

Assessing the Impact of Primary School Quality on Adolescent Educational Participation and Achievement

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In developing countries, the school is the main learning and socializing institution outside the family. Investments in schooling are critical for individual poverty alleviation, the achievement of gender equity and empowerment, and societal economic growth. In recent years, the push for universal schooling — a goal embraced by the international community through the Millennium Development Goals — has led to the elimination of school fees and a rapid expansion of primary school enrollment in many poor African countries. Malawi, one of the poorest countries in the world, was an early pioneer in eliminating school fees at the primary level and has seen an enormous increase in primary school enrollment over the past decade. With limited resources and under-trained teachers, many educational experts are now concerned that the quality of schooling has necessarily suffered with implications for school retention, basic learning outcomes and transitions to secondary school. Successful transitions to adulthood for the next generation depend on adequate school access and quality.

In this paper, we will use the first (2007) and second (2008) waves of a longitudinal study to examine the effect of school quality on adolescents' educational participation and achievement in two districts in Malawi. Because of the majority of Malawian adolescents attend primary school, our focus is on primary schools. More specifically, we will 1) develop indicators of school quality and assess their reliability; 2) examine variability in these indicators by exposure to donor investment in teacher training programs, community infrastructure and involvement in schools, and the relative wealth of households in the school's catchment area; and 3) investigate the association between school quality and several educational outcomes, including a) school participation and drop out between the first and second rounds, b) primary completion and progression to secondary, b) performance on literacy and math assessments administered as part of the data collection, and c) results on the primary school leaving exam.

Education among young people in Malawi

Recent years have seen a rapid growth in educational enrollment and attainment for girls in sub-Saharan Africa, with relatively little overall progress for boys. While Malawi still ranks on the low end among African countries in grade attainment, there has been substantial progress in recent years. In 2004, 64 percent of young men aged 20-24 and 51 percent of young women had completed 6 or more years of schooling (DHS). In the case of young women, this is a doubling relative to 20 years ago while for young men the increase was only from 57 to 64 percent. Primary completion rates among young people are much lower, however, because primary school in Malawi extends through 8 grades or standards. For example 45 percent of young men aged 20-24 completed primary compared to only 26 percent of young women, suggesting substantial attrition in the later years of primary school particularly among girls.¹

Since the elimination of all primary school fees in 1994, Malawi has achieved nearly universal access to primary school. Although this policy has been effective in increasing access, it is thought to have had little positive impact on other critical schooling outcomes, namely retention, grade repetition, attainment, and skill acquisition. In fact, according to the results of numeracy tests administered in Standard 6 in Malawi as part of a cross-Africa testing project called the Southern and Eastern African Consortium for Monitoring Educational Quality (SACMEQ), no students scored in the "competent" range or above (UNESCO 2005). Indeed, Malawi had the

¹ Investigators' tabulations from 2004 Malawi DHS.

lowest numeracy scoring of 14 countries in SACMEQ. Furthermore, although policies and interventions to encourage girls' school enrollment have contributed to near gender parity in primary school entry (Anzar, Harpring, Cohen et al. 2004; Chimombo, Chibwana, Dzimadzi et al. 2000), girls are still more likely to leave school than are boys and do so at a younger age (National Statistics Office and ORC Macro 2003). Further, due to late entry, repetition, and temporary withdrawal, adolescents of the same age are distributed across a range of grades. For those who do not complete primary, retained literacy remains low. For example, among young women 15-24 who attended primary, only 27 percent of those who left school after grade 3 could read a simple sentence while 72 percent of those leaving school at grade 5 could do so

Defining and Measuring School Quality

Our definition of school quality, which incorporates many dimensions of the school environment, builds on previous research in Kenya and Egypt (Mensch and Lloyd 1998; Lloyd et al. 2000; Mensch et al. 2001; Lloyd et al. 2003). It encompasses those elements that improve cognitive competencies — the focus of the school effectiveness literature — as well as those that have the potential to increase grade attainment, improve reproductive health, facilitate labor force transitions, create pro-social and gender-equitable values, enhance community participation, and build agency for responsible decision-making. When operating at their best, schools have the capacity to increase a young person's chances for successfully navigating transitions to adulthood. When schooling of good quality is accessible and educational experiences are positive, disadvantaged children are more likely to acquire the skills and agency for escaping poverty and accessing a greater range of opportunities as adults.

In conceptualizing and measuring school quality, we are careful to distinguish school inputs from school outcomes. While good quality schools are sometimes defined by their results (e.g., cognitive tests or examination scores, see Hanushek and Lavy 1994; Harbison and Hanushek 1992) or by their material correlates (e.g., resources per student, see Schultz 1987), our definition of quality not only encompasses elements of the educational process that are recognized in the literature as good practice, but also incorporates dimensions of the school and learning environment that are not traditionally captured, such as inequitable treatment of boys and girls and gender based harassment and violence. We define four major dimensions of school quality: (1) material inputs such as the availability and physical condition of facilities, desks, teaching manuals and text books, as well as the certification, experience and commitment of teachers, (2) classroom dynamics and pedagogical practices including teacher treatment and support of students, (3) gender treatment and attitudes including teacher attitudes and treatment of boys and girls, as well as the prevalence of various anti-social behaviors such as harassment, intimidation and violence within schools, and (4) participation in donor and government training programs and interventions.

Interventions to Improve School Quality in Sampled Communities

In Machinga district, there has been significant donor and government investment in primary education to address issues of quality. From August 2003 through December 2005, as part of a broad USAID multi-country initiative entitled Educational Quality Improvement Program (EQUIP), the Malawi Education Support Activity (MESA) focused on teacher professional development through training programs designed to improve the continuous assessment of pupils, enhance the pedagogical practice of teachers, and integrate lifeskills and HIV education into the social studies curriculum. These teacher and school-based initiatives were supplemented by community level outreach to promote the value of schooling (particularly for girls), the

importance of effective schools, and enhanced awareness and response to HIV risk.² Machinga is also the site of the “Safe Schools” Project, a USAID funded pilot intervention designed to reduce gender-based violence (GBV). The implementation of the Safe Schools Project began in late 2006 in a random selection of 30 of the district’s primary schools, 10 of which are included in our school sample. The Safe Schools program of activities includes pre-service and in-service gender training for teachers, institutional support and mechanisms for referral to services for GBV victims, and integration of instruction on GBV and gender issues into the curriculum (DevTech 2004). Unlike Machinga, Balaka district has not had a broad history of donor support and will serve as a comparison.

Data

The data come from the first two rounds of a longitudinal study of approximately 1,770 in-school and 890 out-of-school Malawian adolescents aged 14–16 who were first interviewed in 2007. The study achieved a re-interview rate of 91% in 2008. Fifty nine primary schools in two southern districts of Malawi (Machinga and Balaka) were visited in the second term of the 2007 school year and again during the second term in 2008. The 30 schools visited in Machinga represent nearly 20 percent of the primary schools in the district, whereas those in Balaka represent nearly 25 percent of the primary schools in that district. The probability of a particular school being included in our study was proportional to its enrollment in 2006.³ At each school we interviewed approximately 30 students in standards 4-8, the last 4 years of primary school, stratified by gender and age.⁴ Our in-school adolescents were randomly selected from registers recording enrollment at the beginning of the 2007 school year. Adolescents were classified as out-of-school if they had not attended in the second term of the school year. Out-of-school adolescents were identified through key informants located at the school and within the randomly selected school catchment villages.

The adolescent instrument included an extensive set of questions on household and family characteristics, educational attainment, schooling history and experiences, household labor and employment, sexual behavior, marriage, and health. The majority of questions were asked in 2007 and again in 2008. In addition, in 2007 all sampled adolescents were evaluated as to whether they were able to read two sentences in Chichewa (the national language) and two sentences in English, tasks at which they should have been proficient by standard 4. Adolescents were also asked to complete a mathematical evaluation consisting of 12 questions drawn from the Malawi Institute of Education (MIE) achievement tests for standard 3.⁵ In 2008, these evaluations were repeated for comparability and expanded. A reading comprehension section (in both English and Chichewa) was added to further measure cognitive ability, while a selection of questions

² According to a USAID monitoring and evaluation report (USAID/AIR 2004: 64), teacher training activities in Machinga district reached all 158 primary schools and 80% of teachers (947 of 1,180) in 2004; of Machinga’s total population of 369,014, approximately 12,300 (3%) participated in community-based activities directed toward village chiefs, school committees, parent-teacher associations and the general population. MESA also broadcasts a weekly radio program.

³ The number of schools in each district was based on estimates of (1) the proportion of students in the age group attending primary school, (2) estimated attendance rates (3) estimated attrition rates, (4) estimates of transitions to secondary school and school dropout.

⁴ The overwhelming majority (93%) of 14-16 year olds attend standards 4-8 (National Statistical Office and ORC Macro 2003).

⁵ The Malawi Institute of Education is a para-statal organization that is charged by the Ministry of Education with curriculum development, assessment and teacher training programs.

from the MIE mathematical tests for standard 5 was included to capture more recently acquired knowledge.

To obtain more accurate reporting from students on issues of gender-based attitudes, teacher practices, harassment and violence in school — key dimensions of our concept of school quality— and other sensitive issues, we employed audio computer-assisted self-interviewing (ACASI) implemented on handheld computers. With ACASI, the respondent hears both the question and the response categories through headphones connected to a computer. The respondent answers each question by pressing a number on the computer screen associated with a response option. The advantage of ACASI over face-to-face interviews is that the respondent is afforded greater privacy and confidentiality when answering questions and interviewer influence in the survey is minimized. Computerized interviewing has been used successfully by the investigators in household-based surveys in Kenya and Malawi (Hewett et al. 2004; Mensch et al. 2003; Mensch et al. 2008).

The head teacher and all teachers in standards 4 through 8 were also interviewed at each school. Teachers were asked about their household characteristics, education, and training, as well as their classroom practices and treatment of students, including disciplinary practices and assignment of chores. Head teachers at each school were asked additional questions regarding the characteristics of the school, including the availability of supplies and materials, administrative oversight, and donor activity. As with the adolescent questionnaire, all sensitive questions were administered using ACASI. A school facilities instrument collected information about the physical condition of the classrooms, offices and toilet facilities. At the community level, an instrument was administered in a random selection of villages that served as the primary catchment area for the primary school visited. This instrument captured information on health facilities, the location of the nearest secondary school, religious and civic groups, and productive resources, e.g. maize mills, roads, and markets.

Analysis

Based on our conceptual framework we will first develop indicators of primary school quality aggregated to the school level and rank the primary schools in our sample. The validity of these indicators will be discussed, and descriptive statistical tools (analysis of variance, correlations, reliability analysis) will be used to assess the quality of the measures. Given that both our adolescent and teacher instruments posed similarly worded questions about student experiences and treatment, we can also compare data generated by these two instruments to evaluate the validity of self-reports. Where possible, we will disaggregate our measures of school quality by gender to assess whether an equitable learning environment exists for girls and boys; indicators to be evaluated in this manner include attitudes towards academic aptitude, views about adult roles, pupil punishment, tasks assigned, teacher harassment and acts of intimidation and violence.

The association between community and aggregated household characteristics and the quality of schools will be explored to look at the potential correlates of school quality. For instance, we will incorporate measures of community resources, geographical isolation and the quality of public infrastructure in multivariate models of school quality. Further, given the extensive information collected from attending and non-attending adolescents regarding their household, including its human capital, assets and quality of housing, we will be able to assess the degree to which there is co-variation in aggregated household factors and the quality of education provided by the primary school. A final source of variation in our school quality indicators is expected to derive from levels of donor and government interventions at the school.

The next step in our analyses will be to explore the association between our indicators of school quality and individual educational outcomes, controlling for important individual and household characteristics.⁶ The outcomes, as delineated above, that we will explore represent various aspects of transitions to adulthood as they relate to education. We will also investigate these associations separately by gender to determine if schooling quality has a differential impact on boys and girls. Although multivariate linear regression models will be the starting point for our analyses, multi-level models that capture potential unmeasured effects at the school and community levels will also be evaluated. Further, to control for biases arising from potential unmeasured adolescent characteristics, a fixed effects modeling approach will be considered and evaluated.

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⁶ Although school quality will also be explored as an outcome variable, we expect that its determinants are largely exogenous to individual educational achievement. That said, the impact of household characteristics in the choice of primary schools will be assessed.

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