



EdQual

A Research Programme Consortium on
Implementing Education Quality in Low Income Countries

Determinants of Primary Students' Attainment in Africa

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Targeted investment, basic learning resources and skilled school leadership: addressing primary attainment in Africa



Research using data on 17,000 grade six learners and their teachers in a thousand primary schools across six countries in East and Southern Africa has identified factors both in and out of school affecting pupil scores in reading and maths tests.

Factors with an impact on attainment

Importantly, there was a clear impact simply from attending a school with a large number of disadvantaged learners, even if a pupil's own home was not disadvantaged. So while factors like lack of basic resources for learning, being hungry, and early self-reliance were all linked to pupils scoring less well, having school peers who are experiencing such issues was also a disadvantage for those not directly affected.

In findings that resonate with other EdQual research, particularly on school leadership, the analysis of data from Kenya, Malawi, Mozambique, Tanzania, Uganda and Zambia also shows how important skilled school leadership is to pupil attainment. Headteachers have a crucial role not only in setting school culture—which directly impacts on score—but also in communicating with parents and local communities about pupil needs.

Implications for policy action

Overall the research demonstrates that investment to improve learning needs to be targeted at schools serving disadvantaged communities and to be responsive to local conditions. In particular, the findings support targeted action to ensure pupils have basic learning equipment like desk space, chairs, exercise books and pens, to ensure teachers and headteachers develop specialised skills that match the specific needs of the community they serve, and to provide programmes that target particular groups of disadvantaged learners where they are most needed.

This policy brief sets out findings from analysis of data gathered by the Southern and Eastern Africa Consortium on Monitoring Education Quality (SACMEQ) in the most recent cross-national survey on education in the region for which data is available. It highlights key factors inside and outside of school with an impact on literacy and numeracy, and makes policy recommendations based on these and other EdQual findings.

EdQual RPC and education quality

The School Effectiveness and Educational Quality (SeeQ) project is part of the EdQual Research Programme Consortium. EdQual's research focuses on how to improve the quality of basic education. Education quality is key to attracting and retaining learners in basic education and ensuring education contributes to other areas of development.

Key Policy Messages

In and out of school factors not only directly affect the scores of some children but have a 'neighbourhood' effect—pupils in the same school not directly affected are also disadvantaged. Targeting areas and schools most affected by this issue is critical.

Basic learning resources matter. Lack of these is a very real barrier to learning for many children. This is not difficult or expensive to solve but tends to get overlooked.

School leaders have a key role in addressing many factors affecting pupil attainment. Investment in school leadership and support for school-level innovation is key.

Research findings at a glance

FACTORS NEGATIVELY IMPACTING ON SCORE...

- Attending a school with a large proportion of disadvantaged pupils
- Eating fewer than two meals a day
- Being over-age, living on their own or missing school in order to work
- Not having opportunities to use the language of instruction outside school
- Not having lighting and a table at home

FACTORS POSITIVELY IMPACTING ON SCORE...

- Having pens, exercise books, a chair and a desk in school
- Having a permanent classroom building
- Attending a school with access to a computer or television
- Attending a school that has a safe and disciplined environment

Understanding what influences attainment in Africa: analysing SACMEQ survey data

More than 40% of pupils surveyed in Malawi, Mozambique, Uganda, Zambia, Zanzibar, Lesotho and South Africa could not read for meaning as they approached the end of their primary schooling—in other words, they could not link and interpret information in pieces of text written in the language they were being taught in. In many of the countries, more than a third of the peers who enrolled with them were not surveyed because they had left school before reaching grade six, while others never enrolled at all.

This finding is from a 2000-1 survey by the Southern and Eastern Africa Consortium on Monitoring Educational Quality (SACMEQ), a collaboration of 15 African ministries of education. Although ten years old, this is still the most recent cross-national survey on education quality for the region for which data is available, and the main patterns of advantage and disadvantage are likely to persist.

What factors inside and outside of school had an impact on the literacy and numeracy of pupils who persevered with schooling up to grade six? This policy brief summarises some key findings from research involving secondary analysis of SACMEQ data from six of the countries surveyed—Kenya, Malawi, Mozambique, Tanzania, Uganda and Zambia. The research identified school and pupil level factors that influenced reading and mathematics achievement, described in terms of 'competence levels', a measure of ability (see back page).

We focus on findings that have resonance with other EdQual research, in particular the Leadership and Management of Change project, which worked closely with headteachers in Ghana and Tanzania over a two year period and whose findings add insights to those drawn from the SACMEQ data.

Creating the conditions for learning

Learner resources

In schools, access to stationery supplies like exercise books, rulers and pens was associated with raised scores. In the home as well, resources that children and young people can use for reading and study had the greatest influence on score, including artificial light, a table and, to a lesser extent, books in the home. Other resources that might be used as an indicator of socio-economic wealth, such as access to water or quality of housing, were not found to be important.

Poverty presents a barrier to learning by making it difficult for learners to access basic equipment

This suggests one way poverty presents a barrier to learning is by making it difficult for learners to access basic equipment needed for learning. Qualitative research with orphans and street children has found the inability to buy a uniform, pens or exercise books are reasons why children may not attend school regularly and eventually drop out (Oleke et al., 2007; Sifuna et al., 2008).

Schools can influence the parents of less vulnerable children to prioritise spending on stationery. All 20 Ghanaian headteachers involved in EdQual's Leadership and Management of Change project identified lack of stationery as a barrier to learning in their schools. In most cases, they tackled this successfully through clear communication with parents and community leaders. There are reports from Kenya that, following the government's proclamation of free primary education, some parents resisted contributing towards costs like buying pens and exercise books for their children (Sifuna et al., 2008).

Clearly lack of basic equipment, such as desk space, chairs, exercise books and pens, is a very real barrier to learning for many children. However, it is not a difficult or expensive problem to address. The danger is that it is overlooked because each stakeholder perceives it to be someone else's responsibility.

% of children without...	Kenya	Malawi	Mozambique	Tanzania	Uganda	Zambia
Pen	16	7	9	7	22	24
Ruler	19	43	31	27	27	48
Notebooks	29	4	65	57	40	58
Own writing place	4	46	34	5	26	11

School environment

A few physical school or classroom level resources did influence scores. Children needed to have desk space, a chair to sit on, and performed better in permanent classrooms than temporary wattle and daub or lean-to structures.

Skilled headteachers can create a safe school environment conducive to learning

However, school culture was also important. Where headteachers reported that use of bad language by pupils, theft or teacher absenteeism were a problem, learners tended to score lower in reading or maths. Teachers regularly marking homework enhanced scores.

This is in line with research findings on school effectiveness from other countries (Yu, 2007), which consistently highlights the importance of a safe, disciplined school environment which sets high academic expectations. School leaders are widely recognised to play a key role in ensuring this. Research from South Africa has shown how skilled headteachers can create a safe school environment conducive to learning even where there are high levels of violence, crime or insecurity in the area surrounding the school (Ngcobo & Tikly, 2010).

POLICY RECOMMENDATIONS

- National, local and school leaders need to communicate clearly and in unison to parents about the costs they are expected to meet, especially when education is fee-free;
- Some provision of basic stationery may be needed for the poorest and most vulnerable children, especially orphans and street children.

POLICY RECOMMENDATIONS

- Invest in strengthening school leadership through training and valuing school level innovation;
- Send clear messages concerning what parents are expected to provide when education is fee-free;
- Target modest funds for basic classroom supplies and uniforms at the poorest and most vulnerable pupils.

Targeting disadvantaged learners and schools

Analysis reveals that some out-of-school factors strongly associated with low reading and maths scores have a second 'neighbourhood effect'. This means that not only do these factors directly affect some children, but pupils in the same school who are not themselves directly affected are also disadvantaged. Other forms of disadvantage vary depending on locality and country. The research suggests that policy responses should be targeted at areas and schools most affected.

Neighbourhood effects

When all other factors are held constant, attending a school where a large proportion of the year group eat fewer than two meals a day, do not have a chance to speak the language of instruction outside school, do not have electricity in their home, or are frequently absent, impedes a pupil's learning by around half a competence level. This means that, for many children, neighbourhood effects can make the difference between having only basic reading skills and being able to read for meaning.

However, classroom research by EdQual in Tanzania and Ghana suggests some of these 'neighbourhood effects' are due to the use of teaching techniques geared to moving the whole class through a rigid, content-based national curriculum at the same pace (see Dare et al., 2010; Rubagumya et al., 2010). Across most subjects, but particularly maths and language acquisition, new content builds on skills and content taught previously. This means a pupil who misses several lessons may fail to understand what follows. Where several students frequently miss lessons, the teacher may repeat them, slowing down the whole class' progress. A similar effect may occur where many pupils miss content because they are not fluent in the language of instruction or cannot concentrate because of hunger.

Teachers serving schools with large numbers of disadvantaged pupils require skills and resources for teaching diverse learners. Activity-based, learner-centred methods, in which pupils use materials such as work books or work cards to progress through a structured system at their own pace, have been successful in India and Latin America. They are yet to take off in Africa, where schools tend to be less well-resourced. Learner-centred methods could be trialled in schools serving especially poor and vulnerable communities or in complementary basic education programmes targeted at older children.

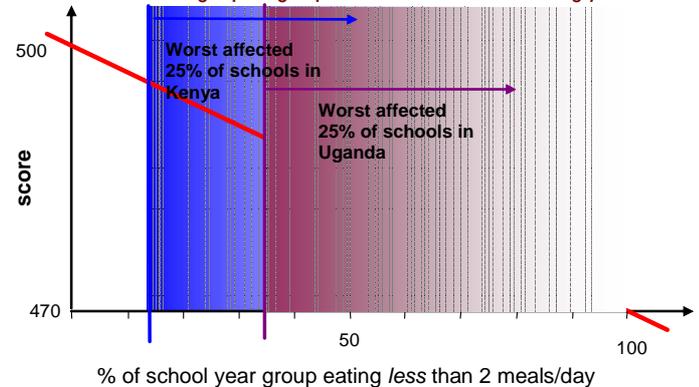
The effect of hunger both on the individual and as a neighbourhood effect was particularly large. In Kenya and Tanzania, these two factors together could make the difference between emergent and basic skills. In some countries, this affects a high number of pupils. Other EdQual research has shown 20% of grade six pupils in Botswana and 17% in Namibia also suffer from hunger with a similar impact on their learning (Smith & Barrett, 2010). Recent literature supports targeting school feeding programmes in communities where they are most needed (Bundy et al, 2009). This research strengthens this case, suggesting educational benefits accrue not only for those children worst affected by hunger but also for their peers. EdQual Policy Brief No. 6 will deal with this issue in depth.

Language of instruction

Pupils who spoke the language of instruction outside of school 'sometimes' or 'frequently' scored up to a third of a competence level higher in reading and fifth of a level higher in maths. This adds to already considerable evidence for the use of mother tongue or bilingual instruction in schools (Pinnock, 2009).

Where a large number of pupils speak a minority language that cannot, for logistical or political reasons, be the language of instruction, teachers should be trained in techniques for second language learners. Evidence from EdQual's Language and Literacy Project suggests a series of short teacher workshops on language use in the classroom can improve learning (Rubagumya et al, 2010) although specialised pre-service training is also important. EdQual Policy Brief No. 2 will deal with this issue in depth.

Example of additional impact on reading score of increasing hunger amongst peer group for a child who is not hungry



Gender and location

Gender interacted with location (remote or rural, small town, city) in complex ways that varied between countries when all other factors were accounted for. The only uniform trend across all six countries was that girls in city schools did better than girls in small town or rural schools. Gender inequality is a particularly large effect across Tanzania, however, where girls underachieved compared to boys in both reading and maths by about half a competence level.

Overage and self-reliant pupils

Pupils living away from home, especially living on their own, those above the average age, and those who missed school to work all tended to under-achieve. This adds to evidence from other sources that many older teenagers and children forced early into self-reliance don't do well in formal primary schools.

Complementary education programmes directed at this group could provide an important supplement to formal basic education, but there is very little research on complementary education in sub-Saharan Africa.

POLICY RECOMMENDATIONS

Consider ways to ensure schools serving difficult or disadvantaged learners have teachers with specialised skills matched to the population, such as:

- Gender professional development or deployment of gender specialists to rural schools;
- Professional development in teaching second language learners or deployment of trained specialists to schools where large proportion of learners do not speak language of instruction outside of school;
- Trial learner-centred methods in schools with a high number of children who are working or complementary education targeted at this population;
- Invest in programmes targeting particular groups of disadvantaged learners where they are most needed eg:
 - Complementary basic education programmes in environments where teenagers or children become economically active early or there are a high number of over-aged pupils in schools;
 - School meals programmes targeted at schools serving communities worst affected by hunger, tailored to local conditions and agricultural cycles.

About the Research

EdQual has analysed achievement, pupil background, school context and school organisation data collected from around 17,000 grade six learners in the eighth month of the academic year in 1,000 primary schools across six countries in East and Southern Africa. The data was collected between 2000 and 2001 by the Southern and East African Consortium for Monitoring Education Quality (SACMEQ), a consortium of fifteen African ministries of education working with UNESCO's International Institute for Educational Planning.

Statistical techniques were used that separate out the pupil level and school level effects (multilevel modeling). Two models were constructed. This briefing focuses on findings for the low income countries of Kenya, Malawi, Mozambique, Tanzania, Uganda and Zambia that had the largest impact on score, which are reinforced by EdQual's qualitative studies and are of particular policy interest. For full results see further reading.

Note on research approach

Reviews of school effectiveness studies in sub-Saharan Africa highlight the strong influence of country context on the relative importance of pupil and school effects (Yu, 2007). A cross-national study such as this highlights areas that deserve policy attention across several countries. National policy-making should also be informed by local research, including research using qualitative methods that can explore issues of school quality in depth and involve talking directly with learners and local education professionals. EdQual has conducted qualitative research in Ghana, Rwanda, Tanzania, South Africa and Pakistan.

Further Reading

Smith, M.C. & Barrett, A.M. (2010) 'Social and economic effects on primary pupils' reading achievement: Findings from Southern and East Africa.' EdQual Working Paper No. 23.

Smith, M.C. & Barrett, A.M. (2010) 'In and out of school influences on primary pupils' learning: Findings from six low income Sub-Saharan African countries.' EdQual Working Paper No. 24.

Yu, G. (2007) 'Research Evidence of School Effectiveness in sub-Saharan Africa.' EdQual Working Paper No. 7.

All available at: www.edqual.org

For more information on SACMEQ: www.sacmeq.org

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EdQual is a consortium of six higher education institutions in the UK and Africa funded by the UK Department for International Development (DFID) to carry out a five year (2005-2010) programme of research on education quality mainly in low income countries, focusing on sub-Saharan Africa.

EdQual partner institutions are:
 University of Bristol, UK (lead)
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