

REACHING OUT-OF-SCHOOL CHILDREN: SUB-REGIONAL DISPARITIES¹

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Abstract

The international discussion about EFA focuses largely on national policies to get children into school. Many studies have shown that out-of-school children are disproportionately girls from poor rural areas and households.² The regional disparities in education equality have been largely overlooked, however. This study examines the data from 30 countries and suggests the importance of the sub-national inequalities in education distribution, particularly for designing education policies. Its results indicate that countries with low national attendance rates show great regional disparity and that low attendance rates within sub-national regions usually correlate with low overall development. The most notable exception to this is Bangladesh, where most children are in school, even in the least developed regions. Bangladesh should therefore be studied as a model for good practice for bringing all children into school

*By 2015, children everywhere, boys and girls alike, will be able to
complete a full course of primary schooling. MDG Development Goal # 2*

Introduction

The motivation for this study comes from the notion that geographical pockets in countries where children are more likely to be out of school are typically in more remote, under-developed regions of countries. If such pockets do exist and out-of-school children are collected in them, education policy and programs striving to reach these children should be a national focus.

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²UNESCO (2002, 2004, 2005), UN Millennium Project (2005), Filmer (2000, 2001) and Filmer and Pritchett (1998, 1999, 2001) and Wils, Carrol and Karima Barrow (2005).

Earlier research (Filmer and Pritchett are the foremost authors) has shown that poor children are much more likely to be out of school than their wealthier compatriots.³ Are these poor children concentrated in particular areas? Where are they? How can they be reached? This study ventures forth from the hypothesis that these children are disproportionately collected in certain regions of the country, that there is geographical inequality, and programs and policies can be focused on certain sub-regions within countries to reach large groups of out-of-school children. As it turns out, there are indeed clear sub-national differences, and, the lower national attendance rates the greater these sub-national differences.

The study also asks whether those sub-national regions with lower attendance rates are simultaneously poor and under-developed (which one might expect, given the relation of income and school-enrollment). The results confirm this and interestingly point to some exceptions where most children are in school in sub-national regions with low development. Some factor which may have created these exceptions are proposed here.

This study covers 30 countries for the sub-national differentials and nine for the sub-national differentials with development context. The empirical evidence for the study comes from DHS surveys that are focused primarily on health.⁴ However, these studies also provide a rich, internationally comparable source for identifying the background characteristics of children who are not in school. Armed with analyses based on these rich sources of information, policy makers can better target education sector plans and programs to reach excluded children.

The first part of the paper describes the available data on school attendance, in particular noting which sources provide internationally comparable data at the sub-national level. The second part of the paper provides an analysis of school participation, noting the role of gender, urban-rural and sub-national/regional variations. The third part of the paper examines the characteristics of these sub-national areas in a sample of nine countries using a development index to define the degree to which areas are underserved in terms of access to health services, clean water, communications, and female literacy rates. This makes it possible to describe the relationship between the development index and attendance rates. The section examines the policy and education programming context in places where attendance is higher than we would expect. The concluding section raises some of the issues that EFA strategies will need to address in light of these findings.

I. Scope and Data

Indicators tracking progress towards EFA goals largely use countries as the unit of analysis. The UNESCO Institute for Statistics (UIS) and the World Bank provide annual education data and analysis that indicate how well the nations of the world are doing in terms of access to and completion of basic education for girls and boys. The collection, organization and presentation of the data have, over the past fifteen years, focused on the gender gap to

³ The results are best presented in D. Filmer and L. Pritchett (1999), "The Effect of Household Wealth on Educational Attainment Evidence from 35 Countries," in *Population and Development Review* 25(1). For graphs of education attainment by income for an ever-extending number of countries see <http://www.worldbank.org/research/projects/edattain/edattain.htm>

⁴ Demographic and Health Surveys, sponsored by USAID have covered 53 countries in the past 5 years. DHS surveys measure school attendance (whether a child went to school during the past school year) rather than enrollment. This study therefore uses attendance as the measure.

support strategies for closing the gap between boys and girls. This was done because of equity considerations and because it was found that girls' education is socially and economically effective: better educated women have fewer and healthier children for example. This policy focus may have been successful; the great majority of countries today have much improved girls' access to and completion of primary education.

The international datasets on education compiled by UIS and the World Bank provide virtually no statistical information about regions within countries. This data gap is also largely true for other development indicators and indices provided by UN agencies. The national administrative and statistical agencies, which are the source of these international datasets, collect information at the sub-national level but aggregate it before sending it to the UN organizations. Some, but very few, of these national agencies publish sub-national education information on a timely and regular basis on their websites and in report. Even when countries publish their own sub-national statistics, they are not necessarily internationally comparable.

The most accessible source for internationally comparable sub-national data are two series of household surveys: the Demographic and Health Surveys (DHS) funded by the U.S. Agency for International Development (USAID), and the Multiple Indicator Cluster Surveys (MICS) undertaken in 2000, funded by UNICEF (a 2005 round of MICS surveys is underway but was incomplete at the time of writing). DHS uses a rigorous methodology of household sampling and provides national and sub-national data and analysis on the population, health, nutrition, and education of women and children in developing countries. Over the last 20 years, the DHS project has coordinated close to 200 surveys in more than 70 countries throughout Sub-Saharan and North Africa, Asia, Latin America and the Caribbean, and parts of Europe (www.measuredhs.com). The MICS surveys were modeled on the DHS surveys and the datasets are in many ways comparable. Those datasets were available for 43 countries at the time of this writing (early 2006). Since 2004 a new initiative, the Education Policy and Data Center in Washington D.C. (EPDC), has been collecting and compiling sub-national education statistics from these international survey series and other sources.

Household surveys provide information on health, education, income and assets, employment, and housing characteristics. While large household surveys cover only a portion of the population, the number of people interviewed runs in the thousands (sometimes tens of thousands) and is large enough that the group is statistically representative of the entire population. The population sample size is often large enough to make a detailed sub-national analysis possible. Household surveys are therefore good sources of data for this study.

II. Who is Not in School?

This section analyzes attendance rates disaggregated by gender, urban-rural, and sub-national areas. National averages for attendance can mask large inequalities. The most commonly presented disaggregation is between males and females and, to a lesser extent, between urban and rural areas.

Figure 1A shows the male-female attendance differentials for 55 countries, expressed as percentage point differences, (reprinted from Wils, Carrol and Barrow, 2005). The countries are arranged in order of the gender differential. The largest gender differential is in

Benin, where attendance for girls is 14 percentage points lower than that for boys. There are an additional five countries with differentials exceeding 10 percent. The male-female differentials are much lower than they were a few decades ago (see UNESCO 2002).

Figure 1B. shows the percentage differential between urban and rural areas, using the same order of countries as in Figure 1A, and also showing the male-female differentials. In all but two of the countries, the attendance inequality between urban and rural residents is larger than that between boys and girls. The level of urban-rural inequality is very high in many countries, the highest being Burkina Faso (51), Ethiopia (50 percent), Guinea Bissau (45), and Niger (43). In one-third of the countries the differential exceeds twenty percentage points.

Before concluding (as one might, from the figures) that the equity focus of education should be on rural-urban differences rather than on gender, one should consider a few points. First, girls' education has social and economic benefits in particular, as mentioned above, with regards to the health of the next generation, additional income, and employment. The evidence is lacking that could determine whether the same is true of rural children, however. One could argue that as the bulk of most countries' poverty and illiteracy tends to be concentrated in the rural areas, these areas are most in need of basic, especially primary education, to develop (more educated farmers are more productive).

Figure 1. Gender and Urban-rural Net Attendance Gaps

Figure 1.A. Gender differentials

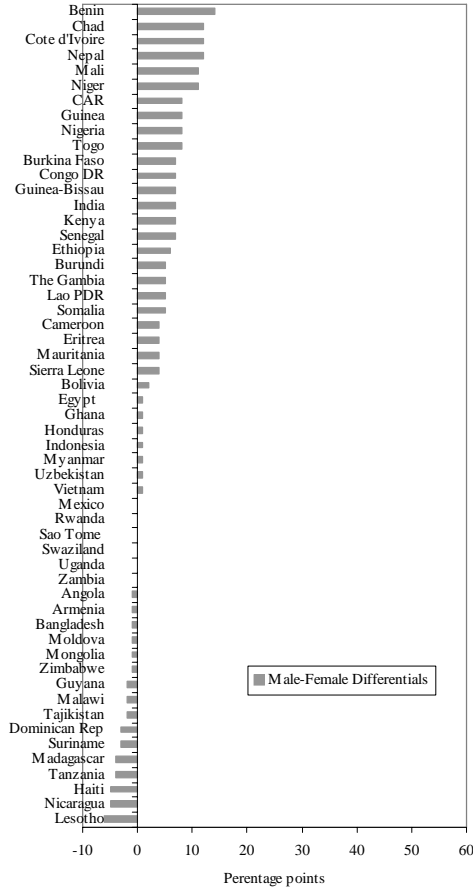
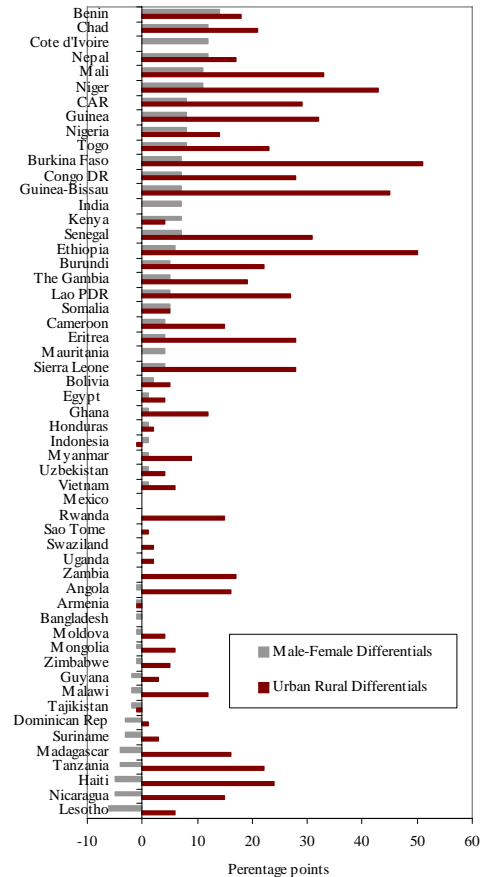


Figure 1.B. Gender and Urban/rural



Source: Wils, Carrol and Barrow (2005)

As it turns out, even *larger* differences appear when the data is disaggregated by regions (provinces or states) within countries and urban-rural areas. Figure 2 shows the data arranged by sub-national region for 30 countries where a DHS survey was carried out between 1999-2003 (reprinted from Wils, Carrol and Barrow, 2005). For each country, attendance rates for rural areas are represented by light-blue dots and attendance rates for urban areas by red dots. The countries are arranged in order of *national net attendance* rates.

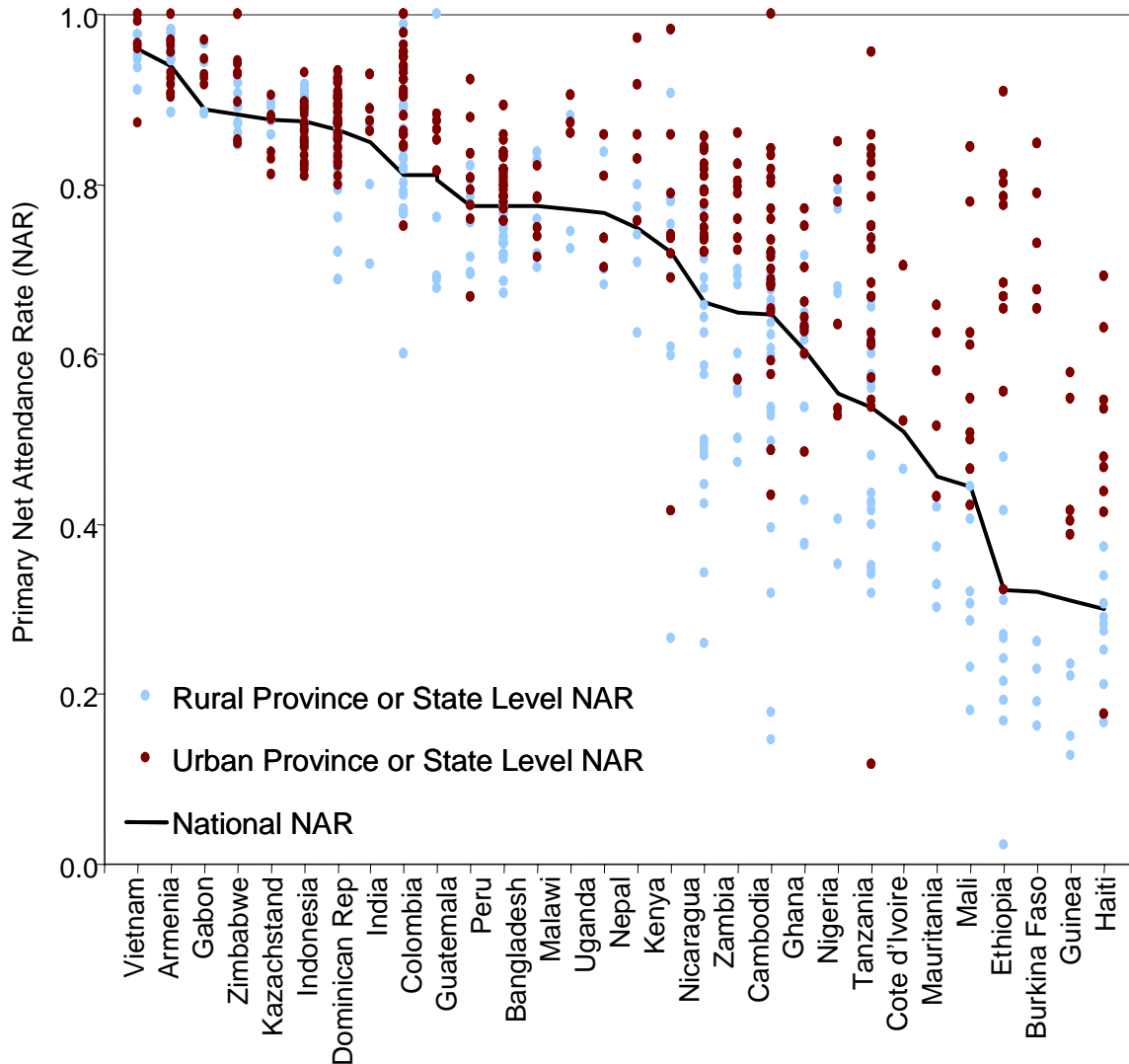
Figure 2 shows a couple of important patterns. First, those countries with high national attendance levels have dots (areas) closely spaced along the right of the figure. This means that in countries with high national attendance rates, *all regions* have high attendance rates and access to schools is uniformly high. Conversely, those countries with low national attendance levels have dots spread widely; regional inequality characterizes countries with low school attendance. Ethiopia has the largest differentials between the lowest and the highest attendance rates (91% in the urban parts of Harar region and 2% in the rural parts of

Somalia region); Burkina Faso, Mali, Tanzania and Cambodia have similarly large disparities; and there are many countries with smaller, but still substantial inequalities.

Figure 2 also shows that in almost all countries, including those with the lowest attendance levels, at least some regions have high net attendance rates. The sub-national regions with high net attendance are generally large urban areas. Examples of areas with high urban attendance rates in countries where schooling is sparse elsewhere are: Harar in Ethiopia (91%), Koulikoro in Mali (84%), Dodoma in Tanzania (96%), Western Urban or Kathmandu in Nepal (97%). One positive outcome we can infer from this distribution is that even within the neediest countries there are certain areas where a high proportion of children have access to primary education; therefore the challenge is to focus on reaching the underserved areas, rather than the entire country.

Figure 2. Net attendance rates by region and urban-rural residence in 30 countries.

Source: Wils, Carrol and Barrow (2005)



The extent of the regional disparities is not correlated to education disparities by income. For example, in Bangladesh there is very little regional disparity but large education disparities by income. In other countries -- Ethiopia, Mali, and Burkina Faso -- the reverse is true (smaller education disparities by income and larger by sub-national variation). In an ongoing study employing a regression model that includes region, income, gender, and urban/rural location, the EPDC has found there are independent regional effects on a child's likelihood to be in school⁵. The fact that geographical education differentials differ from income patterns suggests that there are independent, regional effects. These may have to do with different cultural preferences for school, or different lifestyles, but may also be the result of variations in the supply or quality of schools.

The international discussion on EFA has paid too little attention to regional disparities that suggest that policies and programs should be designed for sub-national areas with sizeable underserved populations. This need is all the greater if poverty is disproportionately concentrated in particular regions. To make effective policies and programs requires understanding the characteristics of the underserved populations. Why do fewer children in one part of the country go to school than in another part of the same country? Are the regions with lower attendance also poorer on average? What policies and strategies can address the development and education conditions in these areas? The next sections address these questions.

III. Characteristics of Underserved Areas

Our first hypothesis is that, generally, areas with low enrollment levels are also under-served and under-developed in other ways, so policies directed at these regions must also address the needs of a poor population with little access to services overall. The relationship between development and education has been underscored in a wide range of studies (*e.g.*, Becker, 1994; Psachoropoulos and Patrinos, 2002). Amartya Sen, in his seminal work *Development as Freedom* argues that *a general expansion of education and literacy in a region can facilitate social change...and help to enhance economic progress from which others too benefit* (Sen, 1999, p.129). Filmer and his colleagues at the World Bank have done significant work documenting the positive correlation between wealth and enrollment using DHS surveys (Filmer, 2000, 2001; Filmer & Pritchett, 1998, 2001).

The literature proposes causative, reciprocal mechanisms in the relationship between education, development, health, and empowerment. A substantial body of research indicates that poor households, with many children, pressing economic needs, and dependency on child labor, keep children out of school (*e.g.* Tietjen, 1991). Poor, rural households may have a lower demand for education from which they perceive few benefits. In addition, children in poorer health and malnourished are not only more often absent from school, but are less able concentrate and retain information (*e.g.* Levinger, 1994). Thus, in any given region, we expect to see school attendance correlated with health, income, and empowerment; this correlation would apply at the sub-national and national levels.

⁵ These results are still very preliminary. The multi-country study uses DHS surveys to look at a child's likelihood to be in school controlling for gender, wealth, sub-national location, urban/rural household. The EPDC's intention is to complete the study by mid-2006.

To measure this relationship, we construct an index of development for wealth, health and empowerment, to correlate with school attendance. It is also possible to run a regression model with wealth, health, and empowerment separately, and this may be done in a follow-on analysis to this study. The index for development used in this study is built from two UNDP (2004) indices for well-being: the Human Development Index (HDI) and the Human Poverty Index. The HDI is comprised of: i) a long life (measured by life expectancy at birth); ii) knowledge (measured by adult literacy and the gross attendance rate), and iii) the standard of living (measured by income per capita in real terms). The Human Poverty Index (HPI-1) includes the same concepts, but is measured differently. A long life is measured as probability at birth of not surviving to 40, knowledge as the adult literacy rate, and the standard of living as a combination of percentage of population without access to an improved water source and percent of children underweight by age.

The index used in this study differs somewhat from the UNDP indices, because the necessary data were not all available at the sub-national level, including life expectancy and income. Our efforts were to find the best possible proxies for the UNDP indicators within the constraints of the available information. In addition to approximating the UNDP welfare indices, factor analysis⁶ was utilized to select four indicators which provided the greatest discrimination from a larger set of candidate indicators. The four indicators that were selected are: i) proportion of women with access to medical services (proxy for health); ii) female literacy rate in the age group 15-49; iii) access to clean water, and iv) access to mass media. While this choice has an unavoidable element of arbitrary selection, calculations with a larger set of indicators show that the findings presented here remain valid even with different baskets of development measures.

The unit of analysis is a sample of 165 sub-national regions in nine countries in Asia, Africa, and Latin America: Bangladesh, Egypt, Ghana, Guatemala, Guinea, Malawi, Nicaragua, Uganda, and Zambia. The nine countries all have large household DHS surveys available, and are at risk for not achieving EFA goals.⁷ Although this is a limited sample, it provides a fair representation of countries at risk. The net attendance rates in this group range from 31% in Guinea to 85% in Egypt at the time of the DHS survey; the group includes extremely poor countries -- Malawi and Guinea, middle income countries -- Egypt and Guatemala, and spans three continents.

Appendix A gives a selection of summary graphs showing the distribution of the four development measures and female school attendance values. A correlation analysis found positive relations between the variables throughout, for all 165 regions together and for regions within countries separately. This means, for example, that in a place where many women have access to health services, there is also likely to be higher literacy and greater availability of clean water, schooling, and mass media. The correlation matrices are shown in Appendix B. This preliminary analysis confirms what much of the literature suggests: one can speak of a “basket” of social development indicators that interact to form an index.

⁶See Tabachnick & Fidell (2001) for a description of the factor analysis used in SPSS version 12.

⁷www.uis.unesco.org/TEMPLATE/pdf/efa/efasuiivi_en.pdf

Development Index in 165 Sub-national Regions

The development index puts the four indicators into one basket (leaving school attendance out as the dependent variable). Factor analysis was used to weight the indicators in the index/basket and the index was normalized to range from 0 to 1. The highest index value of 1 is reached if the value for all contributing indicators is 100%. The nearer the index is to 1, the higher the overall level of approximated development.

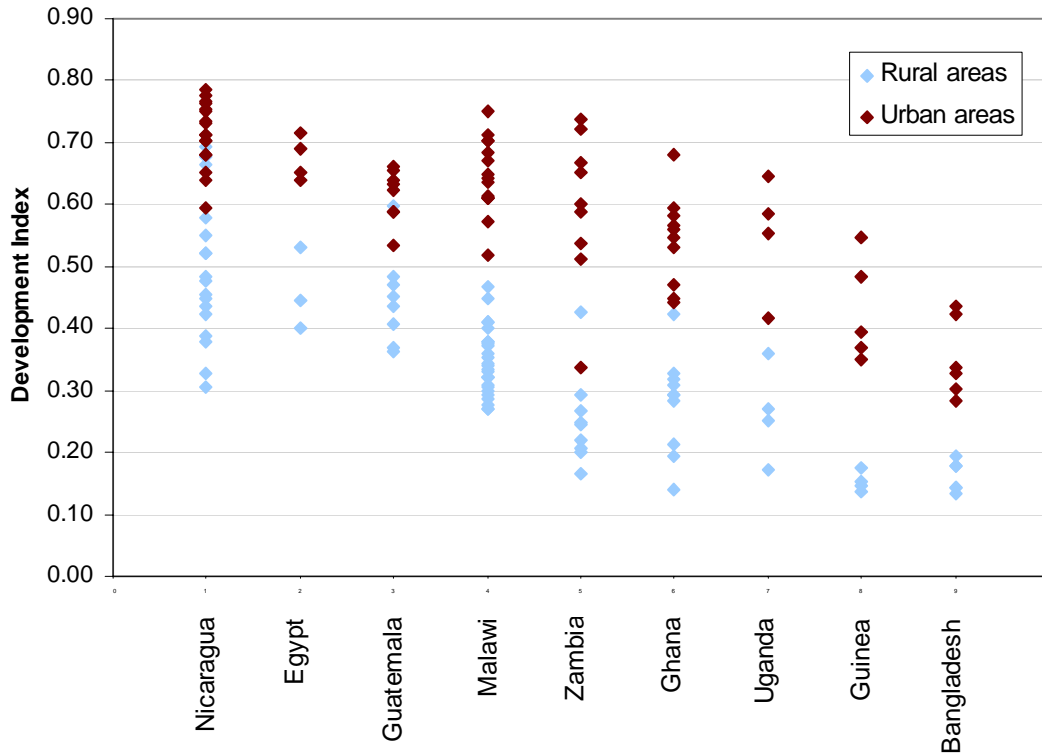
The values for the development index at the national, urban, and rural levels are shown in Table 1. At a national level the values for the development indices vary from 0.26 in Bangladesh to 0.60 in Nicaragua. Within countries, the variation between urban and rural areas as a whole was about as large as the difference between the highest and the lowest country values.

Table 1. Urban and Rural Development Indices

	National	Urban	Rural
Bangladesh	0.26	0.35	0.16
Egypt	0.58	0.67	0.46
Guinea	0.31	0.43	0.15
Ghana 2003	0.41	0.54	0.28
Guatemala	0.53	0.62	0.45
Malawi	0.50	0.65	0.35
Nicaragua	0.60	0.73	0.51
Uganda	0.41	0.55	0.26
Zambia	0.42	0.60	0.25

Figure 3 shows the distribution of the development indices within the 165 regions of the nine countries. This graph splits the urban and rural regions (from Table 1) over countries' provinces or states. First, the graph shows that larger sub-national differences emerge at this more disaggregated level. The largest development index range is in Zambia, with values from .16 in the rural Luapula to 0.74 in the urban Western region. Similarly, large ranges exist in Nicaragua, Malawi, and Ghana. The countries with the smallest development differentials are Bangladesh (0.13 to 0.44), Guatemala (0.36 to 0.66), and Egypt (0.40 to 0.71). Second, there is a very strong urban/rural split. With very few exceptions, the rural areas are all below the urban areas. Third, in seven of the nine countries in the sample there exist at least some regions with high development indices. Only Guinea and Bangladesh have no urban areas with a high development index. In some countries, for example Nicaragua, some of the rural regions with lower development indices (relative to other values in Nicaragua) have a higher development index value than the urban areas in other countries (for example, Guinea).

Figure 3. Development Indices for 165 Sub-national Regions in Nine countries, by Country



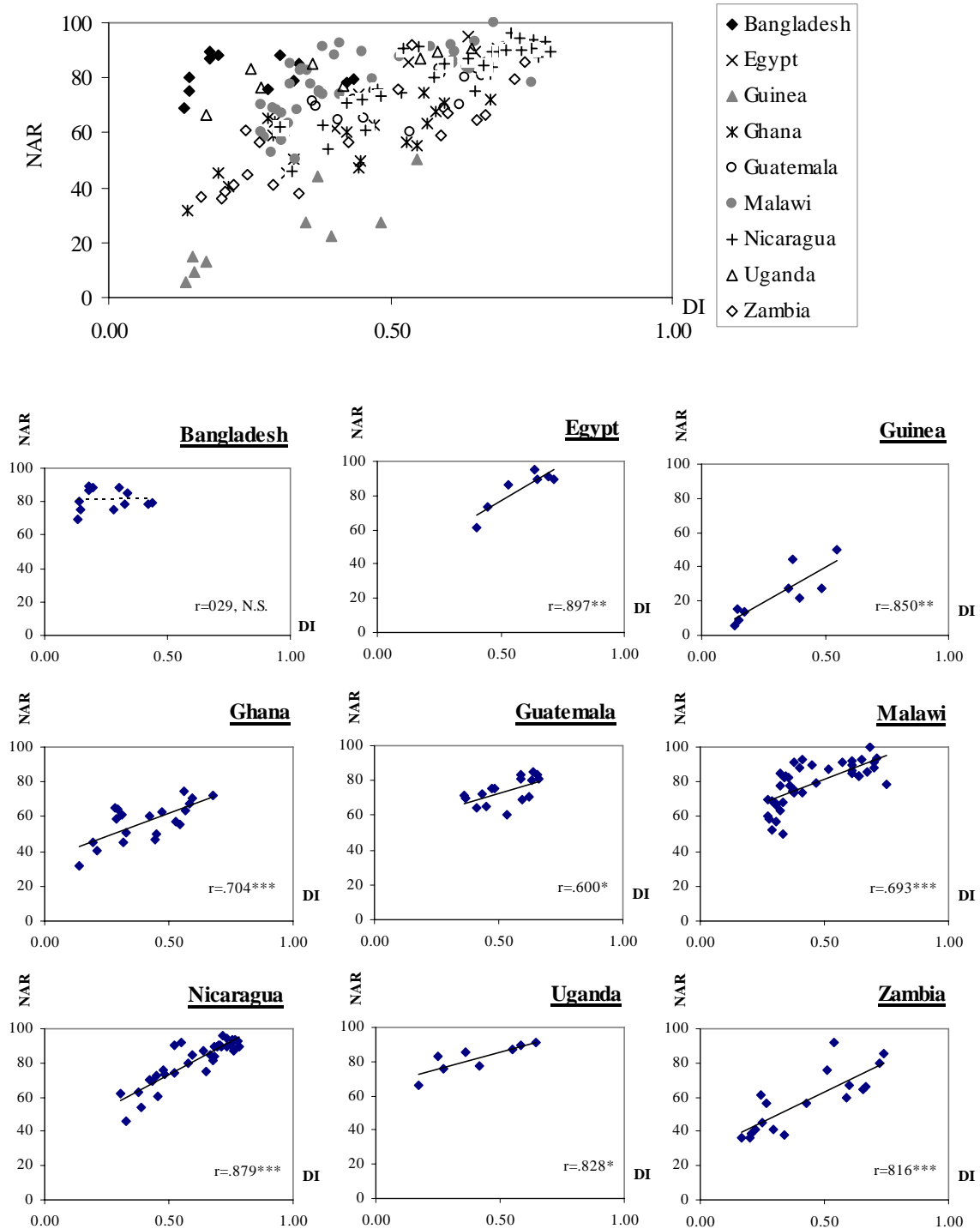
Source: own calculations based on DHS survey datasets.

The lowest values for the development index are found in Ghana (in rural Northern, Upper East, and Upper West regions), Zambia (rural Luapula), Uganda (rural Northern), Guinea (all rural regions), and Bangladesh (all rural regions). Those familiar with these countries and regions will note that the underserved areas are generally the most distant from the metropolitan centers, have the weakest transportation and communications infrastructure, and frequently have populations that include high proportions of ethnic and cultural minorities. Some areas are also marked by social and armed conflict.

1.1 Development and School Attendance

Figure 4 shows a cross-tabulation of female attendance and the development index in each of the nine countries – for all countries together and in small figures separately. The correlation is clear in eight of the nine countries. The rule is that low attendance rates exist within a context of overall underdevelopment. The correlation statistics for each country are generally high, ranging from 0.897 in Egypt (significant at $p < 0.01$) to 0.600 in Guatemala (significant at $p < 0.10$), except for Bangladesh, which has a very low correlation.

Figure 4. Female Net Attendance Rates and Development Indices in 165 Regions in Nine Countries. Linear Regression Lines, Correlation Values and Level of Statistical Significance.



* p< .1; **p< .01; *** p<.001

Source: DHS surveys

Bangladesh is a true outlier in this group. Some of its regions have among the lowest in adult female literacy, health, clean water, and information, yet have among the highest school attendance rates in the study. Bangladesh has been able to send almost all children to school in all sub-national regions. In fact, there is no correlation between the development index and girls' enrollment. Uganda also has relatively high net attendance rates in its underdeveloped regions. Northern Ghana is another exception which is not, however, visible from the figures where attendance rates doubled from 1998-2003 in the absence of radical change in other aspects of development.⁸ These examples should be studied for lessons on how to achieve full primary schooling within a context of poverty and dismal access to other services.

It is interesting to note that in five of the nine countries, the slopes of the regression are nearly equal (Egypt, Guinea, Ghana, Nicaragua, and Zambia). However, the correlation lines for the 5 countries fall at different levels on the graphs. Our interpretation of this finding is that there are certain general factors at work that cause similar correlations between school attendance and other aspects of development, but that there are important country-specific factors, having to do with the policy environment and perhaps culture and geography, that alter those relationships. The next section turns to an interpretation of the exceptional position of Bangladesh, Uganda, and Northern Ghana.

The Exceptions: Bangladesh, Uganda and Northern Ghana

Bangladesh stands out among the nine countries. Its development level is the lowest of all countries but the net attendance of girls is over 80% and the rural girl attendance rate is the highest among all the rural areas in the nine countries. What underlies this remarkable educational achievement? Bangladesh has not experienced exceptionally fast economic growth (in fact, it has been rather slow, see Wils, Carrol and Barrow, 2005); expenditure on education is moderate; the proportion of people working in formal education is not high. But Bangladesh is outstanding for the presence of a very large number of non-government and NGO schools, most notably Bangladesh Rural Advancement Committee (BRAC); and for the stipend program for poor children. BRAC's efforts, initially targeting rural areas, have been able to reach an increasing number and proportion of girls in rural areas over the past twenty years. This has transformed educational opportunity for underserved areas.

BRAC NON-FORMAL PRIMARY EDUCATION PROGRAM

BRAC (Bangladesh Rural Advancement Committee) introduced its Non-Formal Primary Education Program (NFPE) in 1985. This program emphasized the education of girls in rural areas giving them the opportunity to attain higher levels of education by providing flexible learning hours and scholarships depending on educational performances. The program started with 22 experimental schools. Today, the number of schools surpasses 34,000, catering to over 1.1 million students of which 70% are girls. BRAC teachers are chosen from among the most educated women in each village. Teachers must have at least nine years of schooling. Presently, 97% of all teachers are women. Each year, almost 90% of the students who graduate from the BRAC schools go on to the formal schools in higher classes. Additionally, BRAC has also undertaken projects to provide villages with libraries and community centers. The organization offers all this to villagers with funds from foreign countries and by collecting minimal fees from the students to supply them with books and other materials.

⁸Longitudinal results for 1998 and 2003 not shown but available from the authors.

Uganda also has high enrollment relative to the development index in some regions. There is a statistically significant relationship between the development index and female school attendance, but the slope is low. It may be that this is due, in part, to the elimination of school fees in 1996, which resulted in an enormous influx of pupils. Whereas in 1997 there were 2.3 million children enrolled in school, by 2001 there were 6.9 million children enrolled in school. Uganda was also able to greatly reduce the attendance gaps between rich and poor, girls and boys, and between regions. Uganda used public information to tackle corruption and mismanagement so that in recent years, over “90% of the greatly increased central funding reaches schools instead of the dire 28% in 1996” (Wils, Carrol and Barrow, 2005:53). While issues of quality and dropout remain difficult, the achievements of Uganda to expand education to underdeveloped regions deserve notice.

Northern Ghana is another case where the provision of education outpaces an area development index. Its development index is among the lowest of the 165 regions. Between 1998 and 2003 (years of two DHS surveys), however, girls’ net attendance rates almost doubled, going from 17% to 32%. This is an increase of approximately 26,000 -30,000 female students.⁹ Within this period, the School for Life program expanded in Northern Ghana to reach underserved children. From 1996-2003, 50,000 children enrolled. In 2000, 9,000 children were enrolled of whom half were girls.¹⁰ This implies that Schools for Life is responsible for about one-fifth of the enrollment growth in this area.

SCHOOLS FOR LIFE IN NORTHERN GHANA

School for Life in the Northern Region of Ghana provides a nine-month education program for youth aged 8 to 15 years in rural villages where there is no or very low access to primary education. It provides literacy in the mother tongue, numeracy and general knowledge equivalent to three grades of primary schooling. Approximately 70% of the students in School for Life continue on to formal primary school at grade 4. From 1996 through 2003, School for Life enrolled 50,000 children and youth, of whom 50% (25,150) were girls. This number has made a considerable impact on the rate of girl’s attendance in primary education in Northern Ghana, as indicated by the rapid increase in this rate during the years 1998 to 2003. This program continues to expand and is now reaching out to new districts and regions in northern Ghana.

Concluding Observations

The report addresses the sub-national distribution of education inequality and the effect of the overall development context in sub-national regions on attendance levels. The analysis is based on sub-national data extracted from DHS and MICS household surveys. Regarding sub-national distribution of education inequality, the report demonstrates that there are large,

⁹The estimate is based on the following. The 2000 population census counted 1.805 million people in Northern Ghana. According to the 2003 DHS survey, the school-age girls made up 11% of the total population, or, 200 thousand. If the net attendance rate increased by 15 percentage points (from 17 to 32) this is approximately 30,000 pupils. Another way to estimate this is that in 2002 there were 100,000 female pupils, and an estimated GER of 57. Combining pupils and GER gives an estimated school-age girl population of 175,000. Using this population as a base, the 15 percentage point increase would be 26,000.

¹⁰See Hartwell, Ash (2005), *School for Life Case Study*. EQUIP2.

sub-national differences in school attendance in many countries. Those countries with the largest sub-national inequalities are also those with the lowest national level attendance rates. Preliminary research implies the regional effects are independent of other factors, such as average income levels within sub-national regions. This suggests that to reach EFA, these countries must target the under-served regions and channel development strategies, target resources, and direct funding to areas where children need it most. National education and development indicators do not provide an adequate basis for developing strategies and programs for addressing EFA and Millennium Challenge Goals. To reach EFA requires bridging sub-national differentials and the conditions of underserved areas.

In addition to sub-national educational disparities, other inequalities exist: gender differentials have declined at the national level, so that *within* regions girls may still be very much disadvantaged (in particular, in regions with low overall enrollment). Filmer Wealth and poverty are also important inequality factors (Filmer 2000, 2001; Filmer and Pritchett 1998, 2001). However, our development index suggests that poverty itself is geographically concentrated, so it may be that to address the vector of poverty *also* requires at least some regional focus.

Regarding the strong relationship between school attendance and overall development (proxied by a development index), Bangladesh is an exception in that no relationship exists between school attendance rates and regional development levels. Similarly in Uganda, the relationship is also rather flat. It appears that where development and school enrollment are correlated, certain common factors are at work that cause similar correlations between school attendance and other aspects of development. But there are also important country-specific factors having to do with the policy environment and perhaps culture and geography that shift those correlations up or down.

The research also demonstrates that the common mold with rural, underserved areas of a country suffering low school enrollment rates is not universal, as evidenced by Bangladesh, Uganda, and North Ghana. Given the right factors – be they social, cultural, policy/program interventions – there are underserved areas that have broken restrictions on school access that traditionally accompany under-development.

With regards to the exceptional position of Bangladesh, the presence of a large number of NGO schools, including BRAC schools is a distinguishing characteristic. In Uganda, the strong government commitment to universal primary education and the elimination of school fees in 1996 may be critical factors for the position of Uganda. The third special case is the northern region of Ghana, where there was an exceptionally high increase in attendance in the absence of development growth in other areas. The alternative Schools for Life may have played a role in this case. These cases, and perhaps others to be identified in an expanded version of this analysis, may be useful for policy makers to learn how to formulate focused strategies that bring underserved children into school.

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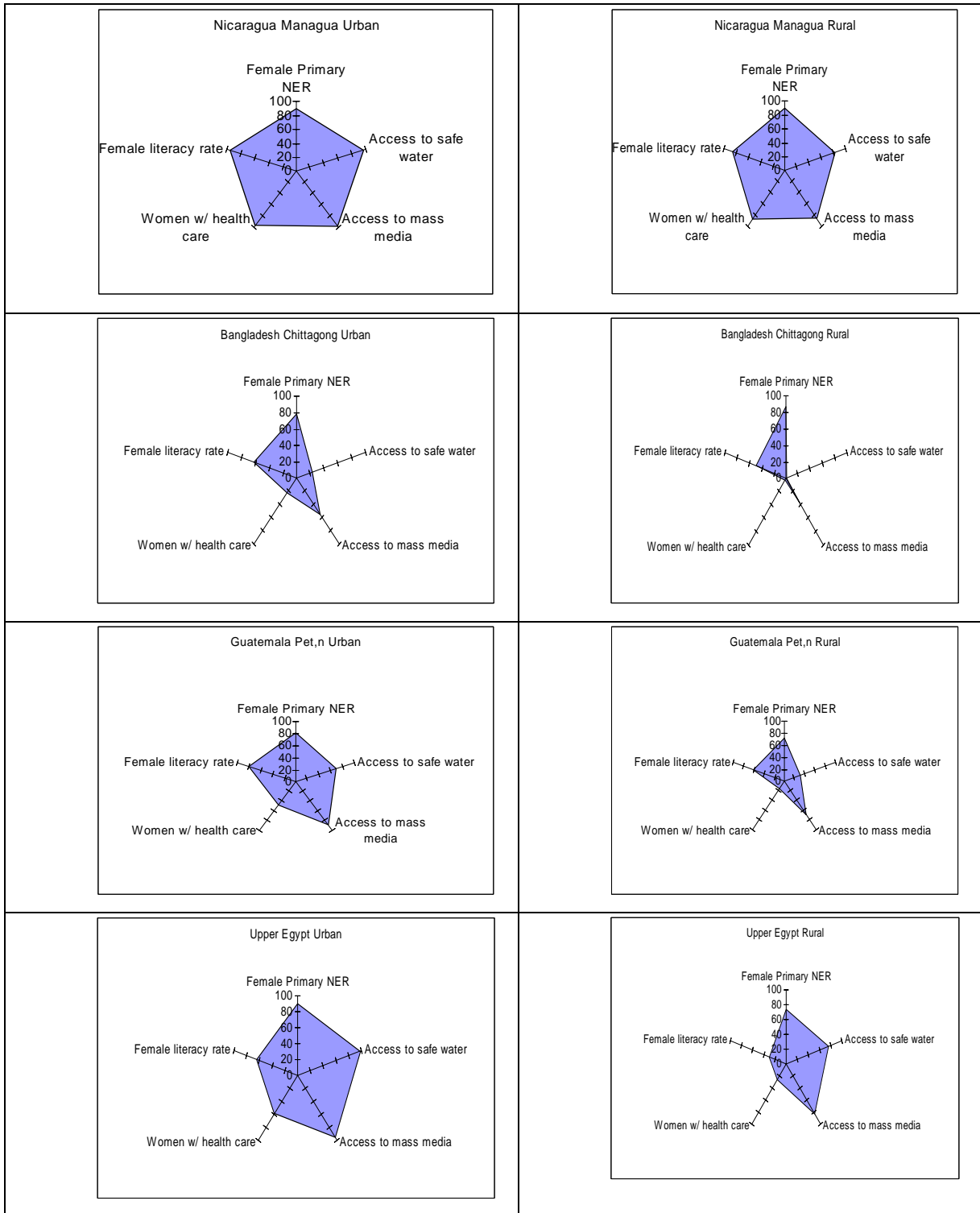
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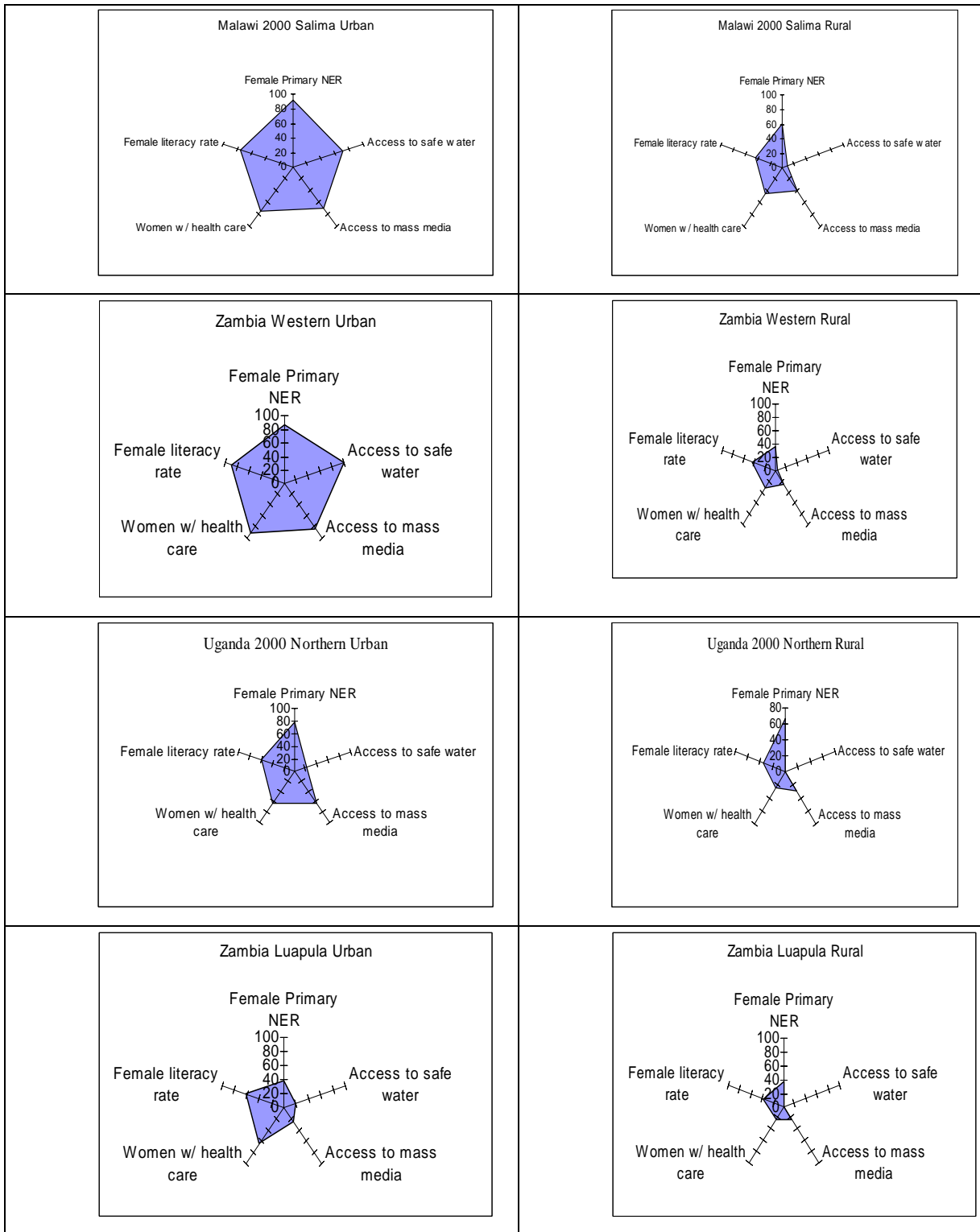
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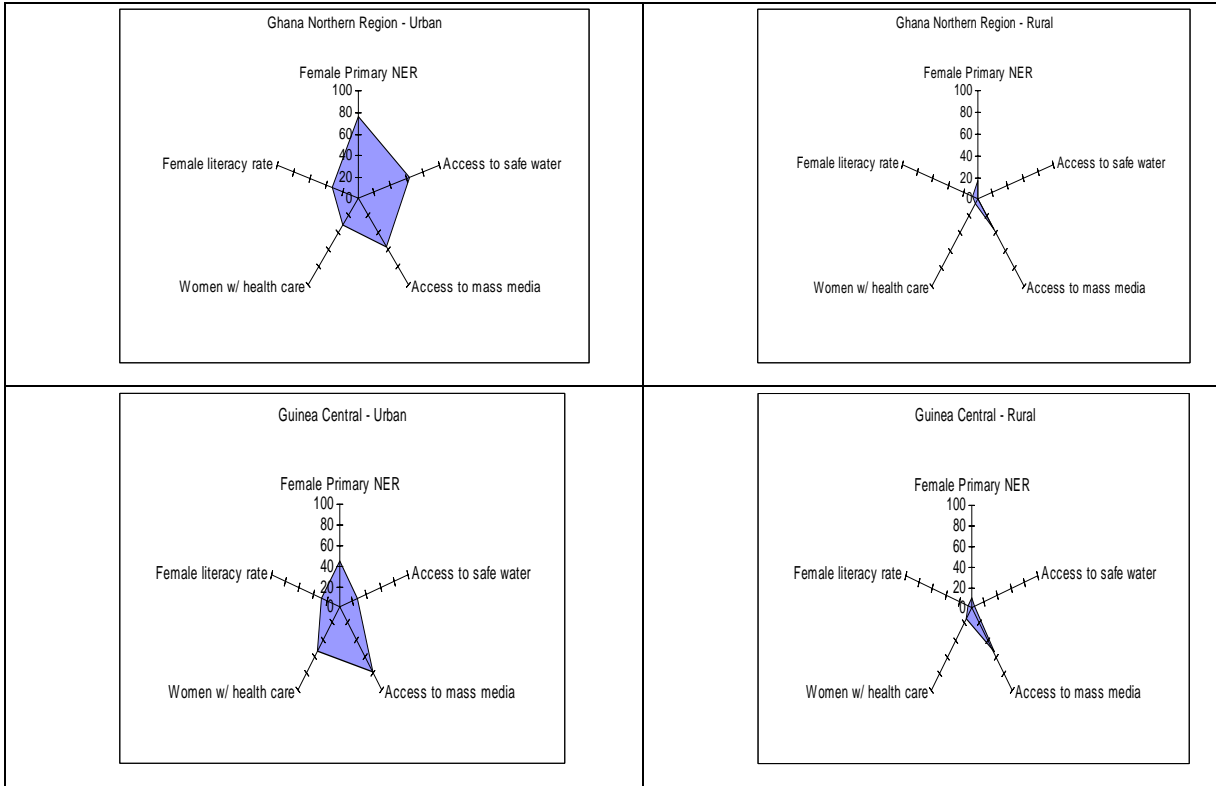
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Appendix A. Selected Summary Spider Graphs of Development and School Attendance Indicators.







Appendix B. Correlation Matrices for 9 Countries and All Countries Together.

** - correlation significant at the 0.01 level (2-tailed); * - correlation significant at the 0.05 level (2-tailed).

All Countries

	safe Water	Mass Media	Health Care	Female Literacy
Female NAR	.47**	.41**	.74**	.50**
Safe Water		.77**	.62**	.69**
Mass Media			.62**	.58**
Health Care				.70**

Ghana

	Safe Water	Mass Media	Health Care	Female Literacy
Female NAR	.56*	.48*	.61**	.87**
Safe Water		.73**	.80**	.65**
Mass Media			.80**	.60**
Health Care				.82**

Bangladesh

	Safe Water	Mass Media	Health Care	Female Literacy
Female NAR	-.15	-.13	-.01	.46
Safe Water		.80**	.75**	.59*
Mass Media			.97**	.78**
Health Care				.74**

Guatemala

	Safe Water	Mass Media	Health Care	Female Literacy
Female NAR	.34	.57*	.52*	.58*
Safe Water		.33	.27	.25
Mass Media			.91**	.91**
Health Care				.86**

Egypt

	Safe Water	Mass Media	Health Care	Female Literacy
Female NAR	.93**	.98**	.79*	.80*
Safe Water		.94**	.87*	.89**
Mass Media			.87*	.81*
Health Care				.90**

Guinea

	Safe Water	Mass Media	Health Care	Female Literacy
Female NAR	.75*	.78*	.88**	.90**
Safe Water		.79*	.89**	.90**
Mass Media			.91**	.91**
Health Care				.95**

Malawi

	Safe Water	Mass Media	Health Care	Female Literacy
Female NAR	.57**	.61**	.63**	.85**
Safe Water		.88**	.84**	.71**
Mass Media			.85**	.72**
Health Care				.76**

Nicaragua

	Safe Water	Mass Media	Health Care	Female Literacy
Female NAR	.78**	.66**	.90**	.93**
Safe Water		.73**	.84**	.84**
Mass Media			.74**	.75**
Health Care				.96**

Uganda

	Safe Water	Mass Media	Health Care	Female Literacy
Female NAR	.70	.85**	.73*	.87**
Safe Water		.83*	.78*	.77*
Mass Media			.86**	.96**
Health Care				.76*

Zambia

	Safe Water	Mass Media	Health Care	Female Literacy
Female NAR	.78**	.75**	.79**	.82**
Safe Water		.92**	.90**	.89**
Mass Media			.83**	.84**
Health Care				.89**

Appendix C. Calculation of the Development Index

Performance in each dimension is expressed as a value between 0 and 1 by applying the following general formula: Dimension Index = (actual value – minimum value)/(maximum value – minimum value). Since there is only one indicator for each development dimension, the dimension index is the same as the indicator value.

The weight of each indicator (see the following table) is obtained by using unweighted least-squares factor analysis and varimax method for rotation through SPSS Version 12 (Tabachnick & Fidell 2001).

	Factor
	1
Access to safe water	.871
Access to mass media	.807
Female literacy rate	.780
Women's access to healthcare facilities	.799

The Development Index is then calculated as an average of the weighted indicator values. It is expressed as a value between 0 and 0.8 which is the average of the weights.

Take rural Managua of Nicaragua as an example.

Access to safe water = 0.82

Access to mass media = 0.84

Female literacy = 0.86

Women's access to healthcare facilities = 0.87

Development Index = $(0.82 \cdot 0.871 + 0.84 \cdot 0.807 + 0.86 \cdot 0.78 + 0.87 \cdot 0.799) / 4 = 0.69$

USING PARTICIPATORY RESEARCH AND INFORMED DIALOGUE TO INFLUENCE EDUCATION POLICY: LESSONS FROM EL SALVADOR

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Citation

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Abstract

From 2002-2005, the United States Agency for International Development in El Salvador worked with the Ministry of Education of El Salvador and other key stakeholders to support a series of participatory assessments and studies that led to changes in education policy. This was carried out as El Salvador was redefining its national education agenda. Different approaches were used in informing the policy formulation process. These included having international researchers persuade policy makers to analyze new policy options to collaborations between researchers and policy makers to construct new knowledge. This paper discusses several approaches to informing education policy dialogue using participatory research, drawing on experiences from El Salvador, and shares lessons learned.

Introduction

Many countries are seeking to improve their education systems to ensure that children acquire the traditional basic skills while many others are actively seeking to develop new competencies for competing in a global market. Changing education systems so that children develop the skills they need is a complex process of planning, persuasion, implementation, monitoring, evaluating, and adjusting and improving interventions usually as part of an education policy reform. Decision-makers who formulate policy need to understand the causes of current problems and design strategies to remedy them. Good ideas are only good if they can be used, however, so stakeholders must embrace the changes. The challenge is to ensure that education reforms include stakeholders from the highest level government officials, to the schools, students and parents who directly benefit from the services and the private sector that employs educated citizens. It is easier to engage the first category of stakeholders than the other two. Yet unless all categories are involved, the process can be self-defeating. To bring about change in an education system means that all stakeholders must change the way they think and do things: the change could be miniscule or enormous.

Good education policy-making therefore requires making informed decisions based on an understanding of the challenges and potential strategies for meeting them as well as ensuring stakeholder buy-in. The first challenge assumes a process whereby policy-makers are informed by research, but more often than not, resources are wasted on a trial and error. The second challenge of involving stakeholders is rarely met as a small group of decision-makers typically make, impose and implement policy decisions on education stakeholders. Neither the rationale for the policy, nor an understanding on how to implement it nor simple agreement with it are always in place. Any of these conditions can thwart implementation.

This paper proposes that when the policy analysis and decision-making process is informed by research findings and involves stakeholders, the education policies developed may better respond to the education development needs of the country. The paper briefly describes several frameworks for informed, participatory policy formulation and discusses some experiences of education policy formulation in El Salvador that use this approach with different degrees of success. It proposes some lessons learned that may be helpful for education policy makers, practitioners, researchers, or anyone involved in educational change.

The Benefits of Participatory Research and Informed Dialogue on Policy Reform

Haddad (1994) defines policy as “an explicit or implicit decision or group of decisions which may set out directives for guiding future decisions, or initiate, sustain or retard action, or guide the implementation of previous decisions.”¹ Policy formulation theory proposes several frameworks for process and defines the main steps as: i) an analysis of the situation and generating and evaluating different policy options; ii) making the policy decision; iii) planning implementation, and iv) monitoring and assessing the results and impact.

Each stage can be carried out in different ways. For example, in the first step, options can be generated and analyzed in terms of the level of participation, the use of information, and the depth of analysis of the situation and the options for change. Reimers and McGinn in *Informed Dialogue* (1997), define policy analysis as a synonym of research: “actions by persons that involve the compilation or organization of observable facts or data, and the arrangement of the data using analytic techniques, and the ability to explain or interpret the data in terms of non-observed concepts or constructs” (p.4). Policy analysis serves “to define problems and identify effective solutions for them...using research results or systematic methods to collect and analyze information for the purpose of generating understanding.” Policy-makers must analyze information from various sources, including results of similar interventions in other contexts, and/or relevant research. However sound policy decisions may also require the point of view of stakeholders which is not always represented in research findings. The point of view of key stakeholders is not the same as developing a shared understanding of a situation, which is important for each stage of the policy process. Stakeholders responsible for the later stages of the process (planning for implementation, implementation, and monitoring and evaluation of the results and impact) must be involved as a shared understanding of the situation emerges. If they are not, their interpretation of causes and solutions may be very different, or they may simply not be persuaded of the need for this policy intervention. A shared understanding of the problem among stakeholder

¹Haddad, W. *The Dynamics of Education Policy Making*, p. 4.

groups raises the likelihood of agreement and shared efforts in the detailed design and implementation of the interventions.

Common Obstacles to Formulating and Implementing Policy Effectively

Informing policy decisions with research while remaining highly participatory are challenges for any decision-making process. Few bureaucracies and/or organizations allow for open dialogue and participation, especially on important policy topics, rather, they are commonly responsive to unforeseen needs, urgencies, and ad hoc demands, instead of pro-active planners. Information is therefore often used to respond to requests or publicize information or to make a programmatic, short-term decision. If research is carried out to inform policy or program decisions, this is rarely systematic. Few bureaucratic cultures are conducive to conducting policy analysis as described in this paper (as the organization, analysis, and interpretation of observable facts or data). Moreover, even if research is used to inform policy-making, this may not be sufficient for implementing policy. A new policy discourse may not change others' ways of making sense of the world unless those people who are directly affected are included in a decision-making process and dialogue.

Policy Formulation using Participation and Research

This paper argues that policy formulation and implementation can be greatly enhanced and more effective if research and stakeholders play a part in it. It supposes that certain principles can apply in almost any context and that a conceptual framework for different ways of using research and participation in policy formulation and to analyze different experiences may therefore be useful.

Reimers and McGinn (*Informed Dialogue*, 1996) describe three models that are relevant here because they can accommodate experiences from El Salvador for the purposes of this discussion and analysis. Each model discussed below differs from model of policy-makers defining policy without research. None of these models is necessarily "better" or more "effective" than another. They are simply different and, depending on the context and factors at play in a given moment, one could be more useful than another.

Persuasion Model

This approach to informing policy decisions assumes that researchers produce knowledge that they use to persuade policy makers to shape policy in a particular way. But, as McGinn and Reimers (2002) suggest, there may be several obstacles: i) policy makers may not be convinced by the researchers' methodology; ii) the availability of research is not sufficient to ensure that policy makers use the research. The proposed solution is marketing, or overcoming obstacles by persuasion: a "carefully crafted sales job that creates the feeling of inclusiveness and co-ownership of the reform process" and, in the best situation, "is inclusive and is in fact co-owned by all the stake-holders, as long as the consultative nature does not extend to the basic choices but creates ownership of the decisions after the fact."²

The Collective Interpretation Model

This model gives priority to the interests of the decision-makers rather than the researchers (McGinn and Reimers, p. 83) who present the data. This model assumes that the policy maker is as able as the researcher to determine the most important information as s/he

²*Informed Dialogue*, p. 81, remark by Luis Crouch.

understands the political context of the policy options. Here, then, policy makers and researchers work together at every different stage; decision makers are the ones to “shape this knowledge by negotiating which topics are important and which bodies of data are more pertinent to inform certain issues” (Reimers, F. and McGinn, N., 1997, p.105). The researcher serves the decision-makers who decides how the research should be used.

Policy-Maker-Driven Research

This model proposes a close relationship between policy-makers and researchers whereby they work together to build their knowledge. It acknowledges the political nature of the policy formulation but optimistically suggests that “more effective ways can be found to merge this process with technical analysis” (Reimers, F. and McGinn, N., p. 108). This model may be ideal for ensuring that research findings continue to be used to inform policy decisions and for strengthening ownership, but it also has its constraints, including the lack of academic training of many policy makers, time and resources.

Experiences of Education Policy Dialogue

The experiences described here took place during 2003-2005 in El Salvador. The 2004 presidential elections had returned the ruling party, ARENA, to power. New ministerial appointments would close a period in which the Ministry of Education (MINED) had been working to implement a ten-year plan (1995-2005) that had been developed shortly after the end of the twelve-year civil war in 1992 to expand access and improve quality. The war had prevented around 20% of the country’s children from going to school, schools were in great disrepair and there were not enough qualified teachers. Several participatory assessments were carried out in 1993 and 1994, by Harvard University, a Salvadoran University (Universidad Centroamericana “José Simeón Cañas, or UCA) and a Salvadoran research organization (Fundación Empresarial para la Educación, or FEPADE)) with financial and technical support from USAID/El Salvador. These assessments were used as the base for discussion with stakeholders from many ideological and societal groups in a series of workshops. An advisory committee was put together to lead the process. Also, meetings were held with the presidential candidates and other top policy decision-makers to discuss findings and recommendations for the education sector. The 10-year education plan took into account many of the recommendations from these participatory assessments. This experience was considered valuable both nationally and internationally, and set a precedent in El Salvador for widespread stakeholder participation in education policy dialogue. The lessons learned include the following: i) dialogue and communication with key stakeholders are essential to overcoming social and cultural barriers to reform; ii) joint research teams including Ministry of Education officials, local NGO specialists, and national academics help build new partnerships and increase ownership of results, and iii) focus groups and roundtable sessions provide valuable feedback to the Ministry of Education about stakeholders’ perceptions and priorities.³

As the Ministry of Education was ending its planning cycle, USAID/El Salvador was also concluding its five-year strategy. During this period of 2003-2005, USAID/El Salvador supported a “bridging” education project, Excellence in the Classroom at the Local Level

³Some of these lessons learned are written up in the Social Development Notes, Note No. 79, March 2003, by Madalene O’Donnell and Parmesh Shah of the Participation and Civic Engagement Group in the World Bank.

(EXCELL), implemented by EQUIP⁴ from June of 2003-June of 2005. This project aimed primarily at making school principals into pedagogical leaders to improve education quality. The project included participatory research and dialogue to inform education policy.

During this same two-year period (2003-2005), USAID/El Salvador was developing a plan for supporting the education sector for 2005-2009. To do this, USAID/El Salvador decided to carry out an assessment of the education system, focusing on pre-school-9th grade (primary education) using some of the same strategies used ten years before.

The context in 2003 was different in many ways than the context ten years previous, yet some factors were similar that made a similar process relevant. While the majority of the education stakeholders agreed that access was the main problem in 1993, ten years later the majority of stakeholders pointed to quality as the main problem. Furthermore, while overall indicators on access, completion, repetition, and drop out had improved greatly, those figures by socioeconomic groups varied greatly, pointing to issues in equity that had not been a policy priority. Polarization between the two ideologies had diminished substantially, yet there were several different influential groups with very different ideas about the best strategies for improving education quality. There had not been evaluations of many of the strategies implemented to improve quality during the previous ten years that would help to identify specific areas for improvement. In sum, while there was a general consensus on the overall problem being quality, there were many different views about the specific policies or interventions required to make a change in quality. The issue of specific policies focused on equity had not been part of the policy dialogue.

Participatory research and informed dialogue shaped education policy decisions although there was often less ongoing collaboration between decision-makers and researchers and more persuasion. Some decision-makers helped to shape the research agenda and constructs to analyze the data, in addition to interpreting the data and formulating recommendations with researchers. At this time there was also a change in government, and the incoming Minister of Education had worked in the education sector as an advisor and researcher. Using information for decision-making was a familiar practice to her, which opened up an opportunity for participatory research and dialogue to inform policy decisions.

Sector Assessment for Basic Education

In 2003, USAID/El Salvador began a process to determine what areas of the education system should be supported in the 2004-2009 strategy. Several criteria were considered, including the 2004-2008 Central America and Mexico Strategy that had previously determined that USAID would focus primarily on Basic Education and complement rather than duplicate the work of other donors in education in the region. Within this, USAID/El Salvador was to work closely with the host government to determine the priority areas for support.

The 1993 participatory assessment supported by USAID/El Salvador had been relatively successful in terms of generating stakeholder participation, support, and national consensus for education priorities. It had also been done before the election and had helped the Ministry of Education to define its priorities and assist USAID in determining how to focus

⁴The American Institutes for Research and the Academy for Education Development were the main partners in this project.

its support. For this reason, USAID/El Salvador, in 2003, decided to carry out a similar process, yet with more limited funding. A (mini) sector assessment would take place only for pre-school/kindergarten through 9th grade.

The assessment team members were international and local education experts, several of whom had also been on the participatory assessment team of 1993.⁵ The team reviewed relevant evaluations, studies, and policy documents, held in-depth interviews and focus groups with stakeholders from the government, NGOs, think tanks, school and community members, teachers, administrators, school principals, and others. A first draft assessment covered pre-school, basic education, inequalities in education, teacher education, decentralization, standards and testing, education finance, and donor coordination. Following the draft, each topic was discussed during a three-day forum to reach a consensus on priorities or goals, for the education sector.

The 200 forum participants included decision-makers and stakeholders from the MINED, Salvadoran public and private universities, local NGOs and think tanks, donor organizations, teachers, principals, students, and parents. Participants were encouraged to sign up for specific sessions before which they were to read 25-page assessment chapters. A facilitator led the discussions and tied the assessment findings into the discussion as much as possible.

The first round table session held was with a select group of influential decision-makers who are out-spoken on education policy. A second session was then held for each thematic area of the assessment: Equity in Education Opportunities, Teacher Education, Curriculum and Standards, Decentralization and School Autonomy, and Education Finance. As the World Bank had carried out an assessment of Secondary Education, its researchers held a session on Secondary Education as part of the series. Sessions consisted in half an hour presentation of the main findings after which five to ten-person subgroups were organized. A facilitator from each group used a problem tree as a conceptual and visual tool for orienting the discussion and getting concrete results. The problem and its cause were defined clearly and possible solutions proposed so far as possible. Extensive dialogue led the different groups to build upon the findings in the assessment, enrich the analysis and provide viable interventions to improve policies and programs. For example, a discussion of decentralization led one group to determine that EDUCO⁶ had initially been designed to address educational access and quality but had then become simply a modality for hiring teachers. The recommendation for the future education plan was to revive the quality components of EDUCO.

In addition to the roundtable sessions, each participant received a questionnaire designed to gather opinions on policy priorities. Participants were asked to rate interventions (on a scale from 1-100) in terms of their probable effect on improving education quality (or more

⁵Fernando Reimers (International advisor, also the main advisor in 1993), Richard Kraft (international), Ernesto Schiefelbein (an international expert also from the 1993 team), Renan Rapalo (international), Jose Luis Guzman (national expert from the 1993 team) and Anabella de Palomo (national expert).

⁶An internationally recognized "program" implemented by the Salvadoran Ministry of Education beginning in 1993 titled Education with Participation of the Community (EDUCO). The program was aimed at expanding access and improving teacher performance by delegating the hiring and firing of teachers to the community.

specifically, student learning) and the viability of its implementation. Some of the most highly-rated results included: i) training pre-school teacher to support reading and writing; ii) increasing the provision of books and stories to classrooms; iii) expand pre-school to incorporate the poorest children, and iv) assign the best teachers to first grade. Each intervention has been adopted as part of the education plan developed in 2005.

Two issues highlighted in the assessments findings became part of the education policy dialogue and priorities in the new education plan: expanding educational opportunities to the poorest sectors and ensuring that all primary school children become numerate and literate. Several factors helped to generate support for these decisions. First, data was gathered on educational access and repetition and analyzed by socio-economic groups, pointing to inequities. Data on reading and writing was also gathered by national test scores and in classrooms, which highlighted the lack of capacity of most third graders to read and write even at a basic level. These findings were highlighted in the main forum presentation and in each of the roundtable sessions. Furthermore, the international experts on the team met with some high-level decision makers and influential stakeholders for in-depth discussions on these problems and policy options that have been used internationally and/or were considered potentially effective. An interview with one international expert on these topics was published in one of the main newspapers. All of these actions involved persuasion and “selling” ideas and contributed to informing public opinion and generating support.

Several lessons can be drawn from the public forum and roundtables to improve this process in the future.⁷ Education stakeholders commented that this process generated more awareness and facilitated a dialogue. Making information available prior to the sessions was essential, as was having facilitators focus the discussions and work towards a consensus. However, lack of diversity among participants was a drawback. Politically motivated during the pre-election period, the MINED was careful and concerned that findings and discussions could be manipulated for political purposes. Teacher union members, representation of traditionally confrontational or opposing non-government organizations, or political party representatives were not involved in the process, which necessarily limited the diversity of the views, the variety of interpretations and the buy-in from stakeholder groups.

The timing was both a limitation and an opportunity. Findings were shared while a new government was running for election. The new ideas were therefore available to be incorporated into the next national education agenda. Given the election, the administration had different priorities. Researchers did meet with the highest officials and integrate their concerns into the research agenda for the assessment, which helped to ensure a certain degree of support from these decision-makers. Lastly, this was not an isolated process. The suggestions for further research generated in the sessions became the major input for the research agenda to be carried out under USAID/El Salvador’s basic education project (see next section). This provided an opportunity to do further research on key topics and strengthen the arguments and solidity of the interventions in specific issues. Another important outcome was the decision to hold a seminar at the Harvard Graduate School of Education with the key education policy makers. This had been done ten years before and had been useful for developing a bond and consensus in this group and giving them an opportunity to enrich the policy analysis process with research findings and have the time and

⁷Some of the lessons learned mentioned here are from a write up carried out by consultant Teresa Campos, through a task order with Creative Associates.

space for analyzing the options together. The seminar did take place a year later, in December, 2004.

One of the most important outcomes of this participatory assessment was that it led to a more encompassing sector-wide assessment that involved the major donors and local think tanks and NGOs. The Minister of Education who was to finish his term in May of 2004, wanted an assessment of all aspects of the education system, for which he requested support from other donors (the main one being the World Bank that was carrying out an assessment of secondary education) to integrate the assessments, the studies and the evaluations into one complete sector assessment. USAID/El Salvador and the World Bank provided support for two international consultants and funding to local NGOs and think tanks for this process. During the last month of the administration's mandate, discussion sessions were held in order to provide feedback to the findings. When the newly-appointed Minister took her position, she and her team decided to use the "Integrated Sector Assessment" as one of the main inputs for their new 16-year strategic education plan, Plan 2021, highlighting sector-wide policy priorities from early childhood education to higher education.

These assessments were carried out in a moment of transition, primarily of the Salvadoran government, but also for USAID and other donors support to the education sector. This made it more challenging to maintain ongoing discussion between researchers and policy makers (as in the "policy-maker-driven research" model). There were, however, opportunities to provide decision-makers with research findings and persuade them towards policy options based on these findings, such as specific interventions for improving quality and equity, as well as to generate public support for these policy issues.

Participatory Research and Informed Policy Dialogue under the USAID/El Salvador Basic Education Project

The participatory education assessment helped to identify areas that required further research. The participatory research component of EXCELL was designed to inform education policy dialogue. Six studies were planned to take place in a two-year period although the study topics were not predefined: the research agenda was to be defined jointly with key education stakeholders. For this reason, the list developed as part of the roundtable sessions was used as an initial input. Shortly after this agenda was developed, a "research committee" was formed including MINED personnel from the Research, Monitoring, and Evaluation Unit, Planning Unit, and others, EXCELL researchers and members of the USAID/El Salvador Education unit. Other stages of the research had much more broadly-based participation, but the committee established to define the research objectives, methodology, constructs, and data was limited, and included personnel that contribute directly to shaping policy decisions. This research was carried out under one administration (before the new Minister was appointed in June of 2004) which allowed for continuity on ongoing dialogue and collaboration. Much of this was done using "negotiation" and "policy-maker-driven" approaches.

Studies to Inform Public Dialogue

The first study carried out as part of the research agenda addressed equity in education opportunities. While gender inequity in terms of access and education outcomes is not a

marked problem,⁸ socioeconomic inequities are clear in national indicators broken down by income groups. The “roundtable” sessions had made it clear that a better understanding of the causes of inequities in access and education outcomes was needed, but the committee did not share a clear consensus about this research. Several MINED personnel voiced the opinion that sufficient research had been done on poverty and its effects on education opportunity, and that there was no more to learn on this topic that could inform policy decisions. After much discussion and dialogue, the committee agreed to do a study on education and human development, or how education contributes to improving human development at a micro-level. Terms of reference were agreed upon in the committee, and an international researcher hired to work with the Ministry of Education (MINED) personnel and the local researcher (from EXCELL). At that point, more specific objectives were developed aimed at examining differences in education inputs (mainly resources) and education outcomes (school completion and achievement). The international researcher, local researcher, and MINED personnel worked collaboratively to provide/organize the data. The researchers did the analysis but discussed it with the MINED personnel. Findings evidenced regressive spending to the poorest children (i.e. less poor children receive more public resources, especially when human resources, or teacher quality, is taken into account). Other findings addressed socio-economic and family (education) disadvantages to achieving the same education outcomes given the same inputs.

A public forum was held to discuss these findings at which Mexican researcher was invited to discuss how similar findings in Mexico led the government to implement compensatory programs, or programs focusing more resources and additional support to the poorest children. The Salvadoran Minister of Education spoke about the MINED’s plans to improve education opportunities. Working groups were formed and discussed the study’s findings and commentaries and suggested policy and program interventions to improve equity of education opportunities.

At that time, the government had announced a Presidential Commission to give inputs for Plan 2021, which consisted of influential business leaders and intellectuals. A special meeting was held to present the study to this group, which led to in-depth discussion of these problems and potential solutions.

Several lessons learned in this process may help inform similar processes. One of these has to do with the introduction of new ideas. Previous education policy dialogues in El Salvador had not examined inputs and outputs that improve the quality of education opportunity. International researchers introduced the constructs for analyzing the equality of opportunity by persuasion. Once persuaded, all stakeholders became engaged in the analysis. Another important lesson learned concerns the presentation of the information. The first draft of the study, that used advanced statistical methods, was incomprehensible to most members of the research committee, decision-makers and stakeholders. The international researcher was asked to make the study much more accessible and, ultimately, more influential.

This led to a new understanding of equality of education opportunity in the policy dialogue. It was also successful in terms of getting this issue on the new education agenda as a priority

⁸Gender inequality in education in El Salvador tends to be revealed more by qualitative research, such as differential treatment in the classroom, yet is not reflected in national indicators.

and generated support from important allies such as the members of the Presidential Commission that would continue to emphasize it and help to generate solutions.

The two most challenging aspects of this process were sustainability of the local technical skills to do this type of analysis and of an ongoing discussion with stakeholders to implement interventions to improve the equality of education opportunities. This could have been remedied in part by involving a local NGO, think tank, or university from the outset of the process.

Studies to Inform Private Dialogue

International researchers used elements of the persuasion model in their work, but other studies drew more upon the collective interpretation and policy-maker-driven models. The first of these studies was about the uses and needs of information to improve education quality. The idea for this study arose from a discussion with the research committee that included members of the MINED Planning Unit and Research, Monitoring, and Evaluation unit interested in looking at how research was being collected and used at different levels of the education system. The discussion of the concerns and goals of these officials shaped the study design. As data was collected and analyzed, the members of the research committee helped interpret the findings. The findings illuminated ways to improve information collection and use, some of which involved structural changes. The choice of the MINED staff was to discuss this document internally first with staff members from their units, and to make recommendations to higher-level MINED officials. This instigated a process of reflecting upon the use of information which led in turn to carrying out more extensive assessments and eventually to moving towards structural changes.

The second study, which focused on how the MINED was addressing Special Needs Education, was also driven by policy-maker interests. It served to clarify concepts and to identify strengths and limitations in its implementation at the policy and classroom levels. A teacher guide to help identify and work with special needs children grew out of this, and was distributed to a large number of schools. This study did not lead to a public debate on special education or to any policy changes, however.

Finally, near the end of the basic education project, a descriptive study was carried out to identify the main characteristics of teachers using primarily qualitative research methods in which MINED staff and local researchers had not been trained. The aim was to analyze national level quantitative data on teachers and to complement this with focus groups, questionnaires, and in-depth interviews to understand teachers' motivations, interests, limitations, and goals. Again, MINED personnel and decision-makers were the principal shapers of the research. MINED staff were then trained in qualitative research methods and participated in recollecting, processing, and analyzing the data. The study led to the first draft of a document used for stimulating discussion about teacher education policy among an elite group of education stakeholders.⁹

Since USAID/El Salvador's education activity was coming to a close shortly after this initial forum, a local education think-tank was charged with improving the study based by sharing it with specialists in the field for feedback as well as generating further policy dialogue.

⁹MINED officials decided not to disseminate the study as it was controversial and had not been entirely vetted by MINED officials.

However, it is uncertain whether they will meet this challenge for want of resources and ownership since they were brought in at the end phase of the process.

Each of the three studies involved researchers and policy makers in the design and interpretation of findings to generate policy options. Different factors influenced the degree to which persuasion, negotiation, or collective construction was used at each phase of the research and policy analysis process. These cases seem to demonstrate that the more policy-maker involvement there is there is also more uncertainty about the research being used for policy decisions. Because of the buy in, however, the effects of these more collaborative models may be seen in the longer term, rather the more immediate effects of the persuasion model. In all of the cases, the participatory research and dialogue on constructs and findings contributed to identifying new priorities and options for policy decisions. To help ensure the usefulness of the finding, more attention should be given to sustainability or the follow up on the studies' use.

Harvard Seminar to Inform Plan 2021

The experiences described above address the ways that participatory research influences education policy. The following discussion focuses on using information that policy makers themselves seek to inform the process of designing policy.

In this case, the policy-makers included the Minister and staff engaged in developing a 16-year strategic education plan. While some policy directions had already been defined, many tasks remained, such as clearly defining goals and benchmarks and concrete programs and interventions for meeting the goals. In addition, although policy directions were somewhat clear, more definition was needed on the areas to emphasize, for example the grade at which to begin interventions.

The idea for this seminar had emerged from the roundtable with high-level education stakeholders in the participatory sector assessment carried out one year earlier. USAID/El Salvador financed about 15 people to attend a four-day seminar at Harvard Graduate School of Education. The planning process for the seminar involved several discussions between the Minister of Education and other top-level officials, members of USAID/El Salvador, and Harvard Graduate School of Education faculty. An agenda was developed based on Ministry interests and organized into three main areas: i) poverty and equity; ii) competitiveness; iii) standards, evaluation, and indicators to monitor Plan 2021, and, iv) long-term planning. Harvard Professors and other experts and practitioners were scheduled to discuss international research findings and policy implications for these topics. Several weeks before the seminar, the members of the group¹⁰ received readings provided by the speakers and were asked to send questions that they wanted to have addressed in the sessions. Questions ranged from *what should be taken into account for pre-service teacher education* to *how a school for developing citizenship can be developed in El Salvador*. Planning sessions were also built into the seminar to work specifically on the education plan.

During the seminar, several tools were used to focus the discussion and build consensus. For example, the group collectively defined the criteria that should guide education policy and

¹⁰The group included the Minister and Vice Minister of Education, the National Directors, members of the Presidential Commission for Education, and representatives of important NGOs and think tanks that work in the education sector.

then defined several long-term and short-term education priorities, as well as questions to think about in trying to make policy decisions on these priorities. For example, a long-term priority was to assure that all children have eleven years of schooling. The questions included the viability of this priority considering current secondary school enrolments and whether it would be better to focus on alternative modalities for schooling or only on traditional schooling. Also, in terms of introducing English as a second language, questions arose about the best time to introduce this in schooling. These questions were used as a basis for discussion in sessions with Harvard faculty and other specialists and in the planning sessions.

Another tool was a survey for participants to determine the relative importance of different interventions and how they related to short-term priorities. The results of this survey were processed and presented to the group and discussed. The participants also visited a number of schools and organizations in the area, including: a pilot school for children of poor families that sought to develop early literacy and interpersonal/civic skills from a young age; an organization working in civic education; a pre-service teacher education university, and a special project for technology in education at Massachusetts Institute for Technology.

The seminar was considered one of the four principal inputs that contributed to developing the new 16-year strategic education plan, Plan 2021.¹¹ Certain policies and programs in Plan 2021 were informed by research findings and international experience and by considering the different perspectives represented in the seminar group. Another, unplanned, outcome of the seminar was the creation of relationships and trust in the group that would lead to ongoing communication and coordination as this new strategic plan was implemented. Some seminar members were charged with monitoring the implementation of Plan 2021.

In this case, policy-makers' interests defined the agenda. The positive outcome was that policy issues were thought through, which included questioning assumptions and redefining priorities in some cases. Yet, as mentioned in the discussion of the models, constraints in both time and resources limited the degree to which the policy making process could benefit from this seminar. Due to time constraints of these stakeholders/policy-makers there was little opportunity for preparation, such as readings and discussions among this group prior to the seminar. Furthermore, due to limitations in time and resources, the seminar was only three days, which didn't give adequate time to cover all the priority issues in depth. While the policy-makers did have more ownership over the process than in the other approaches, the time and resource constraints turned out to be limiting factors.

Lessons Learned and Recommendations

- There are various ways to inform policy decision-making using dialogue and research. Timing and circumstances contribute a great deal to this. Elements of any of the models that have been discussed may be useful at different stages of the process, and the political context is a key factor that can create limitations and opportunities. To identify opportunities and overcome limitations, a careful analysis can be carried out prior to initiating participatory research and dialogue on policy issues in order to understand the internal dynamics of the decision-making process and identify both allies and opponents (Grindle, M. 2000).

¹¹The other three inputs were the Integrated Assessment, a consultation process carried out at a national level, and the Millennium Challenge Account Goals.

- The role of the external researcher should be carefully determined on the basis of timing and context. Each of the models discussed in this paper give the external researcher a role to play, whether to introduce new concepts or constructs, participate in shaping research designs, helping to use specialized research methods to process information and interpret results, contributing to developing national capacity, or exchanging points of view based on his/her experience. The role should be carefully analyzed and defined at the outset.
- Tools are valuable for focusing discussions and for collectively constructing knowledge and building consensus. Tools could involve surveys, facilitated discussions, problem trees, frameworks, or any other means of leading a discussion toward the understanding of complex situations. For example, instruments that lay out policy options and gauge potential effectiveness and viability can help to focus discussion and generate consensus. Also, making complex research methodologies and findings comprehensible to laypersons can make valuable information much more effective for informing policy decisions.
- Paradigms change slowly and often require a process in which people critically reflect on their existing assumptions (Boggino, N. and Rosekrans, K. 2004). The process can be incremental or stimulate people to call their existing assumptions into question. It is helpful to have divergent perspectives represented to provoke the validity of deeply-held assumptions. The context may limit this: timing and using tactics to steer away from ideological discussions and center on common views must be kept in mind. Moreover, this is a reiterative process of dialogue and collective construction of knowledge, systematization of decisions, and more collective construction. Project cycles, political cycles, and resource constraints can all be limitations in this regard. Finally, paradigms can limit research design but dialogue can help to change the paradigms regarding research priorities.
- Education systems change slowly and require a complex process of planning and implementation. The challenges facing education systems currently require new knowledge about policy priorities and effective interventions for making the desired changes. The degree to which this knowledge can be created and shared collectively may make the difference in how this knowledge translates into new educational practices.

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THE GIRLS' STIPEND PROGRAM IN BANGLADESH

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Abstract

The Female Stipend Program (FSP) was created in 1982 in Bangladesh to help increase the enrolment and retention of girls in secondary schools. Implemented initially in six areas only, the program was so successful that it was extended in 1994. This paper, based on a desk study of the FSP for the Bangladesh office of the Department for International Development to evaluate the program's effects, is particularly pertinent for other developing countries seeking to support girls' education as part of the effort to meet EFA and Millennium Development Goals.

Introduction

Since its independence, Bangladesh has addressed girls' education primarily as a means of readying girls for "enlightened motherhood." (Chanana, 1994) or to enter professions thought to be suited to women. The 1974 Quadrat-e-Khuda Education Commission Report asserted that 'women's education should be such as to be of help to them in their domestic life', and stressed that subjects such as 'child-care, the nursing of the sick, preservation of health, food and nutrition' must be included. It also suggested channeling girls into 'vocations specially suitable to them' such as primary teaching, nursing, and typing (Jalaluddin & Chowdhury, 1997:290).

The Female Stipend Program (FSP), by contrast, sought to help keep adolescent girls in secondary school to delay their marriage and motherhood. This strategy was a response to the growing population, estimated at between 123.3 million (BANBEIS, 2003, citing the 2001 population census) and 144.3 million (CIA, 2006) that makes Bangladesh the most densely-populated country in the world (Wikipedia, 2005). The FSP was designed in response to population literature suggesting that secondary education would delay marriage, increase the use of contraceptives and reduce fertility (Herz, 1991; Shahidur R Khandker & Samad, 1996; Thein, Kabir, & Islam, 1988; World Bank, 1993). Access to secondary education would thus provide some form of fertility or population control to a specific age-group. The use of stipends seemed like a logical strategy because poverty appeared to be a major obstacle to access. When, in 1990, girls' secondary education was made free up to Class 8 in rural areas and enrolments increased, this strategy seemed justified.

The Female Stipend Program

The pilot FSP yielded positive results: girls' secondary enrolments increased from an average of 7.9% to 14% in some project areas and dropout rates fell from 14.7% to 3.5% (Haq & Haq, 1998:93). This success of the pilot projects was the basis for launching the nationwide FSP in 1994, planned initially to last for five years, and which was funded by various donors and the government in projects that covered the nation. Under the program, all girls in rural areas who enter secondary

school – about 50% of possible enrolments – are eligible for a monthly sum ranging from Taka 25 in Class 6 to Taka 60 in Class 10 (between US\$0.37– \$0.88 in July 2006). Girls receive additional payments in Class 9 for new books and in Class 10 for exam fees. The conditions were a minimum of 75% attendance rate, at least a 45% score in annual school exams, and staying unmarried until sitting for the Secondary School Certificate (SSC) or turning 18. The three criteria have remained constant during the lifetime of the FSP.

Evolving Objectives

FSP objectives have shifted in line with changes in the social/political environment, in development policies and in general understanding. (BMoE, 2004; Raynor, 2000). The priorities have remained higher secondary enrolment and retention, indirectly linked to fertility control, delayed marriage, and population reduction. The objectives changed in the 1990s to include income generation/employment, both of which are also linked to delayed marriage and reduced fertility. The underlying assumption was that families would be in less of a hurry to ‘marry off’ daughters who contributed to the family income. Similarly, the assumption was that women with higher status linked to income possibilities would be more involved in decision-making, which can be linked to fertility control. For example, a woman with higher status is more likely to be able to influence her husband in matters such as contraception. The term ‘empowerment’ appears in documents late in the program, and only in some components, and appears to be accorded a low priority.

Strengths and Weaknesses

Neither the overall FSP nor any single aspect of it can be regarded as an unqualified success or a total failure. What follows is a review of the program as a whole and then of specific objectives, assessing in turn strengths and weaknesses. It should be noted that credible evidence of large-scale impact exists only for the first objective in the list.

The FSP is seen nationally and internationally as a success. Many reports, particularly in the media, however, are limited to enrolment rates, even if the word ‘enrolment’ is not mentioned. This can unduly credit the program with more success than is the reality. Recent examples include reports from the World Bank sponsored micro-credit conference in Shanghai in April 2004, and the Global Monitoring Reports (World Bank, 2004, 2005) in which Bangladesh is held up as a model for the rest of the world. Such coverage encourages the unexamined assumption that ‘stipends’ can resolve a host of education, gender and development problems.

More critical analyses of the FSP have emerged. Abadzi (World Bank, 2003) and Mahmud (2003), for example, acknowledge the considerable move towards gender parity of enrolment at secondary level and strong community support for the program, but criticize education quality, equality and sustainability, and see the program as primarily ‘a political decision to consolidate popular support’ which is justified in terms of ‘social justice’ and gender equity (Mahmud, p.12). Mahmud also notes the shifting emphasis from closing the gender gap in the early stages to improving quality and financial sustainability in the ‘second-generation projects’. However, she is particularly critical of one project that she sees as continuing to emphasize access: “Quality considerations do not appear to be on the forefront of government concerns in the secondary education sector at this stage” (p.6).

Abadzi comments (p.15) that one project received a World Bank award for excellence in girls’ education in 2000, and notes that few projects have received such acclaim and publicity. The FSP ‘was an innovative project, first of its kind in many ways, which received overwhelming support from both the government and society at large’, but she notes that the dual objective of increased enrolment and assistance in passing examinations was only partly achieved. While enrolment increased, girls “...received little if any instructional support. Aside from general upazilla targeting, [there have been] no special activities to help very poor girls stay in school once they enroll. Fewer than a third of students entering grade 10 learn the required material and pass the school leaving examinations, about 30 percent fewer than the national average. Without satisfactory learning

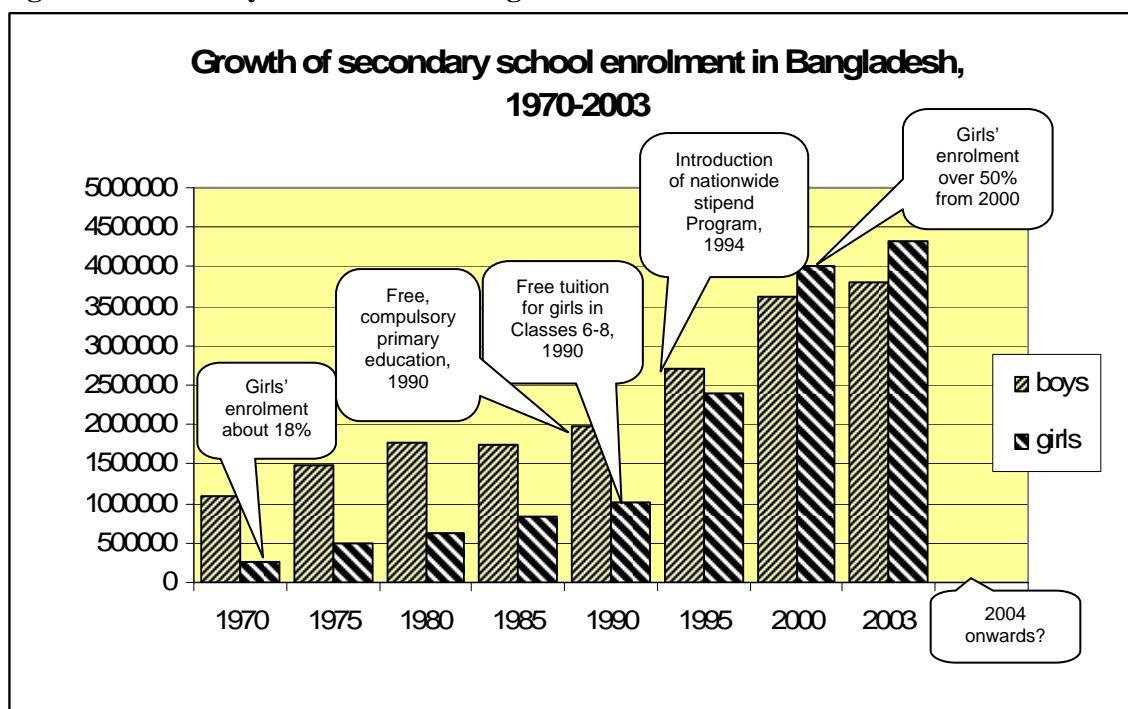
outcomes, the girls cannot become teachers or get employment that will significantly empower them and alleviate their poverty. Thus, project outcome is rated **moderately satisfactory.**" [emphasis added].

Objective 1: Enrolment and Retention Parity

The FSP has been undeniably successful in increasing secondary enrolment and retention, as a host of studies has documented. One of the best-researched studies on the impact of the FSP on enrolment used the fact that the program was introduced at different times in different areas and to all class cohorts. This study focused on one project with more easily available and accessible data. The authors found that the FSP increased girls' enrolment 'substantially' (Shahidur R. Khandker, Pitt, & Fuwa, 2003). Other FSP projects report similar increases suggesting that it is reasonable to generalize the findings across the whole Program.

Most recent figures indicate that girls' enrolment – primary and secondary – is now about equal to that of boys. UNDP (2005) figures show that girls' net primary enrolment had risen to nearly 86% by 2002/3 compared to 48% in 1996 (BANBEIS, 1999). It gives the secondary Gross Enrolment Rate as 45% for boys and 47% for girls. If the figures are correct, Bangladesh has succeeded in providing equal access to girls at primary and secondary level; many writers in part attribute the increase in girls' enrolment in primary school to the FSP (Muzaffer Ahmed & Ahmed, 2002; Chowdhury, Choudhury, & Nath, 1999; e.g. Herz, 1991).

Figure 1. Secondary Enrolment in Bangladesh 1970-2003

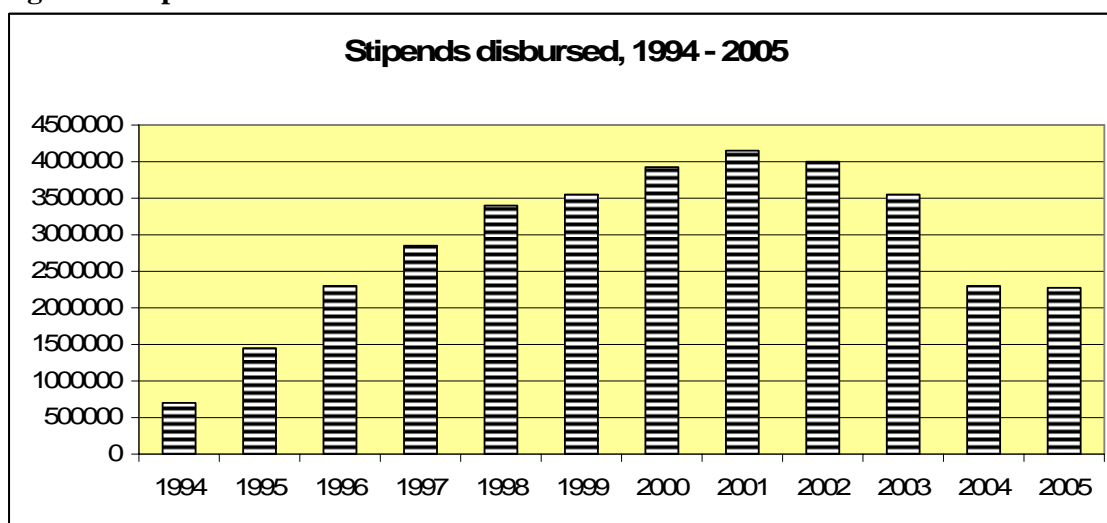


Source: BANBEIS, 2002, 2005.

Figure 1 gives a breakdown of secondary enrolment by gender since 1970, with significant increases in girls' enrolment since the introduction of the FSP. Boys' enrolments have also increased, perhaps in part because of the FSP (Working Party on Gender Equality, 1999). It should also be noted that the increased girls' enrolment cannot be ascribed to a single education initiative, as FSP is one of many in Bangladesh. Other factors may have influenced enrolment. Abadzi suggests that after the introduction of free tuition in 1990, increases in secondary enrolments, 'may also be due to the free tuition for girls in grades 6-8 established in 1990' (p.10). However, the effects of free tuition and stipends are 'inextricable' at this point, indicating the need for more research. The leap in girls' enrolments in 1995 does provide strong evidence of the impact of FSP.

At the time of writing, 2003 was the most recent year for which data was available. The 2003 figures are for enrolments at the beginning of the year, and do not give an indication of how many girls actually completed the year. A tightening-up on the awarding of stipends began in earnest in mid-2003, during the second installment period. By 2005, the numbers of girls receiving stipends had dropped by at least a third (see Figure 2) due largely to greater monitoring of disbursements. The effect of the drop in the number of beneficiaries on overall enrolment is yet to be seen, but a study conducted in early 2005 indicated a significant drop in girls' secondary enrolment in the study area as a result of the cutback on stipends (Thornton, Haq, Huda, & Munsura, 2005). This is worrying for girls' secondary enrolments and could affect primary enrolments if parents feel that there is little chance that their daughters will get the secondary stipend.

Figure 2. Stipends Disbursed 1994-2005



Sources: BANBEIS 1998, 1999, 2001, 2005; DSHE 2006; FESP 2004; FSSAP 1999, 2004; Mahmud 2003; World Bank 2003.

Objective 2: Delayed Marriage and Fertility Control

The linked objectives of delayed marriage and fertility control are addressed together in this section. These objectives have moved down the objectives list in more recent years, and even disappeared from some project documents despite the high prevalence of child marriage.

There may be some evidence of limited positive impact on delaying marriage. A survey conducted mid-term in one project cycle indicates that 9.3% of stipend girls left school to get married, a drop from 12.3% in 1994 (World Bank, 1997). More recently, a major study focusing on secondary education generally gives a figure of 8.8% in rural areas (Manzoor Ahmed, Nath, Hossain, & Kalam, 2006:62). Abadzi concludes that this effect is 'unknown and hard to estimate', and that the number of *recorded* dropouts due to early marriage is almost zero. She points out that the number of girls benefiting from possible FSP-related delayed marriage is probably rather low, because only girls who graduate from primary school are eligible for the secondary stipend, so many remain at risk of early marriage. Girls in secondary school include urban middle class girls who are not generally married early (World Bank, 2003). Mahmud comments that pressure for early marriage remains a powerful force (Mahmud, 2003).

Even if FSP only affects early marriage of girls enrolled in rural secondary schools, their number is substantially higher now than before the FSP started. It seems that generally, while girls remain in school, they are still unmarried. Evidence from recent impact studies (Nari Uddug Kendra, 2003; Pathmark Associates Limited, 2001a; 2001b) suggest that delayed marriage is seen as a positive outcome of the program but it is almost impossible to get accurate data on marriage age in Bangladesh, partly because of low birth and marriage registration rates, and partly because guardians are tempted to lie when they marry their under-age daughters off illegally (the legal age of Girls' Stipend Program in Bangladesh

marriage for girls is 18; for boys, 21). It seems reasonably safe, however, to believe that the FSP has helped delay child marriage for some girls for a few years at least. Set against this, however, the International Centre for Research on Women's Demographic Health Survey 1996-2001 lists Bangladesh as having the second highest rate of child marriage, with an estimated 75% of girls marrying before the age of 18 (ICRW, 2003).¹

The impact of FSP on fertility control is even more difficult to assess. While it may have left the top of the FSP agenda, it has re-emerged in at least one recently-started education project, 'Raising the age of marriage for young girls in Bangladesh' (Pathfinder International, 2004). The report claims that 'the experience of Bangladesh in recent decades has demonstrated the enormous role that education can play in reducing fertility' (p.1), although that claim is not substantiated. The project only started in 2003, so it too early to assess its impact.

It may also be too early to determine whether the FSP has had a substantial impact on controlling population growth. The pilot phases were too small to have had a significant impact on national fertility figures, and those girls who joined the program from 1994 onwards are not yet old enough to have 'completed' their families. Many will not yet have had their first child. But if a drop in fertility rates is noted, they cannot be attributed to the FSP alone as there are so many other initiatives in health and family planning.

Objective 3: Employment /Income Generation

In the 1990s, the focus of the FSP started to shift from fertility control to improving girls' chances of engaging in income-generating activities or taking up formal employment, both of which were linked to poverty alleviation. And linked to that, of course, is the assumption that employment could help delay marriage and reduce fertility. The stated paid employment targets include self-employment, primary and secondary school teaching, agricultural extension agents, health and family planning workers, NGO field workers, etc. (World Bank, 1993:10). One FSP project also made provision for skills training to enable girls who left school to acquire some of the skills needed for setting up their own small-scale businesses.

There is evidence that young women are now entering the formal employment sector in large numbers, but how much of this can be directly attributed to the FSP is questionable. One of the most significant developments in Bangladesh in the last decade or so has been the expansion of the Ready Made Garments industry, which relies heavily on the willingness of women to work long hours for very low pay. This has brought about a revolution of sorts, with large numbers of women leaving home to work in these factories. However, the factories now ask for SSC-qualified workers whereas formerly completion of Class 5 would have sufficed.

Objective 4: Equality /Empowerment

The concepts of 'equality' or 'empowerment' have only recently appeared in project objectives, but there is (limited) evidence that education has had some positive impact on increasing the empowerment of women and girls. This has arisen not through any overt attempt to deal with inequalities in the educational processes (such as curriculum and classroom methodology) but indirectly by increasing girls' confidence in themselves as they see themselves 'being educated', and enhancing their status in the community for the same reason.

Various FSP objectives can be grouped together under an 'empowerment' umbrella, even if an objective such as 'to give the awardees a greater say in decision-making in the family' (Mustafa, Howlader, Chowdhury, & Islam, 1990:7) was linked to their ability to make choices about contraception, and thus reduced fertility. In this section, we take into account those stated FSP objectives that deal with such things as 'enhanced status', 'increased mobility' 'decision-making', 'socio-economic development' and 'further education', all of which could lead to greater

¹The Bangladesh Bureau of Statistics gives 47% (cited in UNESCO Bangkok, 2003) Girls' Stipend Program in Bangladesh

empowerment or equality of women, even if this is not or has not been an explicit objective of the Program.

Little impact can be discerned when using internationally accepted measures. In 2003, the UNDP Human Development Report showed Bangladesh just squeezing into the 'medium development' category for the first time ever, with a general Human Development Index (HDI) ranking of 139 out of 175 countries. In 2005, Bangladesh ranked 139 out of 177 countries. The Gender Development Indicator (GDI) is about on a par with the HDI, that is, the GDI and the HDI appear to be following the same positive development trends. The Bangladesh GDI ranking is buoyed up by its educational parity of enrolment rate, which is one of the four main indicators. This apparently positive overall trend does not reflect the fact that women and girls in Bangladesh are still right at the bottom of the 'low development' category in terms of empowerment. On the 2005 Gender Empowerment Measure (GEM), Bangladesh ranked 79 out of 80 countries (UNDP 2003, 2005). The GEM includes measures of women's participation in high-level decision-making, their inclusion in professional and technical areas, and their earnings as a percentage of men's. This ranking shows that women's development is not in line with overall human development in Bangladesh; it also indicates that as yet the FSP has contributed very little in terms of empowerment.

While Bangladesh may have achieved gender parity for enrolment, there is strong evidence of gender disparities in other aspects of education, such as in the teaching profession and achievement (Alam & Haq, 2001; Financial Express, 2004; FSSAP Project Implementation Unit, 1999; Shahjamal, 2000). This can be linked to unequal 'out-of-school' practices in which boys are more likely to get private tuition (Gibson, Mahmud, Toufique & Turton, 2004; Mahmud, 2003; Raynor, 2004). There is also evidence of unequal treatment in the classrooms, where teachers pay less attention to girls than to boys (Raynor & Pervin, 2005; Shahjamal, 2000). There are certain in-school or school-related gender factors that have not been adequately taken into account in the FSP design. School processes (such as the amount of attention a girl might get from a teacher) and educational outcomes (such as likelihood of obtaining an educational qualification), as well as out-of-school factors might have an impact on a girl's school life.

The Nari Uddug Kendra report provides an impressive-looking list of 'impacts' that can contribute to empowerment, including more girls/women now earning money, more girls/women having a greater say in decision-making, and the fact that they can now 'move freely alone' (Nari Uddug Kendra, 2003, p.iv-v). Very few of these achievements are quantified in the main body of the report, although digging more deeply into the annexes reveals a relatively low level of impact, with, for example, only 30% of girls' opinions regarding marriage decisions being considered, which indicates that 70% are not (p.42); only 4% of head teachers, teachers and guardians feeling that girls can move more freely alone; and only 3% thinking that guardians have become more aware of the reasons for not giving dowry (p.45); and 60% guardians reporting that the girls are not engaged in any income-generating activity (p.49). This latter point may reflect the fact that girls' and women's work is still not recognized as having any market value.

The Pathmark study, allowing as it does for an assessment over a longer period of time, and being able to compare those who received the stipend with those who did not, may be able to show greater and longer-term impact. It rates the pilot phase as 'highly successful' (p. i), focusing on what were at that time objectives mainly related to fertility control. However, it does touch on related empowerment issues, and indicates that girls from the study areas are more likely to be employed, have more confidence to protest unwanted marriages, and are more likely to take decisions about their own children's education. About 34% of girls in the study area were earning, compared with only 11% in the control area. 36% of FSP girls/women then enrolled in Class 6 were now married, compared with 53% in the control group. And about 53% of the FSP women now 'go alone outside the village' compared with only about 28% in the control group (p.20).

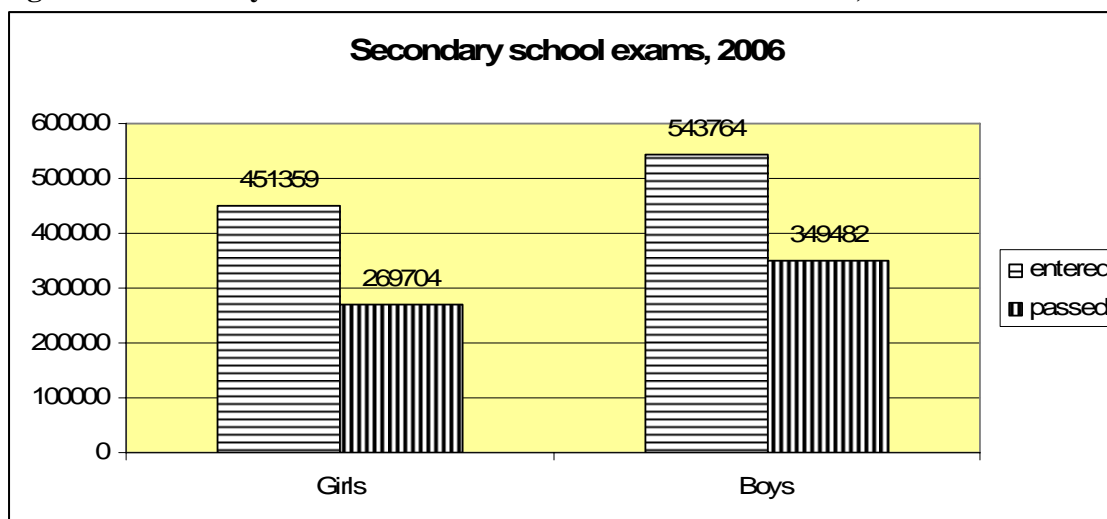
Objective 5: Quality

The available documentation repeatedly conveys the message that Programs such as the FSP, as they stand, can have a negative impact on the overall quality of education by increasing enrolment without designing parallel strategies to increase the number of teachers or classrooms, or by imposing unrealistic criteria for receipt of stipends (in the case of the FSP, the 45% pass criteria), which creates the temptation to tinker with exam marks. A disturbing trend in girls' declining performance (compared to boys) in final examinations can be seen in BANBEIS data which shows that in 1990, girls were about 30% of those enrolled in secondary schools and about 30% of those who passed the SSC; by 2000, when girls were over 50% of those enrolled, they were only about 40% of those who passed (BANBEIS, n.d.). This figure has improved somewhat in the years 2004-2006, with girls being about 43-44% of those who passed (calculations based on data published in the newspapers), but these figures do not nearly match the proportion of girls enrolled. Similarly, the high drop-out rates for girls (46% compared with 39% for boys) in Grades 6-10, highlighting the risk of a trade-off between higher enrolments and lower quality (Manzoor Ahmed, Nath, Hossain, & Kalam, 2006; UNESCO, 2003:19).

Until relatively recently, the FSP has focused on quantitative targets: increasing the number of girls entering and staying in secondary education, and in this, it has been successful. But there are strong and growing reservations about the quality and relevance of education in Bangladesh for both boys and girls (e.g. Mahmud, 2003; Sen, 2002; World Bank, 2006). This has particular consequences for girls, who continue to be less likely to complete secondary school, to gain an academic qualification, to study subjects that have a good marketable value, or to enter secure paid employment (K. S. Ahmed, 2000; UNESCO Bangkok, 2003; World Bank, 2003).

Taking final secondary-level exam results as a proxy indicator for quality of education, we can see how girls and boys are faring in Figure 3. Data from the 2006 entries (extracted from *New Nation*, 2006) show that girls are still significantly less likely to be entered for the exam or to pass it - an indication of their getting a lower quality of education. Despite official figures indicating that girls are in the majority in terms of secondary school enrolments, they were only 45.4% of those who were entered for the exam, and less than 44% of those who passed. Figures were similar for 2004 and 2005 (based on data given in the *Financial Express*, 2004 and the *New Nation*, 2005)

Figure 3: Secondary School Certificate Exam Entries and Results, 2006



Source: *New Nation*, 2006.

Reports from various studies of FSP projects express reservations about the (declining) quality of education, and there seems to be evidence that the FSP is contributing to this decline, especially for students from poor families. One quote from a World Bank report sums it up: "people interviewed voiced concerns that the program may have lowered educational quality by crowding classes and

reducing individual attention or interaction opportunities for students... It appears that without educational support, small stipends may not be very effective means in helping very poor girls complete secondary education.” (World Bank, 2003:16)

Recent attention to ‘quality’ issues in relation to the FSP have been largely limited to the enforcement of the 45% pass mark criteria, which means that privileged girls – those having parents with enough education to help them do their homework, enough income to buy the books and pay for private tuition – are much more likely to be able to obtain that mark and receive the stipend. The FSP thus becomes more of a scholarship than a stipend program, giving awards only to girls who have already managed to succeed and dropping those who have not.

Objective 6: Poverty Alleviation

While the FSP had objectives for lifting people out of poverty by making them more employable, or more likely to be involved in income-generating activities, it was not designed to deal with *existing* poverty issues. FSP targeted families who could afford to allow their girls to complete primary education, was available to all families with girls in secondary school – poor or otherwise – and made no realistic provision to make up for the inbuilt disadvantages that poor people have.

There seems to be evidence from other studies that the stipend is *not* a significant factor for many families. One study (Pathmark Associates Limited, 2001a) indicates that the stipend has helped reduce dropout for about 16% girls in Class 6, rising to 20% in Class 10. Another study (Nari Uddug Kendra, 2003) puts the figure at about 30%. Abadzi makes what is an obvious point: (p.10) that “the extremely poor usually do not finish primary school and are not eligible for ... stipends.” The FSP objectives relating to poverty alleviation would therefore miss many poor people. As development partners and the Government of Bangladesh all have strong objectives for poverty alleviation, it would seem that greater attention should be paid to primary students if stipends are to continue to be used as a strategy to alleviate poverty. Abadzi (p.15) reports that students are paying Taka 200 a month for private tuition, which the stipend does not nearly cover. “Clearly, poor girls cannot afford to pay for coaching with their stipends and afford basic expenditures as well.” These criticisms may seem a little harsh given that the very early versions of the FSP had no specific poverty focus, the assumption at the time being that almost all rural Bangladeshis were poor. But when the word ‘poverty’ entered the objectives in the early 1990s, there was a need to refocus strategies to meet those objectives. This did not happen. It is only recently that awareness of the consequences of that has emerged.

Lessons Learned

This section summarizes the lessons learned as indicated in project documents or derived from accounts of the FSP, and covered in the main body of the article above. It is hoped that these findings will be of relevance to those involved in the FSP and similar projects in Bangladesh, and to the international community.

Stipends can help reduce disparities in enrolment. They may be useful or necessary in the short-term to help change attitudes and will probably be politically popular, but may create ‘dependence’ and be hard to stop, thus raising issues of sustainability.

There is not yet sufficient evidence of impact in terms of fertility control or delayed marriage, or of ‘being schooled’ leading to ‘being employed’ or ‘being self-sufficient’, or of equality and empowerment. Rigorous impact studies are needed.

There is a need to look *beyond access* to quality and gender/inclusion issues such as educational processes and achievements. For example, achieving Millennium Development Goal 3 of promoting gender equality and empowering women will take more than simply reaching parity of enrolment.

Closer targeting is needed to reach poorer families because existing criteria actually discriminate against them and can turn the Program into more of a scholarship than a stipend.

By putting the onus of meeting the criteria on the beneficiaries, the government is avoiding the

responsibility of reaching poorer families.

Obstacles for poorer families could be alleviated by making the criteria more realistic, making provision for extra tuition where needed, by enforcing the use of low-cost government-approved textbooks, and by ensuring timely disbursement of stipends.

Stipend Programs are expensive and may not be needed by the majority of beneficiary families; the money might be better spent elsewhere. Parents should have more than just financial motivation for sending girls to school, there should be strong advocacy campaigns raising awareness of the potential benefits of sending girls to school.

Close monitoring and evaluation are needed to see that the Program is meeting its objectives, that the objectives are having the desired impact, and that the strategies used help meet the objectives. This involves reporting on much more than school enrolment.

Conclusion

FSP has clearly had impact in terms of increasing girls' enrolment. Less clear is exactly what other impact it has had in terms of stated Program objectives such as fertility control, getting girls/women into paid employment, or empowerment of women. While there has been documented progress in such areas, in many cases, it has not been possible to clearly link the FSP to the educational or societal changes that have occurred since the program began. While the FSP has been widely-acclaimed as a model for achieving gender parity of enrolment, little is known of its impact beyond access to schools.

As Mahmud notes, and as has become very clear in the writing of this study, very little has been done in the way of 'rigorous' impact assessment, and only one tracer study has been located. There have been various interesting studies on isolated aspects of the program, and they contribute to analyses of impact but do not reveal the big picture. The FSP may have had or may be having enormous positive impact, but as there is little clear evidence of this and this must be seen as one of its weaknesses. There needs to be far more information available for governments and development partners to consider the FSP as a model for development or to consider what changes might be made in program design to make it more effective. For example, the 45% pass rate unaccompanied by a concerted effort to increase the standards of education generally or to increase the quality of provision of education for girls in particular, shifts the onus onto the girls who fail. The failure is attached to the girls rather than the overall failure of the education system to provide them with the quality education they need. The extra tuition required outside of school to achieve the necessary marks excludes the poorest girls from achievement. The attendance criterion also militates against those girls from poorer families whose support to the household is crucial and therefore removes them from school.

Sustainability is linked very closely to poverty issues. A program such as the FSP is expensive and almost certainly comes at the expense of other desirable development objectives such as poverty alleviation. This is not necessarily to say that the money has been wasted; it seems to have been very useful in convincing parents that it is a good thing to keep their daughters in school. But there are indications that the need for financial support may be dwindling as findings suggest that many parents 'will continue to send their students [to school] even if there is no stipend' (S. S. Ahmed, 2004:40). These findings call such a large-scale stipend program into question and suggest a closer targeting of those in *real* financial need that could lead to a more cost-effective, sustainable program.

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HOME-BASED SCHOOLING: ACCESS TO QUALITY EDUCATION FOR AFGHAN GIRLS

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Abstract

Girls' education in Afghanistan has begun to recover from the devastating Taliban regime. In March 2003, at the beginning of the school year, over 1,200,000 girls enrolled in primary school. A year later, almost 1,400 000 girls enrolled.¹ Yet nearly 60% of school-age Afghan girls remain out of school and those who are in school are not assured of completing sixth grade. This paper describes a home-based schooling program that provides primary education for children in Kabul, Paktia, Logar and Nangahar Provinces. The program is particularly interesting in a country wracked by decades of war that is redefining its education policies and education system. Can the contributions of international NGOs serve to support this new Afghanistan education system, and especially to support the provision of quality education for girls?

The IRC Home-based Schools Program

At the time of the data collection in August 2005, the International Rescue Committee was supporting education programs in four provinces (see Table 1) of Afghanistan, training and supporting a total of 261 teachers, teaching over 10,000 rural children, of which more than half were girls.²

Table 1: IRC Support for Education

Province	Classes	Enrolments			Teachers		
		M	F	Total	M	F	Total
Kabul	66	807	999	1806	40	12	52
Logar	123	1437	2262	3699	68	54	122
Paktia	159	2593	2044	4637	80	7	87
Total	348	4837	5305	10 142	188	73	261

¹ UNICEF Rapid Assessment of Learning Spaces (RALS), 2003/4.

² IRC has since started an education program in Heart Province, Western Afghanistan, and so the numbers of students and teachers for 2006 have changed.

The IRC was requested to work in these communities because they are too far from government schools to have young children – especially girls – travel daily, and the communities are unsure about the quality and the appropriateness of the government schools. This paper draws on interviews with 19 teachers teaching in IRC supported home-based schools as well as their students, conducted as part of the IRC's Healing Classrooms action-research project on teacher development for student well-being.³ It also draws on research conducted as part of a forthcoming study of home-based schools as part of USAID's 'EQUIPS 2' program of research on complementary education models.⁴

A home-based school is basically a one-class school operating in a room in a home, space in a mosque, or the shade of a tree. Just as the classroom space varies, so too does the supply of learning materials, some classrooms are decorated with wall charts and visual materials whereas others are quite bare and children sit on mats on the floor of empty rooms.

The schools follow the daily and annual program of the Ministry of Education, and teach its curriculum. Classes are scheduled for three hours, in the morning or afternoon, six days a week (Friday is off) and children learn Dari or Pashto (depending on the local majority language), Math, Holy Koran, Islamiat (religious studies), writing and drawing until grade 4 when a second language, geography and history, science and health are added. The schools have been very successful in increasing girls' enrolments from 48 % girls in 2003 to 52% girls in 2004, with some provincial variation.⁵

Home-based School Teachers and Teacher Support

Teachers not only teach, but also reach out to the community on education issues and advocate for girls' education. Teachers in the IRC supported home-based schools are volunteers or have been asked by the *shura*⁶ to teach. Many of the teachers are women. (see Table 1) but many mullahs also teach in these schools as they are often the most educated members of the community and consider teaching to be part of their religious responsibilities.

Teachers have different education levels. A few are highly trained but most have no prior training; some are students themselves go to school and teach in home-based schools at the same time. IRC trains these teachers in three sessions of approximately 13 days per year providing a 'nuts and bolts' of teaching and classroom management that includes lesson planning, classroom organization, exam writing and grading as well as very concrete skills in six pedagogical strategies including the following: i) group work; ii) question and answer; iii) role play; iv) story telling; v) brainstorming, and vi) class or group competitions. The seminar promotes active learning and student participation, whatever the student's ability. Teachers are also trained in Dari (or Pashto in Nangarhar Province), maths – and materials development which the teachers particularly enjoy. A 14-day psychosocial awareness seminar helps teachers communicate with their students and address their emotional problems. The program emphasizes listening skills and encourages teachers to talk with students about their feelings and concerns.

³For more information on the Healing Classrooms Initiative, please contact the authors: jackie.kirk@theirc.org; rebecca.winthrop@theirc.org

⁴See http://www.equip123.net/equip2/index_new.html

⁵In Kabul Province, for example, girls comprise over 55 % of the total enrollment, whereas in Paktia, they comprise only 44 %.

⁶Community or village council.

Ongoing Supervision

Teachers have regular monitoring and supervision visits after their initial training. In Kabul Province a team of three master trainers (2 male and 1 female) plan monthly visits, and more frequently visit weak teachers. The master trainers observe one class period, and record observations on a specially-designed form, sharing comments and feedback after hearing the teacher's perceptions of the lesson. Trainers also collect attendance and other basic data on each home-based class so that the education team can assess training needs and plan seminars.

Local Teachers and Gender Roles

Classrooms are both co-educational and single-sex, but the main focus is on educating girls who were kept out of school by the Taliban. Girls in the home-based schools tend to range between 6-15 years old; the older girls typically remain in single-sex classes or in classes with young boys only. Parents prefer single-sex education and female students remark on the value of having female teachers and classmates. As one girl says, "If there were boys here our parents wouldn't let us come." Female teachers encourage parents to let their daughters attend school. "It is important to have a woman teacher as she is like us and we can ask her the questions in our minds, and we can be very courageous in front of her."

Male teachers are also more acceptable if they come from the same community as the children they teach. Their familiarity to parents makes them trustworthy. "It would be better to have a woman teacher, but it is alright," says one girl. A mixed-sex classroom is more tolerable for a community when all the children come from the community. "We are all from the same village and so we know each other and it is fine. Sometimes we go to each others' houses – we are in our own village – and we don't allow any strangers in." In another class, the interview group explains that the seating arrangements comply with cultural attitudes towards mixing boys and girls: "It is simple: the boys sit in the front and the girls behind." A girl explains, "Our parents say we shouldn't be very free with the boys and that we should sit aside from them", and her male classmates rather proudly says, "The boys in this class are very good and are not teasing the girls. The teacher also says 'Don't tease the girls and be very good with them'".

Local teachers know the children and understand community attitudes. They work at knowing their students, their families, their strengths and weaknesses. One teacher describes this: "As far as possible we know the students individually. Yes, the strengths and weaknesses of our students are clear – some of them are more intelligent and understand more, others are weaker. Most of our students are living together in society with us and we are always in touch with their families. All of our students know their classmates. I know where they live and we know their economic situation and where their fathers are working." This intimate knowledge is a significant advantage for the home-based school teachers in addition to their sustained commitment and resourcefulness.

Teachers typically have a traditional approach to teaching, which includes rote learning, teachers giving and checking homework, writing a lesson on the blackboard and reading it to the class. Some teachers do use small groups and innovative pedagogies. One student describes the activity he most enjoys in class: "She [his teacher] jumbles different words from a sentence, and has the students read and reorders the words themselves; she uses a

homemade set of plastic pockets on the wall for students to sequence jumbled numbers, and to fill in missing ones.”

The traditional pedagogy is modified by the teachers’ familiarity with their students and communities. They adapt their teaching to the local context, making it more accessible and enjoyable for students. One girl describes enjoying how her teacher relates the lessons to their everyday lives. Indeed, all of the students interviewed said that they were very comfortable asking their teacher to explain something they had not understood. Some students described their teachers’ insistence that they ask questions. “Our teacher says, ‘Keep asking me if you don’t understand.’” “We tell our teacher, ‘please repeat this lesson as we don’t understand.’” One boy who has no one at home to help him explains how he manages to keep up: “Only my teacher knows the lessons, so I ask the teacher, then I repeat myself many times until I understand.”

Teachers very clearly see themselves as serving their community by teaching and consider that good teaching must include kindness towards children; local teachers clearly feel that they are serving their community and its children. “The teacher should enter class with a happy face – if a teacher goes to class with a stick then the children will be very uncomfortable and will not learn.” Another woman says, “In my opinion, a teacher should be kind and should treat their students like their own children. A good teacher should have a happy face and not be harsh – if they are harsh then the children will be scared and won’t learn. If a child has forgotten something like a textbook or exercise-book then the teacher should tell them to share and coordinate – the teacher should also help.” “A good teacher is very kind, children can trust them with their problems and concerns (and not tell other people), a good teacher is friendly and has good manners – she should be friendly with children”. There is anecdotal evidence of discrimination on the basis of ethnicity, religion, politics and language in government schools, whereas home-based teachers appear more likely to practice and promote equality, tolerance and acceptance of diversity. Several teachers in the study make the point that they may know some students a little better than others but should nonetheless treat them all equally.

Local teachers understand that parents are sending their children to school to become literate, and ultimately be able to serve their country, community and family. Education is linked with national pride and socialized behavior: coming to school encourages students to be clean and well-mannered. Students explained that their teacher tells them not to fight and to argue with each other, “that is for dogs and you are humans and not dogs.” “My teacher tells us to be good friends and not to fight,” says another student. “He tells us not to walk through the fields and not to disturb people, and not to fight on the way home. He tells us whenever we see an older person to say *‘salaam.’*” Another teacher is described as follows by her students: “She advises us to respect and to be good humans. She helps us with other problems too, like with chores”.

One young woman teacher who runs three classes in her family compound describes how she came to be a teacher. “When I got married and came here my husband was in Iran and I was bored so I first started to teach the girls in the village the Holy Koran, and when I saw that they were very interested I began to teach them other things. At first I had nothing, not even any chalk, and so I used a wood stick and some coal.” Another woman teacher indicates the value of teaching: “School helps me forget my problems and sorrows – before I was teaching

I was very sad all the time. I enjoy being with the children and it helps me forget my pain. They learn from me and I learn from them too.

Few of the 19 teachers in the study consider themselves to be ‘career teachers.’ Three teachers (two men, one woman) teach in government schools in the morning. Another man has become the principal of a nearby girls’ secondary school, explaining that he has always been interested in teaching and has been doing so now for 11 years. Another woman teacher explained that she got married in Grade 11 and only started to teach a home-based class with her sister-in-law much later. She has since returned to school to complete Grade 12.

Students appreciate their teachers. Even students who described being punished (in three classes) say that this is necessary and helps them to learn. One girl described that her teacher makes her stand in the corner if she has forgotten her homework, but she believed that this was necessary to prevent other students from becoming careless. The boys in another class explained that their teacher and the class captain have sticks but that neither hit very hard. In contrast, in two of the classes, the students were quite explicit about the fact that their teacher does not hit them: “Our teacher is very kind, she doesn’t even bring a stick”, they say. And, “Our teacher never beats us – he says if I beat you, then you won’t come to school. He just tells us to be good students”.

Being a student has social status for these Afghan children. Wearing a uniform – however ad hoc it might be – and/or just washing and putting on clean clothes to go to school clearly contribute to feelings of well-being, of being ‘on the right track’ for a bright future. In the very first interview conducted with students, girls quite spontaneously started talking about how going to school means that they have to be clean and to wear clean clothes. One child remarked that it is good when the teacher says how clean they look, and although they do not have a specific uniform at this class, they explain that they do have separate clothes for school. Another girl agreed: “Yes, I also like to wear clean clothes and comb my hair and then people know that we are going to school.” Neither she nor her classmates have a school uniform but they keep certain clothes for school and change once they arrive home after class. Three girls from a different class where all children wear the black and white school uniform confirm their pleasure in wearing this, “because we feel like school students.” Another girl in another uniformed class explains, “When I come to school people recognize that I am going to school because of my uniform and my clean white chador.⁷” It would appear that for girls especially, the pride that this sort of recognition brings them is a very positive factor in their schooling experience.

The Challenges

The local successes of the home-based schooling model are many, as are the challenges. The working conditions of the school and the isolation of the teachers constitute a very real challenge. Although for the children and teachers the home-based schools are very ‘real’ schools, ensuring their sustainability is difficult, especially as the teachers receive no formal compensation for their work. From the Afghan authorities there has been a perception that these schools are stop-gap solutions as Afghanistan gets back on its feet. The longer-term challenge is how to gradually integrate and institutionalize these schools into the national system, given that the Ministry of Education is not able to meet the demand for education;

⁷large headscarf

currently they receive no financial or technical support from the Ministry of Education and rely entirely on community and donor support.

Home-based School Conditions

Accessible home-based schools take place in teachers' homes, mosques and other community buildings that were not built to be schools. Teaching and learning resources such as textbooks are all provided by NGOs and donor agencies. Teachers themselves lack some basic necessities for quality learning, such as textbooks and even desks and chairs. One teacher, whose girls' class is run in the mosque, explains: "It is difficult teaching in the mosque – the class should be very open. In the mosque the girls cannot play during their breaks – they can't read poems as they should." This teacher has seen government schools with large tents as classrooms, and he would like one of these to put on his own land. Another mosque-based teacher says, "Yes, I am happy because I see my students improving – but the environment in the mosque is not good – sometimes the mullah says it is not good to teach math in the mosque, for example, that I should only be teaching Islamiat. In sports period, for example, we can't do anything in the mosque or even outside. It would be better if the class were more open and if all the classes in the village were put together and then the teachers and the students could meet each other."

Some teachers express their frustration: "Not having school materials that the students need" and their inability to make the improvements they would like to in the classroom environment are frustrating. Students, who appreciate the work they do in school may also express their disappointment with the environment. "Yes, our class is beautiful, but in other schools they have benches for the students and for the teachers too." Girls who study in the mosque also find it frustrating having to learn there. They are not allowed to read out loud, play sports or even have breaks as there is nowhere to go. They should not disturb the people who are coming to the building to pray. Two boys, who used to study in a mosque and have moved to the terrace outside the teacher's home. They dislike not having a real classroom. They preferred being in the mosque to the teachers' home as they feel a little uncomfortable in his compound. Another boy is quite adamant that the mosque is preferable, as "in a teacher's house their children come and ask for this and that, but this doesn't happen in a mosque." Two girls who attend a class in a half-built house explain, "We like studying, but we don't like coming to the house – it is not like a school. Also the way to [this] school is not easy – there is no path and we have to come over the fields, past the trees." They only have to walk about 5 minutes from their homes, but they still feel unsafe. This became especially understandable when later the girls explain that they started their studies in a clandestine class during the Taliban time: "Still now we don't feel secure – we are thinking that any time they will tell us to leave this home."

Professional Isolation

The dedicated teachers in the home-based schools are trying to provide a quality education for children in their communities despite many challenges and lack of regular interaction with other teachers. This is a problem in particular for the women teachers. One male teacher says that he meets up with other home-based school male teachers in the village, and that over a cup of tea they talk about their work and share some ideas. Women have fewer opportunities for such sharing. One woman occasionally meets another male teacher in the village but relies on the trainers' visits for professional exchange and discussion. A young woman who is completing 12th grade says, "As I am in school myself I see my own teachers

in school and follow what they are doing and how they are teaching.” This is a particular issue for teachers with little formal training. Being alone they are responsible for all the subjects: “Just one teacher can hardly teach six subjects – it is very difficult to plan and prepare.” In order to manage these sorts of responsibilities, teachers could benefit from visiting colleagues’ classrooms, sharing methods, successes and challenges.

The Tentativeness of Home-based Schooling

The home-based school is perceived by some students to be tentative unlike “the government school (which) has a future and is forever.” This is particularly so because teachers volunteer to teach and are not paid. Teachers understand why they receive little compensation – “The students are poorer than I am – how can they pay?” – but the result is that financial pressures may limit teachers’ tenure. Many male teachers will continue teaching while they can do small contracts, or farm their own land in the mornings before school starts. Younger men can teach while still living with their parents but will eventually think about earning income. The priority of young men and women who are students and teachers is their own education, and so they may leave to continue higher education. Women teachers need the approval and support of their fathers and husbands, and the support will vary with the situation. One woman continues to teach with her small baby but her generally supportive husband is worried that she is tiring herself too much. Many women have less understanding husbands and in-laws. The women teachers know that they may be forced to give up teaching to earn money or to devote more time to household and family activities.

Policy Implications and Recommendations

Home-based schooling responds to a need at a particular moment in Afghan history. Its durability may be an issue, but the lessons that it can offer to the Afghan government are worth noting. They raise a number of significant policy issues: i) where possible, the integration of home-based schools into the government system; ii) sustaining and improving home-based schools where they are the only available school; iii) improving teacher training and support, and iv) recognizing the ‘alternative qualifications’ of home-based school teachers and finding ways to accredit them. One real issue here is how to upgrade the teachers and the schools to become the equivalent of government schools – and officially certified as such. This is an issue facing the community schools in other parts of the world as well.

Integrating Home-based Schools into the Government System

IRC supported home-based schools are not alternative schools, but rather temporary solutions that would be gradually integrated into the government system. There is no comprehensive, national policy for integration yet, but at the provincial level, there are many children and some of the teachers who meet the national requirements, being gradually transferred to nearby government schools, as new schools are opened. Thousands of children in IRC supported home-based schools have been integrated into government schools to date as the Ministry of Education slowly rebuilds the education system.

Anecdotal evidence suggests that integrated pupils do well in their government schools. Their teachers are impressed by their knowledge and skills. However, integration requires careful follow up to maintain attendance and of motivation, and ensure that the best practices from the home-based schools are maintained and even improved in the more formal setting. This is especially important to sustain high levels of girls’ participation.

Sustaining and Improving Home-based Schools

For rural, under-served areas, home-based schools will remain necessary for some time to come, especially for girls. But home-based education must be officially recognized to give girls access to further studies. A critical mass of girls ready and keen to continue their schooling may encourage communities to find ways of allowing them to attend distant secondary schools.

One possible strategy to maintain the home-based schools where they are needed is to establish partnerships where the home-based school is a 'satellite' of a formal school. In this way, the home-based school teachers could also benefit from the training and other resources being provided to the formal sector. It could also encourage the government schools to adopt the home-based schools' successful strategies for attracting enrolments, *e.g.* employing only female teachers known in the community.

Teacher Training and Support

Teacher training and support are essential. The teachers need to know very basic pedagogical methods and strategies, and to orient their teaching to student learning, and IRC is always trying to find more effect ways to train and support teachers. A future more consolidated basic teacher training course will integrate psychosocial and gender awareness together with subject content in maths, Dari and Islamiat. The Ministry of Education is also implementing an ambitious Teacher Education Program (TEP) of in-service training for 105 000 teachers that might, in the future, include home-based school teachers. Discussions have started with the Department of Teacher Training and IRC trainers have been trained as Master Trainers on the TEP materials.

Another new innovation are the regular village teachers' meetings being supported by IRC. Teachers appreciate the meetings, especially women who had never before even seen the other teachers even in the same village. Despite some uncertainty about whether the men and women would be able to meet together, mixed sex meetings do take place and the participants are comfortable with this arrangement.

Teacher Accreditation

The Ministry of Education needs to develop a well-educated and trained teaching body but will surely struggle to find local teachers with the requisite 12th grade training required to be a government teacher, especially in remote, rural areas. It is especially difficult to find women who meet these criteria. Appropriate mechanisms are needed to recognize the prior experience and qualifications of home-based teachers with lower levels of formal education, for example, home-based school teachers who show mastery of basic teaching concepts and methodologies, demonstrate concern for student well-being and show a commitment to the profession should be fully included in the government system and given ongoing professional support. This is critical for changing the perception of the fragility of home-based school teaching. This will be particularly important for retaining women teachers and promoting education for girls.

Conclusions

Home-based schools provide many thousands of children – and particularly girls, who would otherwise be excluded from education, with a culturally acceptable education. Teachers have a vested interest in their pupils' learning and happiness. They understand the context and can

make education relevant to them. Home-based teachers need further training and support but they already possess many important teaching skills and attitudes.

As the Ministry of Education expands and strengthens the education system in Afghanistan, the home-based schools offer some indications of positive pedagogical approaches that could be useful, particularly in rural communities. The policy implications here are similar to those in other countries where complementary schooling models provide support to yet also introduce new ideas and methods into traditional and often relatively dysfunctional systems.

THE LONG TERM ASSOCIATION OF EARLY CHILDHOOD DIARRHEA WITH SCHOOL SUCCESS: A CASE STUDY FROM PAKISTAN¹

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Abstract

Diarrhea is a significant cause of morbidity and mortality among children in many places, yet its long-term effects on child development and school success are poorly understood. This paper uses multiple linear regression on a group of 107 children in Pakistan, to analyze the associations between diarrhea and infant malnutrition history, parental income and education with school test results in math, English and Urdu. Controlling for parental education and income, malnutrition, and diarrhea data from birth to age five, long-term diarrhea before age two is associated with lower Z-scores in math and diarrhea after age two is associated with lower Z-scores in English. Diarrhea was less significantly associated with Urdu Z-scores. This study does not establish diarrhea as a cause for poorer school performance but it indicates that long-term early childhood diarrhea is an important risk factor for poorer school performance.

Introduction

A child's school achievement is affected by many variables, including many that affect a child before he or she ever goes to school (Abadzi 200). The years during which brain cells are being formed and sensory environmental stimulation affects the structure and organization of neural pathways (Richardson 1994, Puchner 1995) are critical. A good number of these variables are influenced by parental income and education, and the association of these parental characteristics with educational achievement is well established (Hanson *et al.* 1997, Axinn *et al.* 1997, Duncan *et al.* 1994). During these pre-school years, poor nutrition can also have long-term effects on development (Pollitt 1990, Pollitt 1997, Brown and Sherman 1995, Shrestha and West 1994, Wachs 1995, Grantham-McGregor 1995, Levinger 1992, Seshadri and Gopaldas 1989, Morley 1995, Levitsky and Strupp 1995). Micronutrient deficiencies of iron, iodine and vitamin A play a major role in children's development and their school performance (Pollitt 1990, Pollitt 1997, Haas and Fairchild 1989, Shurch 1995). Evidence is mounting regarding the importance of a wide range of other micronutrients as well.

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Deficiencies in magnesium, potassium, selenium, copper, calcium, vitamin D and zinc in child development, while poorly understood, seem to have a functional significance even when they do not reach clinical proportions (Wachs 1995, Tomkins *et al.* 1995, UNICEF 1993).

Early childhood diarrhea is a widespread public health problem in developing countries that is not usually associated with developmental impairment. Surveys conducted by the World Health Organization in the 1980s show that a young child in a developing country suffers, on average, 3.3 episodes of diarrhea per year and that more than one-third of the deaths among children younger than five are associated with diarrhea (Mata 1992). Oral rehydration therapy has greatly reduced fatality rates from acute watery diarrhea, but it has done little to prevent diarrhea or reduce its duration, frequency or stool volume (Bhutta 1996, Molbak 1997, Molla 2000). This is important in light of evidence linking diarrhea as a cause and effect of malnutrition (Mata 1992, Briend 1990, Sullivan 2000, Molla, SArkar, Khatoon and Rahman 1983) and micronutrient deficiencies (Scrimshaw, Ruenser, Keusch, Jolla, Ozalp and Torun 1983, Brewster 1997, Roy 2000) and suggests that frequent and prolonged diarrhea during infancy and pre-school years could significantly alter a child's development and reduce school performance. One recent study of 46 children in Brazil (Meihous, Moore, Patrick, Derr, Lorntz, Lima and Guerrant 2002) already makes this point.

This paper describes a study that examines the statistical associations between diarrhea in the first five years of a child's life and their subsequent primary school performance, controlling for parental education and income as well as malnutrition measures. Establishing the long-term impact of early childhood diarrhea on school performance would add urgency to efforts to reduce its incidence and duration.

Methodology

Diarrhea and Household Data

In 1989, the Aga Khan University (AKU) in Karachi, Pakistan and the Aga Khan Health Service Pakistan (AKHSP) began collecting diarrhea data on all children under the age of five in the village of Oshikhandas near Gilgit, the administrative capital of the Northern Areas of Pakistan. Community health workers trained in data collection visited households every week, under the supervision of AKHSP medical staff. Data collectors were careful to take diarrhea histories from the primary care giver (usually the mother) and followed up with those who were not available at the time of the scheduled visit. Detailed questionnaires were filled out about the beginning and end dates of periods of diarrhea data, total duration, consistency, severity and treatment. Children were weighed monthly in general although children with diarrhea were weighed weekly, and their height was recorded every three months. All children born after the beginning of the study were added while data collection stopped for children who reached age five. Periods of out-migration were carefully noted.

The study was limited to school children for whom fewer than 90 days of data were missing over their first five years of life, leaving a total of 107 children (39 girls and 68 boys) spread between class 1A (52 children), class one (38) and class two (17). The mean age of children at the time of the study was 89 months (SD 8.7). School tests were administered in early December 1997.

At the beginning of the study, household information including parental income and education was also collected. The income variable was divided into six categories ranging from no income up to greater than Rs. 4000 per month (in 1987 rupees). The education variable was broken into eight steps, covering illiteracy, basic literacy, primary schooling and completion of each subsequent school stage up to a professional degree. Data were entered into a computerized database in Gilgit by trained AKHSP staff and carefully examined by the Department of Community Health Sciences at the Aga Khan University in Karachi. Data collection continued through mid 1996.

A variety of categorical diarrhea variables was derived from the data that included the total number of episodes, total duration in days and episodes broken down into three duration categories representing 0-7 days, 8-14 days and more than 14 days. These categories were then further subdivided into categories before and after the age of two years.

Each child's height and weight at approximately age two were extracted from the data and a second set of measurements was made concurrent with the subject tests. From these measures Z-scores for weight-for-age, height-for-age and weight-for-height were calculated using epidemiological software developed by the Center for Disease Control and Prevention in Atlanta (CDC).³ In the absence of local references, these Z-scores were referenced against US norms using 1995 data from the United States National Center for Health Statistics. Thus the Z-score means are not zero.

School Performance Data

Three private schools in Oshikhandas had developed rather rigorous end-of-year tests in math, English and Urdu (the national language of Pakistan but not the mother tongue of the children). These tests were given on three consecutive days and lasted no longer than 90 minutes. Because each school used very different syllabi and had teachers of varying quality, it was difficult to standardize an achievement test. Consequently, teachers developed school-specific tests based on what children had been exposed to and drilled on during the academic year as a fair measure of student performance. Students, teachers and parents all accepted these measures of performance because they are familiar with them and believe, rightly or wrongly, that the immediate goal of schooling is for a child to do well on these tests.

Tests were remarkably similar across schools. Math tests for Class 1-A (reception or kindergarten) in which a child identifies larger and smaller items in drawings, larger and smaller numbers in pairs, counting items in boxes, and filling in numbers in increasing and decreasing sequences. For Class 1, the subject moved on to multiples of 2, 5 and 10; two digit addition and subtraction; more complex sequences; use of coins and notes in money; and multiplication of single digits. English and Urdu tests included spelling (adding missing letters), using words in sentences, joining letters (for Urdu), plural forms, naming parts of the body, completing sentences by selecting the correct word from a list, answering simple written questions about village life, and reading out loud.

To compare results across schools, raw subject scores for each child were converted into Z-scores based on the distribution of results within each class. This provided a normalized measure of each child's performance relative to others in the same class. This approach had two advantages: i) rigorous school-specific tests could be used that are more likely to measure differences between better and poorer performers, and ii) differences between schools due to widely varying styles and quality of teaching and classroom environment were eliminated. Within the same class, better and poorer performers are equally exposed to the same advantages and disadvantages of their environment.

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Table 1: Early Childhood Diarrhea Burdens and Anthropometry for 107 children ages 5.5 and 8.5 years, in Oshikhandas, Northern Areas Pakistan

	N	Mean	St. Dev
Diarrhea Episodes Before Age 2	107	2.44	2.08
Diarrhea Episodes After Age 2	107	0.49	0.81
Total Diarrhea Episodes Before Age 5	107	2.93	2.43
Total Diarrhea Duration Before Age 2 (Days)	107	17.89	20.98
Total Diarrhea Duration After Age 2 (Days)	107	2.72	4.92
Total Diarrhea Duration Before Age 5 (Days)	107	20.60	22.10
Weight For Age Z @ Age 2	86	-0.82	0.89
Weight for Age Z During Study	104	-0.65	0.77
Weight for Height Z @ Age 2	84	0.54	1.57
Weight for Height Z During Study	104	0.51	0.88
Height for Age Z @ Age 2	83	-0.22	1.39
Height for Age Z During Study	104	-0.40	0.89

Statistical Methods

For the main analysis multiple regression was used to identify factors that account for a portion of the variance in student's class Z-score in math, English and Urdu. The sets of explanatory variables were entered in an ordered stepwise regression: non-diarrhea variables (parental income and education and child malnutrition measures) were entered into the analysis first and those with an F-value above a predetermined level of significance (in this case 5%) were retained. The effects of various diarrhea variables were then analyzed to identify those that explain significantly more of the performance variance, controlling for the environmental and nutritional variables selected in the first step. This differs greatly from a less structured selection process in which all variables are considered together and those with the most significant F value are entered first.

In this linear regression analysis, the non-diarrhea variables were not correlated with the diarrhea variables, the errors were independent and followed a normal distribution. The standardized residuals were also randomly distributed. The effects of outliers were checked using Cook's distance and DFBETA. The maximum Cook's distance was 0.05987 and the maximum DFBETA was 0.10534, indicating that outliers did not unduly influence the size of the regression coefficients.

Results

Mathematics

In selecting independent non-diarrhea variables for the regression equation on mathematics Z-scores, the F-values of father's and mother's education, father's and mother's income, and combined parental income were compared. Of these father's income proved to be the most significant, and controlling for this the remaining variables were not statistically significant at the 5% level or even at the 10% level. Father's income was therefore the only variable from among the household environment variables included in the analysis. It accounted for 5.1% of the variance in mathematics Z-scores with a p-value of 0.020. The positive coefficient for father's income indicates that children of higher income fathers performed better in mathematics as expected. The regression was also run using all six of the anthropometric Z-scores (weight-for-age, height-for-age, and weight-for-height at age 2 and approximately age 7) in turn but all were insignificant with height-for-age in 1997 (between the ages of 5 and 8) having the lowest p-value of 0.341. None of these malnutrition measures was therefore included in subsequent analyses.

Controlling for father's income, diarrhea lasting more than 14 days before age two proved to be the most significant diarrhea variable, accounting for an additional 6.5% of the variance with a p-value of 0.007 making it significant at less than the 1% level. The negative coefficient indicates that diarrhea lasting more than 14 days before age two is negatively associated with mathematics performance. Adding further diarrhea variables in addition did not account for further variance in math performance. Together father's income and this diarrhea variable explain 11.6% of the variance in mathematics Z-scores as demonstrated in Table 2:

Table 2. Stepwise regression analysis of Math Z-scores vs episodes of diarrhea lasting more than 14 days before age 2 controlling for father's income (n = 107)

<u>Variable</u>	<u>Standardized Coefficient</u>	<u>Change in R Squared</u>	<u>P value</u>
FI -Father's income	0.229	0.051	0.015
14PB2 - Episodes lasting more than 14 days before 2	-0.255	0.065	0.007
	Total R Squared	0.116	

Regression coefficients and P values for each diarrhea variable alone, controlling for Father's income (n = 107, dependent variable Math Z-scores) in descending Standardized Coefficient (ascending P Value) order.

<u>Variable</u>	<u>Standardized Coefficient</u>	<u>P Value</u>
14PB2 – Episodes lasting more than 14 days before 2*		
14P – Episodes before age 5 lasting more than 14 days*	-0.255	0.007
8P – Episodes lasting 8 or more days before age 5*	-0.230	0.015
TDURB2 – Total diarrhea days before 2*	-0.223	0.019
TDUR – Total diarrhea days before age 5*	-0.214	0.025
8PB2 – Episodes lasting 8 or more days before 2*	-0.208	0.029
EP – Total episodes before 5*	-0.206	0.031
B2EP – Before 2 episodes	-0.191	0.046
TDURA2 – Total diarrhea days after 2	-0.172	0.073
A2EP – After 2 episodes	-0.147	0.124
DR8T14A2 – Episodes lasting 8 to 14 days after 2	-0.134	0.161
8PA2 – Episodes lasting 8 or more days after 2	-0.135	0.161
DUR07 – Episodes before age 5 lasting 0 to 7 days	-0.117	0.221
B2EPWL – Before 2 episodes with weight loss	-0.115	0.231
DUR07A2 – Episodes lasting 0 to 7 days after 2	-0.113	0.240
DUR8T14 – Episodes before age 5 lasting 8 to 14 days	-0.100	0.298
EPWL – Episodes before age 5 with weight loss	-0.095	0.321
DUR07B2 – Episodes lasting 0 to 7 days before 2	-0.090	0.350
DR8T14B2 – Episodes lasting 8 to 14 days before 2	-0.089	0.353
14PA2 – Episodes lasting more than 14 days after 2	-0.067	0.484
A2EPWL – After 2 episodes with weight loss	0.045	0.640
	0.020	0.833

* Significant at the 5% level or better

The list of all diarrhea variables in Table 2 (each entered in the regression equation alone, controlling for father's income) ordered by standardized coefficient is very useful for comparing the association of before and after age 2 diarrhea variables and their combinations with mathematics Z-scores. Three important observations derive from these results:

- Comparing the before-age-two and the after-age-two variables, none of the after-age-two variables is significant at the 5% level, while three of the before-age-two variables are significant at this level. These are 14PB2, 8PB2 and TDURB2.
- There is evidence that after-age-two diarrhea is significant since three of the variables covering the entire first five years of life are more significant than their before-age-two subset. These are TDUR, EP and 8P. The significance of these variables is increased by the inclusion of after-age-two data. Therefore, after-age-two diarrhea plays a role, albeit a less pronounced one.
- Episodes with weight loss (B2EPWL and A2EPWL) are not significant which would suggest that diarrhea related malnutrition is not an important factor in mathematics Z-scores. This is consistent with the lack of significance for the malnutrition measures.

English

As with math, father's income proved to be the most significant of the parental education and income variables. Controlling for father's income the remaining income and education variables did not explain significantly greater variance in English Z-scores. Father's income alone accounted for 8.1% of the variance in English Z-scores with a p-value of 0.002. None of the malnutrition measures proved to be statistically significant. In this case weight-for-age at age two had the lowest p-value of 0.333.

Controlling for FI, the number of after-age-two episodes (A2EP) explained the greatest variance in English Z-scores, accounting for 6.7% of the variance with a P-value of 0.005. As with the math analysis, adding additional diarrhea variables did not increase the explanatory power of the model and the associated coefficients were not significant. Of those reporting diarrhea, the after age two average duration in this data set was 5.6 days. Together FI and A2EP accounted for 14.8% of the variance in English Z-scores as indicated in Table 3, below.

Table 3: Stepwise regression analysis of English Z-scores vs. episodes of diarrhea after age 2 controlling for Father's income (n = 107)

<u>Variable</u>	<u>Standardized Coefficient</u>	<u>Change in R Squared</u>	<u>P value</u>
FI -Father's income	0.285	0.081	0.002
A2EP - After 2 episodes	-0.260	0.067	0.005
Total R Squared		0.148	

Regression coefficients and P values for each diarrhea variable alone, controlling for Father's income (n = 107, dependent variable English Z-scores) in descending Standardized Coefficient (ascending P Value) order.

<u>Variable</u>	<u>Standardized Coefficient</u>	<u>P Value</u>
A2EP - After 2 episodes *	-0.260	0.005
TDURA2 - Total diarrhea days after 2 *	-0.258	0.005
DUR07A2 - Episodes lasting 0 to 7 days after 2 *	-0.200	0.033
8PA2 - Episodes lasting 8 or more days after 2 *	-0.192	0.041
EP - Total episodes before 5 *	-0.185	0.049
DR8T14A2 - Episodes lasting 8 to 14 days after 2	-0.180	0.056
TDUR - Total diarrhea days before age 5	-0.177	0.059
14P - Episodes before age 5 lasting more than 14 days	-0.167	0.076
A2EPWL - After 2 episodes with weight loss	-0.154	0.101
14PB2 - Episodes lasting more than 14 days before 2	-0.147	0.117
8P - Episodes lasting 8 or more days before age 5	-0.145	0.124
TDURB2 - Total diarrhea days before 2	-0.140	0.138
EPWL - Episodes before age 5 with weight loss	-0.132	0.161
DUR07 - Episodes before age 5 lasting 0 to 7 days	-0.130	0.167
DUR8T14 - Episodes before age 5 lasting 8 to 14 days	-0.121	0.199
B2EP - Before 2 episodes	-0.117	0.217
8PB2 - Episodes lasting 8 or more days before 2	-0.102	0.280
DR8T14B2 - Episodes lasting 8 to 14 days before 2	-0.083	0.379
B2EPWL - Before 2 episodes with weight loss	-0.077	0.414
14PA2 - Episodes lasting more than 14 days after 2	-0.075	0.430
DUR07B2 - Episodes lasting 0 to 7 days before 2	-0.056	0.553

*Significant at the 5% level or better

The Table 3 results allow several observations:

- In contrast with the mathematics analysis, a comparison of before-age-two variables with after age two reveals that none of the before-age-two variables is significant at the 5% level whereas four of the five variables significant at the 5% level are after age 2. This is strong evidence that the greatest negative association of diarrhea with performance in English is for diarrhea after the age of two.
- Unlike the mathematics analysis, combining variables across the age-two divide does not increase their significance. For instance, combining A2EP with B2EP to form EP increases the p-value of the variable from 0.005 to 0.049, a significant rise. This rise is encountered with all

such combinations, which suggests that diarrhea before age two does not have a measurable association with English Z-score.

- As with math, episodes with weight loss do not add value to the analysis. The weight loss variable (A2EPWL) is the least significant of the after-age-two variables ($p = 0.101$).

Urdu

As with English and math, father's income (FI) was the most important variable from the parental education and income category for Urdu Z-scores. In contrast with the other two, however, father's education (FE) also proved to be significant, and the two variables together account for 14.1% of the variance in Urdu Z-scores. In further contrast with English and math, one malnutrition measure, height-for-age at age 2 (HAZ2) approached accepted levels of significance with a p-value of 0.070. HAZ2 accounted for an additional 3.1% of the variance in Urdu Z-scores such that FI, FE and HAZ2 together accounted for 17.2% of the variance.

Controlling for FI, FE and HAZ2, the number of diarrhea episodes lasting more than 14 days before age two is the most significant of all diarrhea variables with a P-value of 0.150. Adding 14P to the analysis increases the R^2 by 0.009, indicating that this variable accounts for only 0.9% of the variance on Urdu Z-scores. None of the other diarrhea variables approached recognized levels of significance in the analysis. The negative association is supported by the negative coefficients of all diarrhea but the regression analysis is not sufficiently sensitive to quantify this.

Discussion

The analysis confirms the negative association of diarrhea with school performance for mathematics and English, whereas the strength of the association is much weaker for Urdu. A common factor in all three subject areas is the close association with father's income (FI). Wealthier households may create environments that are more conducive to developing a child's ability to perform in school whether by diet-related micronutrient or trace element deficiency or stimulation using toys or television. Fathers with higher incomes may also have other characteristics that give their children an advantage in school.

Mathematics and English

Diarrhea is negatively associated with mathematics and English performance in distinct ways. For math, diarrhea before age two has the strongest negative association, although later it continues to have a slight negative association. For English, by contrast, multiple linear regressions could not identify any before-age-two diarrhea association, whereas after-age-two diarrhea proved significant. This could be evidence for differences in the timing of development of mathematics vs. second language ability, although the findings could be associated with other factors.

The apparent independence of mathematics and English performance from malnutrition variables would suggest that for this group of children, malnutrition as measured by height-for-age, weight-for-age and weight-for-height is not an important determinant of future or current school performance. The lack of performance association with diarrhea episodes involving weight loss supports this assertion. If diarrhea does in fact reduce a child's future ability to perform in these subject areas, it is possible that this occurs through trace element deficiencies that affect cognitive development rather through links with protein-energy malnutrition.

Urdu

The association of diarrhea with Urdu performance was not as strong as for mathematics and English. Urdu is also unique among the three subject areas in having a significant positive association with father's education as well as with a malnutrition measure at age two after controlling for father's income. Children with wealthier, more educated fathers and with greater height-for-age at age two performed better in Urdu.

One possible explanation for these differences between Urdu and mathematics and English could be that children come to school having had considerable exposure to Urdu in their first five years. Although Urdu is not the mother tongue of children in Oshikhandas, they hear Urdu on the radio and television and in many everyday conversations. They also see Urdu written and read, even more so if their fathers are more highly educated. For many children mathematics and English, by contrast, are encountered for the first time in the classroom. It is possible that the height-for-age-at-age-two association with Urdu performance is a result of malnutrition influencing their ability to absorb Urdu early in life before the children enter school, particularly if the malnutrition is long term. Those whose nutritional status is below the norm in early life are possibly less able to process and absorb the Urdu around them, and they thus enter school at a disadvantage due to the previous concurrent effects of malnutrition.

Conclusions

The findings of this paper are consistent with the possibility that diarrhea negatively influences school performance by affecting the bioavailability of trace elements and micronutrients that play complex roles in child development. At a minimum, this study has identified longer duration diarrhea in early childhood as an important risk factor for reduced school performance. However, these findings do not prove causation, and it is possible that other factors govern the diarrhea/school performance association

Given the success of oral rehydration therapy in reducing mortality from diarrhea, the continued high incidence of diarrhea in many parts of the world suggests that the number of survivors of severe early childhood diarrhea is increasing. If these findings are more generally applicable to a broader set of populations, the school potential of these diarrhea survivors could be significantly impaired, and it thus becomes a matter of urgency to reduce the incidence and duration of diarrhea in early childhood if only to increase the returns to investment in education.

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