, V, K Jandhyala and A Saihjee(2003) "Through the life cycle of children : factors that facilitate/impede successful primary school completion ", *Economic and Political Weekly*, November 2003, 4994-5002

[150] Miguel, Edward and Michael Kremer (2004) "Worms: Identifying impacts on education and health in the presence of treatment externalities" , *Econometrica* 72(1) 159-217

[151] Hanushek, EA (1995) "Interpreting recent research on schooling in developing countries", *The World bank Research Observer* 10(2) 227-246

[152] Ramachandran, V, K Jandhyala and A Saihjee(2003) "Through the life cycle of children : factors that facilitate/impede successful primary school completion" , *Economic and Political Weekly,* November 2003, 4994-5002

[153] Snow, Catherine (2002) *Reading for Understanding: Toward an R&D Program in Reading Comprehension*, Rand Corporation

[154] Paul, J-J (1997) Le redoublement a l'école: une maladie universelle? *International Review of Education* 43(5/6) 611-627; Motala, S (1995) "Surviving the system: A critical appraisal of some conventional wisdom in primary education in South Africa", *Comparative Education* 31(2) 161-179

[155] Motala, S (1995) "Surviving the system: A critical appraisal of some conventional wisdom in primary education in South Africa", Comparative Education 31(2) 161-179

[156] Save the Children (2003) *What's the Difference? The Impact of Early Childhood Development Programs: A Study of the Effects for Children, their Families and Communities*, Save the Children US and Norway: Kathmandu, Nepal

[157] Save the Children (2007) *Finding Hope in Troubled Times: Education and Protection for Children in Nepal,* Save the Children Norway and Save the Children US, Kathmandu, Nepal.

[158] Kline, Rachel (2002) A model for improving rural schools: Escuela Nueva in Colombia and Guatemala, *Current Issues in Comparative Education* 2(2) 170-181

[159] Ibid

[160] Banerjee, Abhijit V, Cole, Shawn Allen, Duflo, Esther and Linden, Leigh L. (2006), "Remedying Education: Evidence from Two Randomized Experiments in India" CEPR Discussion Paper No. 5446 Available at SSRN: http://ssrn.com/abstract=897926.

[161] Moore, A, S Akhter, F E Aboud (2008) "Evaluating an improved quality pre-school program in rural Bangladesh, *International Journal of Educational Development* 28, 118-131; Bartlett, S, Pradhananga U, Sapkota P and Thapa, N (2004*) Everyone Counts: Dalit Children and the Right to Education in Nepal,* Save the Children US: Kathmandu, Nepal.

[162] Fuller, Bruce, Lucia Dellagnelo, Annelie Strath, Eni Santana Barretto Bastos, Maurício Holanda Maia, Kelma Socorro Lopes de Matos, Adélia Luiza Portela, Sofia Lerche Vieira (1999) "How to Raise Children's Early Literacy? The Influence of Family, Teacher, and Classroom in Northeast Brazil", *Comparative Education Review* 43 (1):1-35, page 7.

Facing page: The most powerful determinant of children's achievement in low-income countries is what actually goes on within the classroom. Building confidence involves participation and creativity. Here children in Rajasthan, India perform a skit about the importance of nutrition.

For more information, please visit the website: **www.akdn.org**

Aga Khan Foundation
Case Postale 2369
1211 Geneva 2
Switzerland
Tel. +41 22 909 7200
Fax +41 22 909 7291
Email: akf@akdn.org

Author:
Dr. Sheridan Bartlett
Photography:
Caroline Arnold, Kathy Bartlett, Wendy Griffin, Zahur Ramji
Printing:
Rosseels Printing Company, Belgium

AGA KHAN FOUNDATION

www.akdn.org