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How (well) is Education Measured in Household Surveys?

A Comparative Analysis of the Education Modules in 30 Household Surveys from 1996–2005

Education Policy and Data Center

IHSN Working Paper No 002
October 2009

www.ihsn.org

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Abstract

Household surveys are an important source of information about education systems. International survey programs such as the Demographic and Health Surveys (DHS) and the Multiple Indicator Clusters Surveys (MICS) have become standard sources for international databases on education statistics. Other types of surveys have been less utilized and the education data in them is sometimes not as well understood and standardized. This report studies 30 of such household surveys, and analyzes how and how well education information is collected in them. It provides a number of general recommendations that are intended to be useful to the individuals and agencies involved in the design of education questionnaires for household surveys and use of the resultant data.

About the Education Data and Policy Center

The Education Policy and Data Center (EPDC) is a public-private partnership whose mission is to improve education policy worldwide through better information and analysis. EPDC provides ready access to education data through a comprehensive education database, tools for better data analysis and presentation, and custom solutions for EPDC clients and partners. EPDC has fostered its public-private partnership through work with a variety of organizations including: the EFA Global Monitoring Report; the EFA Fast Track Initiative; the Governments of Kenya, Nigeria, Pakistan, and Zambia; the International Household Survey Network; the UNESCO Institute for Statistics; the International Institute for Education Planning; and the World Bank. Funding for its work has come from several of these partners in addition to core financial support from USAID and the Academy for Educational Development (AED), where EPDC is located.

Acknowledgments

This working paper was made possible by financial support from the World Bank Development Grant Facility, Grant No 4001009-06, administered by the PARIS21 Secretariat at OECD, and by the Education Policy and Data Center's commitment of its own resources to this work. The paper was prepared by Annababette Wils (conceptualization and management) and Karima Barrow (data analysis management). Bidemi Carrol, Ania Chaluda, Hsi-Yuan Chen, Joseph Goodfriend, HyeJin Kim, Sarah Oliver, Ben Sylla contributed to the data extraction and writing of the report. The analysis is based on access to survey datasets, questionnaires, and instructions, which was made possible by a collaboration with the World Bank. Olivier Dupriez (IHSN and World Bank), Kristi Fair from USAID, and George Ingram (EPDC) provided insightful comments. All errors remain those of the EPDC.

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Citation

Education Policy and Data Center. 2009. "How (well) is education measured in household surveys? A comparative analysis of the education modules in 30 household surveys from 1996-2005", International Household Survey Network, IHSN Working Paper No. 002

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Table of Contents

1 Summary 1
2 Recommendations 2
3 Coverage of the surveys 3
4 Comparison to the DHS and MICS Surveys 4
5 Questionnaire structures 5
6 Response errors 6
7 Extraction of indicators and standard errors 7
8 Specific analysis and recommendations by topic 8
8.1 Household members, family relationships, and household characteristics 8
8.2 Education attainment and literacy 16
8.3 Informal and vocational schooling 19
8.4 Literacy 19
8.5 Attendance and Enrollment - School Participation 21
8.6 Education Flows 23
8.7 Cost of Education 24
8.8 Education Quality and reasons for attending school 25
8.9 Getting to school 26
8.10 School type 27

References 27
Appendix 29

List of Figures

Figure 1. Questionnaire Structure of DHS Post-2003 and MICS Round 3 Surveys 7
Figure 2. Sample Questionnaire Flow for the Burundi survey. 8
Figure 3. Example of a Complex Questionnaire Structure: Côte d' Ivoire 9
Figure 4. Relationship Between Number of Questions and Portion of Questions with Out-of-universe and Missing Responses. 12

List of Tables

Table 1. List of Surveys Included in Study. 4
Table 2. List of Surveys in Study and One DHS Survey According to Number of Questions in Subject Category 5
Table 3. Percent of Out-of-Universe Response Errors by Topic and by Survey 11
Table 4. Percent of Missing-Response Errors by Topic and by Survey 12
Table 5. Literacy Rate, Ages 15–19, and Educational Attainment: Primary Incomplete, Ages 15+. 14
Table 6. Gross Attendance Rate and Net Attendance Rates 14
Table 7. Gross Intake Rate to Primary and Percentage of Pupils Overage Grade 1 15
Table 8. Primary Completion Rate, Primary Repetition Rate 15
Table 9. Out-of-universe and Missing Responses on Formal and Non-formal Schooling 17
Table 10. Percent Out-of-universe and Missing Response Rates for Combined Education Background Questions that Combine "never attended", "highest attainment", and/or "currently attending" 18
Table 11. Comparison of Education Attainment in Bangladesh DHS 2004 and HIES 2000 18
Table 12. Questions on Literacy 20
Table 13. Questions on Language 20
Table 14. Percent Out-of-universe and Missing Response Rates in Excess of 1% Among 30 Household Surveys 20
Table 15. Types of Questions on School Flows and Which Surveys Employed Them 23
Table 16. Questions on Education Cost 24
Table 17. Questions on School Quality 26

1. Summary

Household surveys are an important source of information about education systems in developing countries. In particular, large series of surveys, such as the Demographic and Health Surveys (DHS) and the Multiple Indicator Cluster Survey (MICS) have become standard sources for education statistics. Smaller survey series and country-specific surveys have been less utilized and the education data in them is not as well understood. This report studies 30 of such household surveys, and analyzes how and how well education information is collected in them.

Based on our analysis, this report provides a number of general recommendations that are intended to be useful to the individuals and agencies involved in the design of education questionnaires for household surveys and use of the resultant data. Our recommendations focus on improving the wording and structure both of individual questions and of the module as a whole with the ultimate goal of improving the quality, the comparability and the range of education information collected.

We have designed our report to complement the 2004 UNESCO Institute of Statistics (UIS) *Guide to the Analysis and Use of Household Survey and Census Education Data*[1]. Whereas the UIS guide is broad in scope and explores the overall design, administration, and analysis of household surveys as they may be useful for education policy makers, this report focuses specifically on education questions and the education module.

As a background to these recommendations, this analysis covers 1) the *coverage* of the education information collected in household surveys in developing countries, 2) the *structure* of the questionnaires to collect education information, 3) the *response error rates* associated with the various formulations, and 4) the *indicators* and standard errors for the education indicators that can be extracted from the surveys.

The analysis is based on our access --facilitated by our collaboration with the World Bank-- to the survey datasets, questionnaires, and instructions. With this information, we can examine the coverage of topics, the structure of the education module in the questionnaires, valid and invalid response rates, the set of indicators that can be extracted from the data, and the statistical error range for indicators.

Working with these 30 surveys required considerable manual analysis, despite automated processes to extract and tabulate responses in Stata, the software used for our analyses. It was a process that initially resulted in a series of incorrectly filtered data and, subsequently, a re-work of the analyses. The sources of the relative difficulty of working with these datasets (compared to more standardized one such as the DHS) are:

- Each survey has to be analyzed separately and carefully because each survey is structured differently, with a different order and naming for the variables, different classifications, as well as different filters for the respondents. Some of the structures are straight question paths, whereas others are quite varied and more difficult to follow.

- The documentation of the datasets is sometimes sparse, and both documentation and questionnaires are written in a variety of languages.

- The questions used to obtain basic education indicators can differ widely, making it more difficult to locate the answer to particular questions. For example, repetition can be found with a direct question on repetition, or with indirect questions on this year's and last year's school attendance. Attendance can be obtained with a direct attendance question, or a general "school status" question.

We believe that others will have similar difficulties working with these diverse and, at times, complicated datasets. For a wider usability of these important surveys, it is therefore desirable that they become somewhat more standardized.

The subjects covered in the 30 surveys vary, but generally concern a limited group of topics. All 30 of the surveys inquire about educational attainment; 29 out of 30 inquire about school attendance; a majority of surveys cover reasons for not attending or not having attended school, satisfaction with school, education

1 Available online at: http://www.uis.unesco.org/template/pdf/educgeneral/HHSGuideEN.pdf

costs, school type; and a smaller number cover school flows, getting to school, and the after-school learning environment.

The extent of the education modules ranges from two education-related questions (Sri Lanka and India) to fifty (Madagascar); the average number of education questions in our selection of surveys is 14.

We found that some surveys have a questionnaire structure and sets of questions that are more effective and efficient than others in terms of eliciting useful information.

On average, the valid response rates in the 30 surveys is high – 97%. The high average masks much lower valid response rates in certain surveys or for particular sets of questions. The level and type of data cleaning that was undertaken by the data producer is unfortunately not available. Part of this report focuses on identifying invalid responses, or errors, why they may occur, and on offering recommendations to reduce such errors in future surveys.

Section 2 of the paper summarizes our key recommendations. Section 3 describes the coverage of the surveys included in our study. In section 4, we compare these country-specific survey modules with DHS surveys. We examine various questionnaire structures in Section 5, and response errors in section 6. In Section 7, we present the extraction of education indicators. Finally, Section 8 provides more specific analysis and recommendations by topic. The Appendices contain flow diagrams of the questionnaire structures and tables with the specific response errors found in the surveys.

2. Recommendations

The following is a list of recommendations for education modules based on the analysis of the 30 varied household surveys (see list in Table 1) and our prior work with DHS surveys.

Recommendation 1. The education module should include a simple *set of core questions* on attainment and attendance.

Suggested core questions on educational attainment:

1. *Has (name) ever attended school?*

If 1 = yes, then

2. *What was the highest school level (name) attended?*

3. *Within that school level, what was the highest grade (name) completed?*

Or*:*

1. *What is the highest level (name) attended? - with the option to answer no schooling*.

If 1 ≠ no schooling then:

2. *Within that level, what was the highest grade (name) completed?*

Suggested core questions about current school attendance*:*

4. *Is (name) attending school during the 20XX-20XX [current] school year?*

If 4 = yes, then

5. *What school level is (name) attending?*

6. *What grade is (name) attending?*

If the interview is held outside the school year, or during between-year holidays, or at the end of one school year and start of another, the survey should specify the school year, to ensure that all responses apply to the same school year, and that year should be the one that preceded the school holidays to ensure the answer relates to actual, not intended, attendance.

Suggested core questions about the previous year's attendance to obtain short-term trends and information about school flows:

7. *Did (name) attend school during the previous 20XX-20XX school year?*

If 7 = yes, then

5. *What school level did (name) attend?*

6. *What grade did (name) attend?*

This pair of questions makes it possible to easily gather information on drop-out, repetition, and promotion rates. Including these questions makes it possible for questionnaires to drop direct questions about flows. Only four of the 30 surveys include this set of questions.

Recommendation 2a: *A question on self-reported literacy, if included, should be unfiltered, except for age.* "Self-reported" literacy – or, as reported by the one household member who responds to the questionnaire – is often the only indicator of how many people in a country can read and write, although it is notably inexact.

Recommendation 2b: *A simple, standardized reading test* for the respondents to assess literacy (e.g. a card with a sentence, as in the DHS surveys) should be included in household surveys if feasible. Because literacy is often self-reported by respondents, it is especially vulnerable to inconsistencies. The reliability of literacy measures would improve by using this simple, standardized reading test rather than self-reporting.

DHS administers a reading test only to the respondent, in the individual, rather than the household, questionnaire. The reading information, although collected from a limited group within the household, often provides the only internationally comparable information on literacy.

It would be desirable to pilot surveys that include more household members in the reading test. In this pilot, one should take care to 1) have more than one sentence for testing, to ensure that respondents do not overhear one another and repeat what was heard; 2) ensure that the sentences use words commonly learned in early primary school, and not more advanced vocabulary; and 3) that the sentences are of roughly comparable difficulty across languages. It would also be necessary to think about whether the test is only given when all household members are present; to give the test simply to those present at the time of the interview; or only of a certain age, and what the implications would be for the representativeness of the sample.

Recommendation 3: *Standardized language* should be used for certain commonly asked questions, especially those related to attainment, attendance, and literacy. For example, school attendance was asked as: "*What is (name's) educational background?" "What is (name's) current schooling status?" "Is (name) currently attending school?",* and *"Is (name) enrolled in school this year?"* The literacy question is asked as: "*Can (name) read?" "Can (name) read a simple sentence?" "Can (name) read with or without difficulty?" "Can (name) read and write a one-page letter?"* Though language may need to be altered to conform to local norms, any degree of standardization would increase the comparability of indicators gathered from across multiple surveys.

Recommendation 4: *Timeframe should be stated explicitly* where questions imply a timeframe. As an example, in the question 'Did you attend school in the past year,' the term "year" could be interpreted to mean several different timeframes – this calendar year; the past 12 months; the past school year. We recommend using questions with explicit timeframes such as 'During the 2000-2001 school year…"

Recommendation 5: *Provide clear guidance on the units to be used for responses* and ideally, allow only one unit. Some questionnaires with questions on 'Time to School,' or 'Distance to School' allow respondents to choose the unit they use in their response (for example, distance to school can be given in kilometers or in meters). Allowing this introduces an opportunity for error if units are omitted or recorded incorrectly.

Recommendation 6: *Build simple questionnaires with a minimum set of logical filters*. Questionnaires with complex branching and multiple filter questions introduce increased opportunities for errors in filtering or flow. In addition, the filters can incorrectly exclude respondents. For example, the Bangladesh survey asks for educational attainment only of those who state they are literate, excluding those who attended school but not long enough to learn reading and writing. Some household surveys have extensive, complex, and, in a few instances, even illogical filters that are not necessary. While these may or may not prove difficult to follow for those administering the survey, some filters make working with the dataset overly complicated, particularly in the absence of good instructions. Lacking documentation or maps that provide the sequence and filters for questions, we followed the questions in the surveys individually to find the filters. Some more detail on desirable questionnaire structure is found at the bottom of Section 5.

Recommendation 7: *Place instructions where they are easy to see, and keep them clear and simple.* Instructions in a questionnaire should be carefully considered and tested before use. Ambiguous or incorrect instructions can lead to various interpretations, diminishing the quality of the data.

Recommendation 8: *Questions and the lines of data code should correspond clearly*. In some surveys, one question is used to produce multiple data lines. For example, the Burkina Faso survey uses responses to a multi-language literacy question to create four variables: *can't read/write in any language; can read/write in French; can read/write in English; can read/write in another language* (probably to allow for multi-lingual literacy). The answers are coded as four different lines in the dataset – one for each language plus illiteracy. This makes checking for errors more difficult because the analyst has to regroup the responses. A more preferable structure is the one found in the Malawi survey, with separate questions for Chichewa and English.

3. Coverage of the Surveys

This study analyses 30 household surveys from series smaller than DHS and MICS, such as Integrated Household Survey (IHS), Living Standard Survey (LSS), Core Welfare Indicators Questionnaire surveys (CWIQ, or QUIBB in French), Household Income and Expenditure Survey (HIES), as well as ten country-specific surveys. The surveys are from Africa (18) and Asia (12) and cover the period 1996-2005. Only 3 surveys – Djibouti, Ghana, and Burundi – were from the 1990's. **Table 1** shows the list of surveys included.

Table 1 List of Surveys Included in Study

Country	Year	Survey	Region
Bangladesh	2000	Household Income and Expenditure Survey	Asia
Benin	2003	Questionnaire des Indicateurs de Base du Bien-être	Africa
Bhutan	2003	Living Standard Survey	Asia
Burkina Faso	2003	Questionnaire des Indicateurs de Base du Bien-être	Africa
Burundi	1998	Etude Nationale sur les Conditions de Vie des Populations	Africa
Cambodia	2003	Household Socio-Economic Survey	Asia
Cameroon	2001	Enquête Camerounaise auprès des Ménages	Africa
Cape Verde	2001	Inquerito as Despesas e Receitas Familiares	Africa
Côte d'Ivoire	2002	Enquête sur le Niveau de Vie des Ménages	Africa
Djibouti	1996	Enquête Djiboutienne auprès des Ménages	Africa
Ethiopia	2000	Welfare Monitoring Survey	Africa
Gabon	2005	Questionnaire des Indicateurs de Base du Bien-être (QUIBB)	Africa
Ghana	1998	Living Standard Survey	Africa
India	2004	National Sample Survey	Asia
Indonesia	2002	Socio-Economic Survey	Asia
Lao PDR	2003	Expenditure and Consumption Survey	Asia
Madagascar	2001	Enquête Permanente auprès des Ménages	Africa
Malawi	2004	Integrated Household Survey	Africa
Maldives	2004	Vulnerability and Poverty Assessment Survey	Asia
Mozambique	2002	Questionário de Indicadores Básicos de Bem-Estar	Africa
Nepal	2003	Living Standard Survey	Asia
Niger	2005	Questionnaire des Indicateurs de Base du Bien-être	Africa
Nigeria	2003	Living Standard Survey	Africa
Pakistan	2001	Integrated Household Survey	Asia
Sierra Leone	2003	Integrated Household Survey	Africa
Sri Lanka	2002	Household Income and Expenditure Survey	Asia
Tanzania	2000	Household Budget Survey	Africa
Thailand	2002	Socio-Economic Survey	Asia
Uganda	2002	National Household Survey	Africa
Vietnam	2004	Living Standard Survey	Asia

See list with information on primary investigators in Annex 1.

Within the 30 surveys, there are a total of 571 differently worded questions[2] directly relevant to education or indirectly by providing basic background information such as age, sex, family structure.

To map these questions, they need to be organized. First we grouped together questions with a different literal wording - for example, "*Is Name currently attending school?" "Fréquente actuellement l'école?" "Attending school this year*?"- are all grouped together as "*Currently attending school?"* Ultimately, the 571 questions were grouped into a shorter list of 142 distinct education-related questions. The 142 questions are shown in the tables in the appendix.

Second, the 142 questions have been grouped into 13 broader topics: individual characteristics (e.g. age, sex); household characteristics; family relations; educational attainment; literacy; attendance and enrollment; education flows; education costs; motivation and quality; getting to school; school type; after school learning environment; and early childhood education. Within these topics, there is a wide variety in the types of questions included, the formulation of the questions, and the filters to reach the questions (covered in the next sections).

Table 2 shows the number of questions asked within each of 3 background-topic and 10 education-related topics in each of the 30 surveys, plus the coverage in a recent, representative DHS survey. As the table shows, all of the surveys have questions on household members (age and sex are always included), household characteristics (region of residence and nationality are typical), educational attainment and attendance. Twenty six surveys ask about literacy. Many of surveys ask questions about motivation for attending (or not attending) school – 22 – and the type of school attending – 21 - often: public or private school. These two frequently covered topics are not covered in DHS surveys. There is less coverage (about 1/3 of the surveys, not generally the same ones) for flows, costs, quality, getting to school, as well as direct questions about family relationships.

2 This number is a slight under-estimate because it includes some questions that have been combined to standardize the analysis. In addition, some questions on education costs and community questions about the schools are not included in this list of 571.

It is clear that some surveys devote much more space and questions to certain topics than others – for example, a number of surveys ask up to 5 questions on school attendance, whereas many surveys suffice with one question ("*Are you currently attending?*"). Even more extreme, Ghana and Malawi have an extensive education attainment sub-module with 15 and 13 questions respectively; a topic that receives 1-2 questions in most other surveys. The sections on costs can also have many questions (mainly covering different types of costs).

Table 2 List of Surveys in Study and One DHS Survey According to Number of Questions in Subject Category

	Household Member	Household Characteristics	Family	Educational Attainment	Learning & Literacy	Attendance & Enrollment	Education Flows	Education Costs	Motivation and quality	Getting to School	School Type	After school learning environment	Early Childhood Education
Bangladesh, HIES 2000	2	3	0	2	2	3	0	4	1	0	1	0	0
Benin, QUIBB 2003	2	4	0	2	2	3	0	0	2	0	1	0	0
Bhutan, LSS 2003	5	3	4	2	2	2	0	2	2	1	1	0	0
Burkina Faso, QUIBB 2003	3	2	0	2	1	3	0	0	2	0	1	0	0
Burundi, ENCV 1998	8	2	0	3	2	2	1	0	1	0	0	0	0
Cambodia, SES 2003	3	3	2	3	2	3	0	1	1	0	2	1	0
Cameroon, ECAM 2001	4	2	0	2	1	4	1	0	1	0	1	0	0
Cape Verde, IDRF 2001	3	2	0	2	1	1	0	0	0	0	0	0	0
Côte d'Ivoire, ENV 2002	4	4	0	5	3	3	1	1	1	0	1	0	0
Djibouti, EDAM 1996	2	2	0	2	2	2	0	0	2	0	1	0	0
Ethiopia, WMS 2000	2	2	0	1	4	2	2	0	1	0	1	0	0
Gabon, QUIBB 2005	3	3	4	2	1	3	0	0	2	0	1	0	0
Ghana, GLSS 1998	3	4	4	15	5	1	1	16	0	1	0	0	0
India, NSS 2004	2	0	0	1	0	1	0	0	0	0	0	0	0
Indonesia, SES 2002	2	2	0	4	1	1	0	0	0	0	1	0	0
Lao PDR, LECS 2003	2	3	10	1	1	3	1	10	2	0	0	0	1
Madagascar, EPM 2001	5	4	0	3	3	5	6	12	6	2	2	0	0
Malawi, HIS 2004	3	3	2	2	4	5	5	1	2	2	1	2	0
Maldives, VPAS 2004	3	2	0	2	3	1	0	0	0	0	0	0	0
Mozambique, IAF 2002	3	2	1	2	1	3	0	0	2	0	1	0	0
Nepal, LSS 2003	2	3	2	3	2	1	1	3	2	2	2	0	0
Niger, QUIBB 2003	2	2	2	2	1	3	0	0	2	0	1	0	0
Nigeria, LSS 2003	3	3	4	6	0	2	7	17	1	0	2	0	0
Pakistan, IHS 2001	2	2	0	2	3	2	5	1	4	1	2	0	0
Sierra Leone, IHS 2003	6	4	4	13	5	2	7	11	2	1	2	0	0
Sri Lanka, HIES 2002	2	4	0	1	0	1	0	0	0	0	0	0	0
Tanzania, HBS 2000	2	2	0	1	1	2	0	0	1	0	0	0	0
Thailand, SES 2002	2	2	0	1	0	1	0	0	0	0	0	0	0
Uganda, NHS 2002	2	2	2	2	1	1	0	0	2	2	1	0	0
Vietnam, LSS 2004	4	2	0	2	1	3	0	7	0	0	1	0	0
Number of surveys covering topic	30	29	12	30	26	30	12	13	22	8	21	2	1
Malawi 2004 DHS	4	4	4	3	1	2	2						
MICS	4	4	4	3	1	2	2						

4. Comparison to the DHS and MICS Surveys

The 30 surveys differ in many respects from the highly standardized and widely utilized Demographic Household Surveys (DHS) and Multiple Indicator Cluster Survey (MICS) series. For the purpose of this study we review the questionnaire and dataset of the Malawi 2004 DHS survey, which contains an education module that is typical of the DHS and MICS[3] surveys, for use as a background standard to compare with the 30 surveys. In drawing a comparison between DHS/MICS education modules and IHSN education modules, we do not mean to endorse the DHS/MICS model as a golden standard, but rather to use it as constant standard against which to compare the IHSN modules. Many of our 30 surveys cover useful education topics that are left out of the DHS/MICS module. Another important survey, which we did not include for comparison, is the EdStats[4] surveys which were connected to the DHS surveys to collect more detailed education information. EdStats surveys were undertaken in a few countries in the early 2000s.

An important difference between the DHS/MICS survey and our 30 surveys is that the DHS/MICS surveys collect education data through two separate questionnaires, a Household Questionnaire and separate Male and Female questionnaires. The DHS/MICS household questionnaire applies to all household members above the age of 5, and includes questions on age, sex, relationship to head of household, marital status, urban/rural, and region. Because the questionnaire indicates the line number of the mother in the household, users are able to create variables for the mother's highest education level and mother's highest year of education. The DHS collects a large set of information on material assets and this can be used to calculate a wealth index variable. None of the 30 surveys provided a wealth index variable, although many are designed so it can be calculated. The Individual questionnaires include a short reading assessment for literacy.

Regarding the education module, the DHS/MICS ask three basic questions related to attainment and four or five basic attendance questions:

Attainment:

- *Has (name) ever attended school?*
- *If yes, what is the highest level of school (name) has attended?*
- *And, what is the highest class (name) completed at that level?*

Attendance and school flows:

- *Is (name) currently attending school?*
- *If yes, during the current school year, did (name) attend school at any time?*
- *During the current school year, what level and class [is/was] (name) attending?*
- *MICS ONLY: Since (day of week), how many days did (name) attend school?*
- *During the previous year did (name) attend school at any time?*
- *During that school year, what level and class did (name) attend?*

The three attainment questions are the basis of specific information about educational attainment. Though it may seem that 'highest level of schooling', and 'ever-attended' could be subsumed under one question (highest class completed), asking the question in two parts makes it possible to extract more detailed information. Separately, the questions get at two pieces of information: the highest level (primary, secondary, etc.) attended, and the highest grade completed at that level. These two pieces of information show what percentage of the sample has reached secondary, for instance, even if not completing a single grade at that level. Asking just one question, 'highest level and grade completed', would miss this more exact piece of information. Fifteen of the 30 surveys included in our study (including all of the CWIQ surveys) used a similar structure in their questionnaires.

The five (or six) attendance questions can be used to calculate indicators about school attendance, retention, and school flows. This set of questions is a clever construct to use basic, simple information as a building

3 Because the education modules for DHS and MICS surveys are nearly identical in wording and structure, we treat the Malawi 2004 questionnaire as representative of both series'.

4 EdStats: http://go.worldbank.org/ITABCOGIV1

block for more complex information such as repetition, completion, dropout and promotion rates.

In the individual questionnaire, the DHS/MICS module tests only those with primary schooling, informal schooling or less – the assumption is that those with secondary school or higher are literate. To test literacy,

- *Respondent is given a reading card and asked to read a sentence.*

The DHS does not include any variables in the categories of getting to school, circumstances, costs, and school type. While two-thirds of the 30 surveys do include school type, only a third of the surveys cover questions on getting to school, circumstances, and education costs. Only one survey, Madagascar 2001, has a direct question on early childhood programs.

5. Questionnaire Structures

To compare the questionnaire structures, we made a diagram for each of the education modules, found in Appendix 1, for all of the 30 surveys. The logic of the diagrams is to organize the questions by the filtering process of the questionnaire. The unfiltered questions (asked of all respondents) are in a left-most column; questions that follow after one filter, are arranged a bit to the right; questions following two filters a bit more to the right, etcetera. What emerges is that all surveys follow a *main-line-and-detour* structure – by this, we mean the following: the questionnaires start with one or more questions directed to all respondents (for example: *Did (name) ever go to school?*), followed by one or more questions that are filtered (e.g.: *What was the highest attainment?* For those who answered "YES" did go to school), and perhaps even filtered two or more levels. At the end of this filter-detour, the questions return to the main line, asked of all respondents. There are questionnaires with a very simple education module with no detours; many with one or two detours of one or two filter-depths; and some with a long route consisting of many detours and up to three filter levels.

The diagrams of the questionnaires made it easy to find some inconsistencies and illogical filters in the questionnaires. These are listed in the top-right corner of each diagram.

Figure 1 shows the questionnaire structure of the post-2003 DHS and the MICS round 3 surveys, which are identical, except that the MICS survey includes a question on the frequency of school attendance, which the DHS survey does not. Figure **2** shows an example from the 30 surveys, namely the Burundi CWIQ survey (QUIBB), that has an education module with a somewhat similar structure.

Figure 1 **Questionnaire Structure of DHS Post-2003 and MICS Round 3 Surveys**

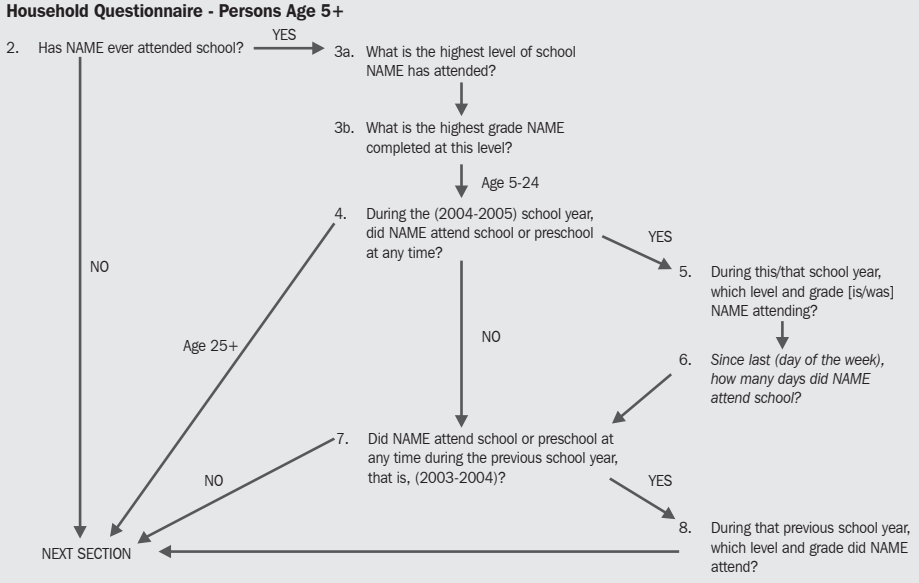
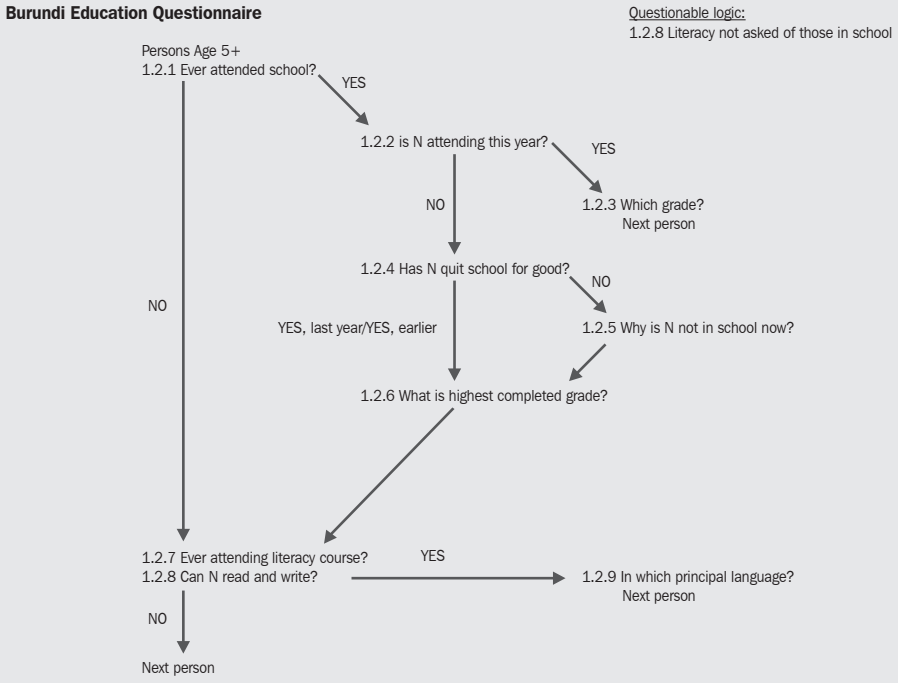


Figure 2 **Sample Questionnaire Flow for the Burundi Survey**



All of the questionnaires have a slightly different, albeit generally related, structure. Most surveys begin with basic, unfiltered questions on the household and the household members, followed by questions on employment and, relevant to our purpose, education. These latter questions may be filtered by age or by a hierarchy of education questions. For example:

1. *(for all those age 5+)*

   Did (name) ever attend school?

   If Yes go to 2

   If No, stop.

2. *Is (name) Currently attending school?*

   If yes, go to 3

   If no, go to 4

3. *What grade is (name) attending? Then stop.*

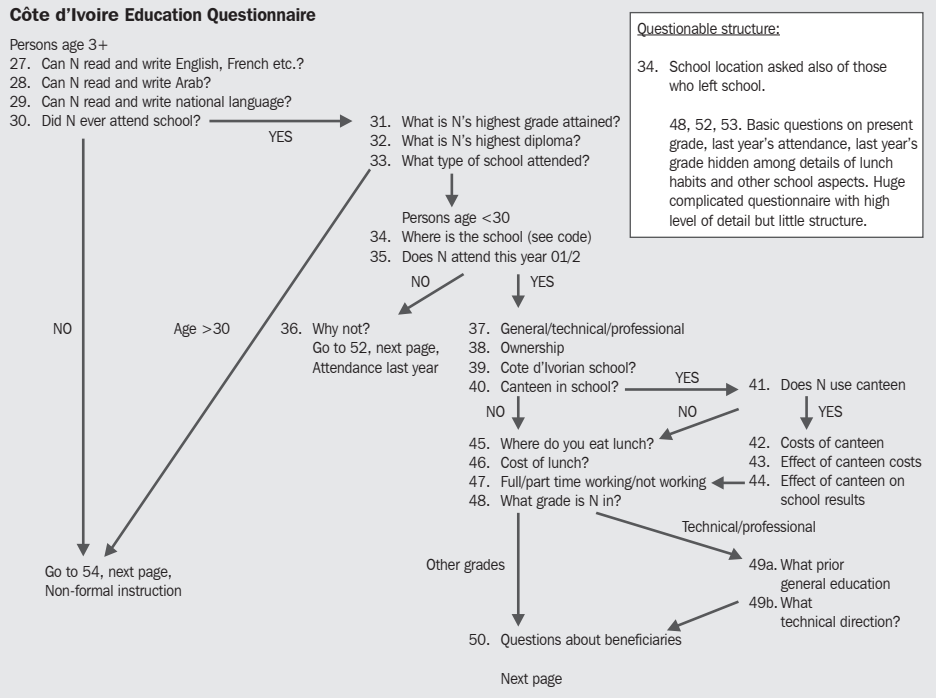
4. *What is the reason for (name) not attending school?*

5. *What is (name's) highest grade attained? Then stop.*

Some of the questionnaires have a relatively simple structure that is easy to work with, while others have more complex structures. An example of a complex structure is shown in Figure 3. Note that there are multiple detours at multiple levels. Moreover, this survey has considerable detail on school lunches, with the question on grade attending buried beneath inquiries on where lunch is eaten. To us, this shows a misplaced priority on one aspect of schooling at the cost of other, more basic information, and a survey that is difficult to work with because questions on particular topics are not grouped together.

A disadvantage of a more complex questionnaire structure is that the analyst must painstakingly follow the questionnaire in order to identify the in-universe respondents, so errors and indicators can be properly calculated. Another disadvantage is that the hierarchy incorrectly filters out some respondents. The advantage of a complex questionnaire is that it may result in shorter interview times if only select respondents reply to more detailed questions. It is not clear that the advantages of complex structuring outweigh the disadvantages. In the discussion of specific topics below, we provide more detailed evaluation of questionnaire structure.

Figure 3 **Example of a Complex Questionnaire Structure: Côte d'Ivoire**



In our work with the surveys, we found that a middle-ground, with enough complexity to provide a richness of information, but not too much to make work with the surveys difficult, to be optimal.

From our analysis of coverage, we conclude that some questions appear to be redundant or provide little additional information or imprecise or ambiguous information, or in other cases, questions were omitted that would have provided important details. Details of the redundant or missing questions are given under the sections headed "Recommended" and "Not recommended".

Some Examples of Desirable Structures Are:

- *Start with unfiltered, basic questions* on "ever attended school", "can you read and write?", "currently attending school?", and "attended school last year?"

- *Short detours* for positive answers on ever-attendance and present-attendance on highest levels/grade attained, grade presently attending, grade attended last year; and short detours on motivation for attending or not attending school (CWIQ surveys ask "*Why are you not attending?*" and "*Why did you never attend?*" for those who are not in school or were never in school); short detours for repetition and dropout; school type; costs.

- *Cluster questions on particular topics together* – for example, basic questions on attendance, such as attendance status and grade attending this year and last year, should be asked together, not (as in some surveys) separated by a series of questions on a different topic such as costs or transportation.

Some Structures to Avoid Are:

- *Disorganized question flow*, such as in the Côte d'Ivoire survey shown above.

- *High level of detail in some subjects while missing basic information*, such as in the Ghana survey, with 15 detailed questions on education attainment, but not a single one on the current grade attending (making it impossible to calculate basic indicators like primary and secondary attendance rates).

- *Filters that presuppose an answer, but do not ask the question*. For example, the Cape Verde survey asks "How long does it take to get to school?" only of those who are attending school (filter specified for getting to school question) but does not actually include the question "Are you attending school?". From the filter, we may deduce that those who answer the question are attending school, but it would be desirable to have the question directly.

- *All manner of incorrect filters* – for example, the Bangladesh survey asks highest attainment only of those who can read and write; the Djibouti questionnaire drops those who are 24+ and attending school from further questions (for example, university students).

- *Erroneous instructions* – this is rare. For example, the Madagascar survey instructs respondents who were not in school during the survey because school was closed to answer questions on school costs last year, skipping the question on whether the respondent was in school last year or not.

- *Redundant questions* – the Nigeria survey, for example, asks about primary and secondary attainment twice, once *What was the highest class or form completed?* – followed later by *What is the highest class of primary education?* – and *What is the highest class of secondary education?*

6. Response Errors

Ideally, all questions are answered by the sub-group of respondents who should answer them, and the responses fit into one of the available response boxes. Unfortunately, this is not always the case. A characteristic of a well-designed survey is that it generates high levels of valid responses; whereas a poorly designed survey will have many response errors. One of the outputs of this project is an analysis and comparison of the response error rates in the surveys. Obviously, these rates are largely determined by the data editing/cleaning work done by data producers, on which no information is available. Three types of response errors are included: responses out-of-universe, invalid/in-universe responses, and missing/in-universe responses [5]. These error rates indicate the extent of data cleaning as much as the extent of data collection errors.

- *Out-of-universe* are responses given by or for individuals who should have been filtered out of the universe by a prior hierarchy of selection criteria (e.g. over age 5, or attending school). Calculation of out-of-universe response rate: number of out-of-universe answers/all answers to question.

- *Missing in-universe* are target individuals who gave no response to the question and are coded as missing in the dataset. Calculation of missing response rate: number of missing answers for in-universe respondents/all answers given by in-universe respondents.

- *Out of range in-universe* are responses given by or for the target individuals, but where the responses were not identified in the questionnaire or were logically determined to be impossible. Calculation of out of range response rate: number of invalid answers given by in-universe respondents/all answers given by in-universe respondents.

The *valid response* rate is the proportion of responses given by or for the target individuals and where the response falls within the range of valid answers. Calculation: number of valid answers given

5 To identify the response errors, frequency tabulations were completed with Stata for all education and household characteristic questions variables outlined in QuestionaireMatrix.xls – with separate frequency tabulations for the in-universe and out-of-universe responses. The Stata output was standardized with a macro, and entered into an excel file with columns for country, survey, year, topic, standardized question categories, literal question, universe criteria, response, frequency of response. A macro reads this standardized output, recognizes which responses belong to each question and which responses are in one of four categories defined below: 1) out-of-universe, 2) invalid/in-universe, 3) missing/in-universe and 4) valid,; and calculates what proportions of the responses fall into each of these categories. This output is collected on four large tables (one for each category) organized question/topic by survey/country. Each cell of the table contains the proportion of responses that fall into that table's category. The tables can also be used to analyze which questions are contained in each survey (see sheets MasterLogFile.xls/ Valid, Out of Range (Invalid), Missing, and Out-of-universe).

by in-universe respondents/all answers given by in-universe respondents.

Table 3 and Table 4 show the average out-of-universe and missing response rate by survey and question topic. For the majority of topic/surveys, there are zero missing and out-of-universe responses; however, the incidence of such errors cannot be ignored. There are missing and out-of-universe responses spread throughout the tables. A few general observations are:

- Sixteen surveys stand out with no out-of-universe responses – Benin, Bhutan, Burkina Faso, Cameroon, Cape Verde, Djibouti, Gabon, India, Indonesia, Maldives, Nepal, Niger, Nigeria, Sri Lanka, Tanzania, and Thailand; of these, there are no missing response rates in the surveys of Cape Verde, Gabon, India, Niger, Thailand. The surveys of Bangladesh, Mozambique and Vietnam are not missing responses, but do contain out-of-universe responses.

- A number of surveys stand out with a high incidence out-of-universe responses – Burundi, Côte d'Ivoire, Ethiopia, Lao PDR, Madagascar, Malawi, Sierra Leone.

- Many of the same surveys stand out with a high incidence of missing responses – in particular, Côte d'Ivoire, Malawi, Sierra Leone, Sri Lanka, and somewhat less, Djibouti, Ethiopia, Lao PDR, and Madagascar.

- The incidence and level of missing responses is higher than for out-of-universe responses.

- There are almost no out-of-universe response rates for household members and households (these questions are answered for all respondents – the one case of out-of-universe responses is Côte d'Ivoire where question on age in months is filtered for only respondents under age 5); but a number of surveys have missing responses mostly concerning precise day/ montA few question topics stand out with out-of-universe responses for a large number of surveys – education flows, education costs, and education quality/ motivation – all questions that generally have multiple filters on them.

- The same questions, plus education attainment and literacy/learning, have a high incidence of missing response rates.

Table 3 Percent of Out-of-Universe Response Errors by Topic and by Survey

	Household Member	Household Characteristics	Family	Educational Attainment	Learning & Literacy	Attendance & Enrollment	Education Flows	Education Costs	Motivation and quality	Getting to School	School Type	After school learning environment	Early Childhood Education
Bangladesh, HIES 2000	0	0		0	0	0		23	0		0		
Benin, QUIBB 2003	0	0		0	0	0			0		0		
Bhutan, LSS 2003	0	0	0	0	0	0			0	0	0		
Burkina Faso, QUIBB 2003	0	0		0	0	0			0		0		
Burundi, ENCV 1998	0	0		0	14	0	1		2				
Cambodia, SES 2003	0	0	0	0	0	0			1		0	0	
Cameroon, ECAM 2001	0	0		0	0	0	0		0		0		
Cape Verde, IDRF 2001	0	0		0	0	0							
Côte d'Ivoire, ENV 2002	1	0		0	0	2	1	3	4		289		
Djibouti, EDAM 1996	0	0		0	0	0			0		0		
Ethiopia, WMS 2000	0	0		0	1	0	1		0		1		
Gabon, QUIBB 2005	0	0	0	0	0	0			0		0		
Ghana, GLSS 1998	0	0	0	1	0	0	0	0		0			
India, NSS 2004	0			0									
Indonesia, SES 2002	0	0		0	0	0					0		
Lao PDR, LECS 2003	0	0	33	0	0	1	8		31				0
Madagascar, EPM 2001	0	0		2	12	3	4		23	5	2		
Malawi, HIS 2004	0	0	0	0	0	0	0	3	1	0	0	1	
Maldives, VPAS 2004	0	0		0	0	0							
Mozambique, IAF 2002	0	0	0	0	0	0			18		0		
Nepal, LSS 2003	0	0	0	0	0	0	0	0	0	0	0		
Niger, QUIBB 2003	0	0	0	0	0	0			0		0		
Nigeria, LSS 2003	0	0	0	0		0	0	0	0		0		
Pakistan, IHS 2001	0	0		0	0	0	1		0	0	0		
Sierra Leone, IHS 2003	0	0	0	1	0	0	8	0	0	0	0		
Sri Lanka, HIES 2002	0	0		0									
Tanzania, HBS 2000	0	0		0	0	0			0				
Thailand, SES 2002	0	0		0		0							
Uganda, NHS 2002	0	0	0	0	3				3	0	0		
Vietnam, LSS 2004	0	0		0	0	1		4			4		
Number of surveys with out-of-universe errors	**1/ 30**	**0/ 29**	**1/ 12**	**3/ 30**	**4/ 26**	**4/ 27**	**7/ 12**	**4/ 8**	**8/ 22**	**1/ 8**	**4/ 21**	**1/ 2**	**0/ 1**

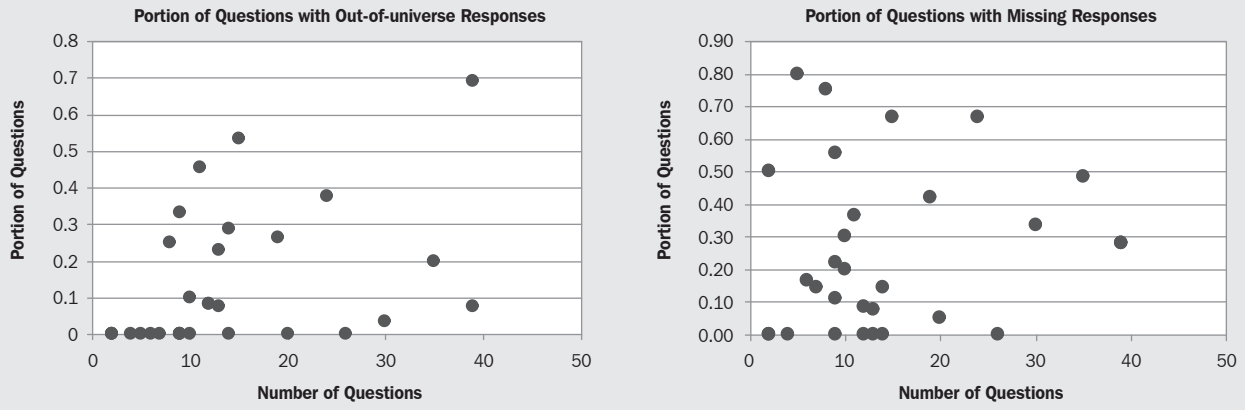
Table 4 Percent of Missing-Response Errors by Topic and by Survey

	Household Member	Household Characteristics	Family	Educational Attainment	Learning & Literacy	Attendance & Enrollment	Education Flows	Education Costs	Motivation and quality	Getting to School	School Type	After school learning environment	Early Childhood Education
Bangladesh, HIES 2000	0	0		0	0	0		0	0		0		
Benin, QUIBB 2003	0	0		0	1	0			1		0		
Bhutan, LSS 2003	0	0	0	0	0	0			6	0	0		
Burkina Faso, QUIBB 2003	0	0		0	0	0			0		0		
Burundi, ENCV 1998	29	0		0	0	0	2		6				
Cambodia, SES 2003	0	0	0	0	0	0			16		0	0	
Cameroon, ECAM 2001	1	0		0	0	0	9		1		0		
Cape Verde, IDRF 2001	0	0		0	0	0							
Côte d'Ivoire, ENV 2002	6	0		1	1	1	6	5	0		3		
Djibouti, EDAM 1996	0	0		1	0	7			11		1		
Ethiopia, WMS 2000	0	0		0	15	0	1		0		0		
Gabon, QUIBB 2005	0	0	0	0	0	0			0		0		
Ghana, GLSS 1998	1	0	0	5	3	0	0	0		0			
India, NSS 2004	0			0									
Indonesia, SES 2002	0	0		0	0	5					0		
Lao PDR, LECS 2003	0	0	13	0	16	1	1		31				1
Madagascar, EPM 2001	0	0		1	1	4	2		5	0	0		
Malawi, HIS 2004	0	1	3	2	2	1	1	7	1	0	1	1	
Maldives, VPAS 2004	0	0		1	0	0							
Mozambique, IAF 2002	0	0	0	0	0	0			0		0		
Nepal, LSS 2003	0	1	0	2	3	0	0	0	0	0	0		
Niger, QUIBB 2003	0	0	0	0	0	0			0		0		
Nigeria, LSS 2003	0	0	0	0		0	0	2	0		0		
Pakistan, IHS 2001	0	0		1	1	0	1		0	1	0		
Sierra Leone, IHS 2003	0	0	0	1	1	0	2	0	1	1	4		
Sri Lanka, HIES 2002	3	2		4									
Tanzania, HBS 2000	0	0		1	0	1			1				
Thailand, SES 2002	0	0		0		0							
Uganda, NHS 2002	0	0	0	0	1				2	5	1		
Vietnam, LSS 2004	0	0		0	0	0		0			0		
Number of surveys with missing response errors	**5/ 30**	**3/ 29**	**2/ 12**	**11/ 30**	**11/ 26**	**7/ 27**	**9/ 12**	**3/ 8**	**12/ 22**	**3/ 8**	**5/ 21**	**1/ 2**	**1/ 1**

Figure 4 shows that there is a positive, though weak relation between the number of questions in the education module and the portion of questions with out-of-universe or missing response errors. One of the reasons for this is that the error rates increase after multiple filters and question skipping instructions, of which there are more in the longer education modules.

A more detailed discussion of which specific questions cause the out-of-universe and missing response errors, and why, follows in the sections dealing with each of the education topics. There does not appear to be a single cause for such errors, rather they stem from 1) complex and misunderstood filters, 2) apparent question skipping by the interviewers, or 3) simple un-knowing but no "Don't know" response opportunity.

Figure 4 **Relationship Between Number of Questions and Portion of Questions with Out-of-universe and Missing Responses**



7. Extraction of Indicators and Standard Errors

The value of household surveys is in the knowledge they provide, contained in indicators such as school attendance rates, repetition rates, distribution of school costs, and distribution of reasons for not attending school. The usefulness of the indicators depends on whether 1) the indicators are relevant, but also 2) on acceptable confidence intervals and 3) a representative survey. We are not able to analyze how representative the survey sample is, but we can analyze the standard errors and confidence intervals.

A standard error (SE)[6] is a statistical measure that helps us understand how confident we can be that the indicator we calculate based on the sample of people who responded to survey is close to the value we would have gotten if we had asked the same question to everybody in the country. In a nutshell, the level of confidence in the accuracy of a calculated indicator is higher when it is 1) calculated from a larger sample of respondents, or 2) there is less variation in the responses we get from respondents. The standard error is provided to give an estimate of the uncertainty that the indicator value from the survey sample is the same as the indicator value in the population as a whole.

The EPDC extracted a set of 10 common education indicators from the 30 surveys to give information about how many children start school and remain in school, and how they flow through the education system - education attainment, literacy rate, gross intake rate, net intake rate, gross attendance rate, net attendance rate, completion rate, dropout rate, promotion rate. The indicators are extracted with Stata.

For each indicator the EPDC calculated standard errors (SE) to examine the reliability of data extracted at the national and sub-national levels. Table 5 through Table 8 show the extracted values for the indicators and the standard errors.

The tables provide the indicators for three cuts, by level of detail: the national level; rural females; and the sub-national level. As expected, in general, at higher levels of detail standard errors are higher because we draw from a smaller sample of respondents to calculate the indicator. Thus, indicators for smaller sub-samples of a survey (e.g. indicators calculated at the regional level) are less reliable than those for the sample as a whole. Some of the survey sample sizes are too small for the detailed sub-national extraction of indicators.

For various reasons, the extractions of the education indicators are somewhat less complete than indicated by Table 2 with the coverage of different topics. The EPDC extracted indicators on educational attainment for 27 countries; literacy for 24 countries; attendance for 27 countries; and flows for 5 countries. Some countries are missing because the surveys lacked an important detail (e.g. the Ghana survey asks about attendance but not grade or level so it is not possible to calculate the primary attendance rate). In one case, a line of data is missing from the dataset – the India survey is missing the line on main occupation which includes school attendance.

The values found for the indicators are within the expected ranges and generally close to values found by the administrative systems.

At the national level, standard errors are generally (but not always) at an acceptable level. At the more detailed level of rural females many of the standard errors are higher, meaning we are less confident in the reliability of these indicators. At the sub-national level, there are many surveys where standard errors are above 2.52 for significant portions of the regions, meaning that many of these indicators are even less reliable. Similarly, the standard error associated with a gross primary attendance rate is lower than that for a net primary attendance rate, and the standard error for a net primary attendance rate.

6 Calculated as $SE_x = \frac{s}{\sqrt{n}}$ where s is the sample standard deviation (i.e. the sample based estimate of the standard deviation of the population), and n is the size (number of items) of the sample.

Table 5 Literacy Rate, Ages 15-19, and Educational Attainment: Primary Incomplete, Ages 15+

	National, ALL Value (standard error)		National, Female, Rural Value (standard error)		Sub-national minimum and maximum values (% of s.e above 2.52)	
	Literacy Rate, Ages 15-19	Educational Attainment: Primary Incomplete, Ages 15+	Literacy Rate, Ages 15-19	Educational Attainment: Primary Incomplete, Ages 15+	Literacy Rate, Ages 15-19	Educational Attainment: Primary Incomplete, Ages 15+
Bangladesh	55 (0.9)	4 (0.2)	44 (1.2)	4 (0.3)	46 - 71 (0%)	4 - 6 (50%)
Benin	42 (1.3)	16 (0.5)	19 (1.6)	10 (0.8)	22 - 71 (17%)	8 - 22 (25%)
Bhutan	65 (1.6)	10 (0.6)	26 (4.5)	4 (0.8)	36 - 71 (14%)	5 - 20 (21%)
Burkina Faso	25 (0.9)	8 (0.3)	8 (0.6)	3 (0.3)	10 - 60 (0%)	3 - 15 (23%)
Burundi	54 (1.0)	29 (1.0)	46 (1.1)	23 (1.3)	37 - 88 (47%)	22 - 41 (20%)
Cambodia	75 (0.6)	36 (0.4)	66 (0.9)	39 (0.6)	17 - 94 (33%)	15 - 45 (13%)
Cameroon	88 (1.1)	20 (0.6)	67 (3.4)	22 (1.1)	44 – 99 (31%)	10 - 33 (25%)
Cape Verde	97 (0.4)	32 (0.7)	96 (0.8)	26 (0.9)	96 – 100 (22%)	30 - 47 (33%)
Côte d'Ivoire	56 (1.5)	11 (0.3)	26 (1.3)	9 (0.5)	21 - 78 (0%)	5 - 15 (27%)
Djibouti	57 (1.0)	5 (0.3)	23 (2.9)	5 (0.8)	43 - 59 (0%)	3 - 5 (50%)
Ethiopia	32 (0.6)	7 (0.2)	10 (0.4)	4 (0.2)	21 - 83 (0%)	4 - 12 (27%)
Gabon	92 (0.3)	12 (0.3)	85 (1.3)	20 (1.1)	86 - 94 (0%)	7 - 20 (50%)
Ghana	56 (1.4)	15 (0.6)	34 (1.7)	15 (1.0)	21 - 79 (0%)	5 - 18 (10%)
India	67 (0.4)		48 (0.6)		51 - 97 (0%)	
Indonesia	96 (0.1)	0 (0.0)	91 (0.2)	0 (0.0)	90 - 100 (0%)	0.0 - 0.3 (43%)
Lao PDR	82 (0.9)		34 (0.8)		74 - 86 (0%)	
Madagascar		29 (1.5)		33 (2.0)		20 - 35 (50%)
Malawi	67 (0.6)	51 (0.5)	54 (0.8)	47 (0.6)	65 - 83 (0%)	48 - 63 (100%)
Maldives	97 (0.3)	15 (0.5)	98 (0.3)	19 (0.8)	96 - 98 (0%)	11 - 19 (50%)
Mozambique	51 (1.2)	57 (0.8)	22 (1.0)	47 (1.3)	35 - 88 (18%)	45 - 68 (27%)
Nepal	52 (1.1)	9 (0.3)	37 (1.5)	7 (0.4)	45 - 62 (0%)	8 - 9 (60%)
Niger	32 (1.0)	7 (0.4)	6 (0.4)	4 (0.3)	24 - 62 (0%)	6 - 15 (38%)
Nigeria		3 (0.1)		4 (0.2)		2 - 6 (50%)
Pakistan	50 (0.6)	6 (0.1)	25 (0.8)	4 (0.2)	39 - 64 (0%)	3 - 7 (50%)
Rwanda	57 (0.5)	47 (0.5)	58 (0.8)	47 (0.6)	48 - 60 (0%)	34 - 49 (60%)
Sierra Leone	37 (2.5)	10 (0.4)	12 (1.9)	7 (0.5)	20 - 76 (0%)	8 - 13 (75%)
Sri Lanka		12 (0.2)		12 (0.3)		7 - 16 (43%)
Tanzania	77 (1.1)	65 (1.0)	67 (1.7)	58 (1.5)	60 - 94 (80%)	49 - 78 (15%)
Thailand		41 (0.4)		49 (0.5)		21 - 50 (60%)
Uganda	41 (0.5)	44 (0.4)	42 (0.7)	47 (0.6)	37 - 43 (0%)	41 - 48 (75%)
Vietnam	98 (0.2)	16 (0.4)	97 (0.4)	21 (0.5)	90 - 99 (13%)	8 - 28 (38%)

Table 6 Gross Attendance Rate and Net Attendance Rates

	National, ALL Value (standard error)		National, Female, Rural Value (standard error)		Sub-national minimum and maximum values (% of s.e above 2.52)	
	Gross Attendance Rate	Net Attendance Rate	Gross Attendance Rate	Net Attendance Rate	Gross Attendance Rate	Net Attendance Rate
Bangladesh	92 (1.5)	65 (1.0)	94 (2.2)	67 (1.4)	86 - 101 (100%)	60 - 72 (50%)
Benin	93 (2.5)	62 (1.6)	77 (3.4)	52 (2.2)	52 - 129 (100%)	34 - 87 (92%)
Bhutan	104 (3.5)	73 (2.3)	90 (20)	58 (16)	104 - 125 (21%)	73 - 79 (14%)
Burk. Faso	44 (1.4)	34 (1.1)	27 (1.4)	21 (1.2)	22 - 94 (100%)	15 - 73 (100%)
Burundi	82 (3.1)	56 (1.9)	75 (3.3)	50 (2.1)	39 - 129 (100%)	30 - 83 (87%)
Cambodia	132 (1.3)	77 (0.7)	132 (1.8)	76 (0.9)	84 - 160 (88%)	48 - 88 (54%)
Cameroon	105 (2.4)	63 (1.5)	89 (3.9)	54 (2.3)	67 - 136 (100%)	33 - 87 (58%)
Cape Verde	111 (1.0)	88 (0.6)	111 (1.9)	89 (1.1)	97 - 125 (67%)	81 - 92 (44%)
Côte d'Ivoire	88 (2.1)	58 (1.5)	67 (2.9)	45 (1.8)	57 - 105 (100%)	36 - 73 (82%)
Djibouti	95 (2.1)	68 (1.4)	69 (5.9)	51 (4.2)	89 - 98 (50%)	61 - 69 (50%)
Ethiopia	71 (1.4)	29 (0.7)	54 (1.8)	22 (0.9)	36 - 116 (73%)	15 - 69 (36%)
Gabon	140 (1.5)	92 (0.5)	155 (4.5)	94 (1.0)	131 - 154 (100%)	91 - 95 (0%)
Indonesia	106 (0.2)	93 (0.1)	107 (0.3)	93 (0.2)	102 - 108 (14%)	89 - 95 (0%)
Lao PDR	115 (1.8)	71 (1.2)	105 (2.5)	65 (1.7)	110 - 122 (100%)	63 - 77 (33%)
Madagascar	107 (3.7)	62 (2.2)	97 (4.9)	58 (3.2)	72 - 123 (100%)	38 - 78 (83%)
Malawi	80 (0.9)	55 (0.7)	76 (1.2)	56 (0.9)	77 - 98 (0%)	51 - 70 (0%)
Maldives	131 (1.9)	78 (0.9)	130 (3.4)	79 (1.4)	134 - 156 (100%)	85 - 89 (17%)
Mozambique	100 (2.1)	66 (1.2)	80 (2.9)	57 (1.9)	82 - 147 (100%)	53 - 89 (55%)
Nepal	111 (2.7)	63 (1.6)	97 (3.9)	57 (2.4)	96 - 132 (100%)	54 - 75 (100%)
Niger	51 (1.7)	41 (1.3)	37 (2.0)	30 (1.6)	39 - 94 (100%)	31 - 72 (88%)
Nigeria	64 (1.2)	42 (0.7)	53 (1.4)	36 (0.9)	34 - 97 (67%)	23 - 59 (0%)
Pakistan	72 (1.0)	42 (0.7)	53 (1.5)	33 (1.0)	61 – 98 (50%)	32-50 (33%)
Sierra Leone	126 (2.6)	77 (1.3)	109 (3.6)	70 (2.0)	116 - 139 (100%)	72 - 92 (50%)
Tanzania	85 (1.8)	59 (1.3)	84 (2.7)	58 (1.9)	68 - 104 (100%)	44 - 81 (90%)
Thailand	96 (0.8)	82 (0.6)	94 (1.4)	80 (1.1)	93 - 100 (20%)	78 - 86 (0%)
Uganda	125 (1.6)	43 (0.6)	126 (2.5)	43 (0.9)	116 - 134 (100%)	40 - 46 (0%)
Vietnam	109 (1.0)	89 (0.6)	111 (1.6)	89 (0.9)	105 - 122 (63%)	84 - 93 (13%)

Table 7 Gross Intake Rate to Primary and Percentage of Pupils Overage Grade 1						
	National, ALL Value (standard error)		National, Female, Rural Value (standard error)		Sub-national minimum and maximum values (% of s.e above 2.52)	
	Gross intake rates Grade 1	% Pupils overage Grade 1	Gross intake rates Grade 1	% Pupils overage Grade 1	Gross intake rates Grade 1	% Pupils overage Grade 1
Bangladesh	117 (5.8)	69 (1.7)	116 (9.1)	70 (2.6)	99 - 139 (100%)	61 - 71 (100%)
Benin	93 (4.5)	44 (1.9)	92 (7.0)	53 (3.2)	36 - 138 (100%)	18 - 70 (83%)
Bhutan	131 (13.4)	81 (2.4)	118 (70.9)	100 (0)	9 - 400 (60%)	67 – 100 (45%)
Burkina Faso	39 (1.9)	34 (2.0)	24 (2.0)	42 (3.9)	22 - 87 (100%)	23 - 54 (54%)
Burundi	132 (7.8)	70 (2.4)	129 (13.0)	73 (3.5)	94 - 256 (100%)	33 - 91 (80%)
Cambodia	170 (5.0)	73 (0.9)	167 (7.3)	74 (1.4)	127 - 243 (100%)	43 - 84 (58%)
Cameroon	111 (4.8)	78 (1.3)	102 (8.6)	83 (2.1)	80 - 157 (100%)	51 - 91 (92%)
Côte d'Ivoire	71 (3.4)	59 (1.8)	50 (5.1)	63 (3.0)	36 - 97 (100%)	37 - 81 (82%)
Ethiopia	100 (3.3)	79 (1.0)	89 (4.8)	84 (1.4)	80 - 130 (100%)	51 - 85 (27%)
Gabon	140 (6.4)	22 (1.4)	187 (21.1)	34 (3.7)	101 - 228 (100%)	12 - 33 (100%)
Indonesia	123 (1.1)	17 (0.4)	121 (1.8)	18 (0.6)	120 - 127 (60%)	15 - 22 (0%)
Lao PDR	184 (5.9)	79 (1.1)	171 (8.1)	78 (1.6)	173 - 200 (100%)	74 - 86 (0%)
Madagascar	157 (9.4)	72 (2.0)	147 (13.8)	74 (3.4)	119 - 211 (100%)	67 - 75 (100%)
Malawi	217 (5.6)	61 (0.9)	217 (8.8)	62 (1.4)	191 - 230 (100%)	44 - 64 (0%)
Maldives	119 (9.3)	98 (0.7)	121 (16.5)	97 (1.7)	106 - 119 (100%)	63 - 76 (83%)
Nepal	150 (8.1)	77 (1.7)	130 (10.2)	74 (2.6)	145 - 158 (100%)	70 - 83 (100%)
Niger	53 (3.4)	25 (1.7)	38 (4.0)	24 (3.0)	37 - 84 (100%)	16 - 31 (75%)
Nigeria	20 (1.2)	38 (2.6)	16 (1.4)	38 (4.0)	7 - 48 (66%)	28 - 49 (100%)
Pakistan	100 (2.9)	84 (0.9)	82 (4.4)	84 (1.4)	77 - 108 (100%)	82-95 (33%)
Sierra Leone	130 (7.3)	54 (2.2)	118 (11.0)	54 (3.9)	114 - 187 (100%)	43 - 60 (100%)
Tanzania	110 (6.3)	78 (2.1)	104 (10.6)	81 (3.1)	65 - 162 (100%)	63 - 93 (95%)
Bangladesh	117 (5.8)	69 (1.7)	116 (9.1)	70 (2.6)	99 - 139 (100%)	61 - 71 (100%)

Table 8 Primary Completion Rate, Primary Repetition Rate						
	National, ALL Value (standard error)		National, Female, Rural Value (standard error)		Sub-national minimum and maximum values (% of s.e above 2.52)	
	Primary Completion Rate	Primary Repetition Rate	Primary Completion Rate	Primary Repetition Rate	Primary Completion Rate	Primary Repetition Rate
Cameroon		25 (0.8)		25 (1.6)		17 - 31 (42%)
Côte d'Ivoire	105 (4.7)	17 (1.1)	93 (6.3)	19 (1.8)	62 -126 (100%)	5 - 31 (45%)
Ethiopia	52 (2.1)	14 (0.6)	29 (2.3)	19 (1.2)	11 -115 (100%)	6 - 22 (27%)
Madagascar	44 (4.2)	25 (1.7)	32 (5.5)	25 (3.0)	29 - 55 (100%)	18 - 33 (100%)
Malawi	44 (2.4)	26 (0.6)	18 (1.4)	26 (0.8)	36 - 62 (100%)	23 - 27 (0%)
Pakistan	60 (2.0)	6 (0.3)	41 (2.9)	5 (0.5)	47 - 94 (100%)	2 - 10 (0%)

8. Specific Analysis and Recommendations by Topic

8.1 Household Members, Family Relationships, and Household Characteristics

All surveys collect information on background data on individual household members. All surveys include sex, age, and many include relationship to the head of household. While sex is limited to one short question; information on age can include the month and day of birth, but in a couple of surveys (Burundi, Sierra Leone) a significant portion of the respondents was not able to provide the birth day and month detail. Information on the exact birthday can make the calculation of net attendance rates, net intake rates, and net completion rates more precise. The DHS surveys do not include information on birth day and month for children over 5 years old.

Other less commonly collected information includes: ethnicity (10 surveys), religion (9), disability status (6). These questions are unambiguous, and are asked for all members of the household without filters.

All surveys include information on the region or province of the household, and distinguish between urban and rural households. Some surveys include questions that could be used to ascertain the socio-economic status of households such as: type and quality of dwelling, ownership of various assets, and income information, and for some surveys, that material information may be enough to calculate wealth indices, although we did not attempt this. The DHS and MICS surveys use an approach developed by the World Bank to develop an asset index[7]. Many studies have found such household characteristics to be important determinants of the chances of school attendance and retention in school.

7 *ORC Macro DHS Comparative Reports 6: The DHS Wealth Index*, www.measureDHS.com, August, 2004.

The out-of-universe, out-of-range, and missing response rates are zero or close to zero for almost all of the surveys and questions relating to household members, family, and household characteristics, but a few notable exceptions apply, namely, questions on age in the Burundi and Côte d'Ivoire survey, and marital status in the Burundi questionnaire.

Recommended: Provide A *Don't Know* Option to Avoid Missing Response Errors

In two surveys, a large portion of the respondents is not able to answer birth day and month (Burundi and Côte d'Ivoire). In Burundi, respondents are first asked birth day, month and year, and where this response is missing - two-thirds of the respondents – there is a simpler, follow-up question on age. If the Burundi questionnaire had allowed a "Don't know" answer to the first birth day/month/question, then there would not be the 2/3 "Missing response" error. In the second survey of Côte d'Ivoire, 26% of the respondents are missing the "Age in months" response; again, presumably, a "Don't know" answer would have provided mostly valid responses, rather than "Missing response" errors.

Recommended: Ask Birth Day and Month Question of Children

Because the survey respondent may be unsure of the actual birth day and month of all of the household members, and because, for older members, the exact date may not be important, survey designers may consider not collecting this information for all respondents.

On the other hand, for school-age children, not knowing the exact birth-date makes it unclear which children to include in the "school-age" category. If a survey is taken months into the school-year, many children will have had birthdays.

For example, in a school system that starts at age 6 and has six grades, if the survey is taken 6 months into the school year, about half of the 6-year olds will be children who were *not* of the official school age at the beginning of the school year, but *were* of school age at the time that the survey was administered. These pupils might be falsely counted as "school-age" children). At the other end of the primary, half of the 12 year olds who *were* the official school (age 11) at the start of the school year will have moved beyond that categorization by the time the survey was administered. Such shifts can cause a few percentage point difference in the attendance estimates.

Recommended: Provide Filters for Obvious Answers

In the Burundi survey, there is also a high percentage of missing answers to the marital status question, which is asked of all respondents regardless of age (whereas most surveys use a filter to make sure questions like these are asked only of appropriately-aged respondents). As it turns out, the reason for the high percentage of missing values is that most of the missing answers concern children age 0-9 years old. About 7600 of the ten thousand children nine and under received a blank answer (the remainder was coded as unmarried), while most of the older population received an answer. Overall, there was a 24% missing response rate to the marital status question. It appears that interviewers skipped what they (correctly) thought was an unnecessary and obvious question for this young group despite the fact that the instructions did not direct them to do so. Unfortunately, this introduces error into the dataset. A better option is to provide a filter for such clear cases. Another, less desirable option is presented in the case of the Lao PDR survey, where interviewers are instructed to code all children 10 and under as unmarried (this could introduce a tiny error in the very unlikely case that a young child had been married).

8.2 Education Attainment and Literacy

Educational attainment has been found to be correlated with many measures of development, such as child and adult health and mortality, income and occupation, urban migration, democracy, terrorism, and as such is an important measure to include in household surveys. The UIS definition of educational attainment, as the "percentage distribution of population … according to the highest level of education attained or completed,"[8] is somewhat ambiguous because 'highest level completed' is not necessarily equivalent to 'highest level attained,' which could mean the highest level reached (but not necessarily completed).

As it turns out, all of the 30 surveys include various questions on educational attainment in various gradations of detail – all 30 surveys provide the highest school level attained or completed,19 specifically provide the highest grade attained or completed, and 15 appear to draw a distinction between the highest grade or level 'attained' and the highest grade or level

8 UNESCO Institute for Statistics, Technical Guidelines, http://www.uis.unesco.org/ August 1, 2007

completed. Most often, surveys ask for the highest level attained and the highest grade completed.

There are various surveys with special formulations, some of which provide interesting variations that may be useful in various contexts, and others, which are confusing, redundant, or lead to higher error rates.

In general, the out-of-universe response, missing response, and out-of-range response levels are zero or close to zero for the general education attainment questions, but there are more errors than for the simpler household member questions, listed in Table 9.

Table 9 Out-of-universe and Missing Responses on Formal and Non-formal Schooling

Survey	Out-of-universe errors	Missing responses
Côte d'Ivoire		3% missing for ever attended training
Djibouti		2% missing for highest grade attained
Ghana	3% OOU for tertiary education and years of tertiary	3% missing (801 respondents) for ever attended school, apprenticeships, attended short training course, literacy training. 28% missing (4702 respondents) for ever attended technical or vocational school and ever attended tertiary.
Madagascar	4% OOU on ever attended school. 2% OOU on highest grade and level attained. 12% OOU on reason for never attending school.	4% missing for highest level attained.
Malawi		3% missing ever attended school
Nepal		6% missing school background
Sierra Leone	6% OOU for length of attending training course.	4% missing duration of apprenticeship
Sri Lanka		4% missing highest level attained
Uganda		2% missing reason for never attending school

Recommended Filters and Formulations

All surveys include at least one question about educational attainment on the notion of whether the respondent has attended school at all or not. Nine surveys do not filter the respondents on ever-attendance – Benin, Burkina Faso, Gabon, India, Lao PDR, Nepal, Niger, Uganda, and Vietnam. Twenty-two surveys filter the respondents on ever-attendance by age, usually age 5 and above:

- Countries filtering in age 3 and above: Bhutan, Côte d'Ivoire

- Countries filtering in age 4 and above: Cape Verde, Madagascar, Pakistan

- Countries filtering in age 5 and above: Bangladesh, Burundi, Cambodia, Cameroon, Djibouti, Ethiopia, Ghana, Indonesia, Malawi, Maldives, Nigeria, Sierra Leone, Sri Lanka, Tanzania, Thailand

- Countries filtering age 6 and above: Mozambique

In many surveys, the same respondents cause errors on multiple answers because they are incorrectly filtered in or out of a questionnaire detour with multiple questions. For example, in the Ghana survey, the same 801 respondents had missing responses for ever attended school, apprenticeships, attendance of short courses, and literacy training. The fact that incorrect filters can cause a ripple of multiple errors is a reason to re-emphasize the importance of clear and logical filters.

Recommended: Three Possible Structures for Education Attainment Questions

In the majority of the surveys the education attainment topic consists of two questions: *Did (name) ever attend school? If yes, what was the highest grade (name) attended?* The second question has some variations: highest grade attained, or only highest level (Malawi), about grade and level (Côte d'Ivoire, Indonesia, Madagascar, Nigeria, Sierra Leone) or grade and certification (Ghana, Indonesia), or other training (Côte d'Ivoire, Ghana). Five of surveys combine the ever attended and highest attendance into one question by asking: *What is the highest level of schooling (name) attended?* – including "no schooling" among the possible answers. Finally, three of the surveys ask about "Educational background" and combine "Still attending", "Never attended", and "Highest attainment" (for those who did attend but are no longer attending). The error rates of these different structures are not much different from the multi-question structures. It may be desirable to use the standardized DHS/MICS structure with three questions because it distinguishes clearly between attendance and completion of school grades and levels.

Table 10 shows the error rates for the combined question structures.

Table 10 Percent Out-of-universe and Missing Response Rates For Combined Education Background Questions That Combine "Never Attended", "Highest Attainment", and/Or "Currently Attending"

Surveys that combine "Never attended" in the "Highest educational attainment" question.			Surveys that combine "Currently attending", "never attended", and "highest attainment" in one question.		
	Out-of-universe	Missing		Out-of-universe	Missing
Bangladesh	0	0	Nepal	0	2
India*	0	0	Pakistan	0	1
Sri Lanka	0	4	Uganda	0	0
Tanzania	0	1			
Thailand	0	0			

* The India survey also includes "Not literate", "Literate without schooling", "Literate with less than complete primary" in the education attainment levels.

Not Recommended: Non-age Filters on Attainment

While most surveys use only one filter, the age of the respondent, to determine whether to ask questions about attainment and literacy, two surveys use both an age filter and a literacy filter. The Bangladesh and Ethiopia surveys both ask about highest school level attained *only* if the respondent is older than the age minimum *and* has given a positive response to *Can you read and write*?. Clearly, this erroneously filters out respondents who did attend school, but did not to learn to read and write, thus overestimating 'No Schooling' at the expense of 'Primary.'

Table 11 shows the higher rates of *No Schooling* found by two separate surveys in Bangladesh. The 2000 HIES survey filters by both age and literacy, whereas the DHS survey filters only by age. The HIES survey shows a considerably larger portion of the population with 'No Schooling' and smaller proportion of the population with 'Primary,' as compared to the DHS survey, though we cannot know how much of this difference is caused by the wording of the questionnaire, and how much can be explained by other differences between the surveys. It should be mentioned that there are also other differences between these surveys that are not related to the filter for education attainment, and that these differences may increase the discrepancy in the measured education attainment.

Table 11 Comparison of Education Attainment in Bangladesh DHS 2004 and HIES 2000

	DHS 2004	HIES 2000
No Schooling	37.6 %	51.8 %
Primary	26.5 %	14.8 %
Secondary	27.0 %	32.3 %
Sec+	9.0 %	1.1 %
	100 %	100 %

Possible Question to Consider: Reason Never Attended?

Lao PDR, Madagascar, Malawi, Nigeria, Pakistan, and Uganda use the ever-attended school question to filter for a follow-on question on *Reason never attended*? Responses to this questions may be useful to policy makers, but should be interpreted with caution, because real reasons for not attending school are likely much more complex than can be captured in a simple survey response. Also, it is not certain that the respondent, who is answering this question for all household survey members, knows the correct answers.

One series of in-depth education surveys, the DHS EdData surveys limit the motivation questions to the parent or guardian of the school age child. In an extension, one could consider limiting the response to this question also to children, or self and spouse, for example. For more guidance on motivation questions, the reader can consult the DHS EdData manuals.

Possible questions to consider: Apprenticeships, training, short courses, informal schooling

The Sierra Leone and Ghana surveys have a separate set of questions on apprenticeships and short courses. The initial filter for *Have you ever been an apprentice*?- and *Attended a short training course?* – is only age. This question is a filter for follow-on questions on duration and type of apprenticeship or courses.

Not recommended: combining current grade with highest grade attained

A couple of surveys combine current grade attending with highest grade attained. One of these is Malawi, which asks: *What grade are you in or what was the highest grade you ever attended?*

Not recommended: Redundant questions on highest attainment

The Nigeria and Sierra Leone surveys also have redundant questions on attainment in a section called "Education career"

In the education section, the Sierra Leone survey queries:

1. *Ever attend school?*

2. *Highest class or form completed? (the answers include a specific list of primary grades)*

Later, the survey continues, for those who are not attending school anymore:

20. *What was the highest primary grade completed? (the answers include, again, a specific list of primary grades), followed by specific questions on primary, and:*

27. *Did you ever attend secondary?*

28. *What was the highest secondary grade attended?.*

For Sierra Leone, the answers are relatively, although not entirely, consistent. For example, there are 1341 who respond that primary grade 1 is their highest level in question 2, but 1384, who respond that primary grade 1 is the highest primary grade completed in question 20; the numbers for primary grade 2 are 1251 and 1209 respectively. These are small, 3%, differences, but unexplained nonetheless.

The Nigeria survey has a similar structure but with redundant questions on school attendance (see section on attendance).

Not recommended: separate questions about specific attainment levels

The Ghana survey asks about attendance in vocational and in tertiary institutions in separate questions. It is not clear what the advantage is, but the disadvantages are: 1) an extension and complication of the survey and 2) additional filters placed on the respondents to these questions complicating the work with the dataset. Most other surveys ask about these higher levels of attainment in the same question that specifies level or grade.

Not recommended: multiple types of highest achievement

Some surveys ask for highest attainment of multiple types. For example, the Ghana survey requests *highest level completed* and then in the next question, *highest education qualification*. It next includes a separate section on vocational ,professional training, and literacy courses which includes a question on *highest certificate obtained*. It is not clear what the difference is between these different types of educational attainment; we are not convinced that the three different levels of highest attainment are meaningful additions, and, in fact, may lead to confusion.

8.3 Informal and Vocational schooling

A few surveys have separate questions on other types of schooling than formal primary, general secondary, and tertiary. The questions are spread throughout the education modules – either as follow-ups to ever-attended school (Burundi, Ghana, Sierra Leone), or special sections on vocational and tertiary training (Ghana, Sierra Leone):

- Apprenticeships – Ghana
- Vocational schooling – Ghana, Sierra Leone
- Training - Côte d'Ivoire
- Informal schooling – Cambodia
- Literacy training – Burundi, Ghana, Sierra Leone

8.4 Literacy

All but three of the surveys (Nigeria 2003, Sri Lanka 2002, and Thailand, 2002) contain questions on an individual's ability to read and/or write and do mathematical calculations. Relative to the attainment questions, these questions are simpler in form. Basically, there are three variations (see Table 12 and Table 13):

Can (name) read AND/OR write? – posed in a composite question or as two separate questions.

Can (name) read AND/OR write a letter? – specified in 5 of the 26 surveys.

Can (name) read/write in (a specific language)? – specified in 7 surveys.

One of the clear advantages of the literacy question is that the standard errors for the extracted literacy rates are low - in part because the answers are directed at a large number of respondents, and follow a simple yes/

no format. However, we found 3 serious issues with this set of questions:

- All of the literacy and numeracy answers in our 30 surveys are self reported and some pertain explicitly to different levels of skills.

- There are relatively high response errors: there are four surveys with significant out-of-universe response errors – Burundi, Ethiopia, Madagascar, and Sierra Leone; one-third of the surveys have missing response errors in excess of 1% – 10 out of the 27 surveys that report literacy and/or numeracy. See Table 14.

- A number of the surveys have questionable filters on the literacy question, for example, filtering out all of those who have completed primary, or including only those who have attended school.

Table 12 Questions on Literacy

Can you read AND write?	Can you read OR write?	Can you read? Can you write?	Are you literate?
Benin, Bhutan, Burkina Faso, Burundi, Cameroon, Cape Verde, Côte d'Ivoire, Djibouti, Gabon, Indonesia, Mozambique, Niger, Tanzania, Uganda, Vietnam	Ethiopia (simple sentence), Lao PDR (with or without difficulty)	Bangladesh (a letter), Cambodia, Ghana (a letter), Madagascar, Malawi (one page letter), Nepal (a letter), Pakistan, Sierra Leone	Maldives

Table 13 Questions on Language

Separated by language types	No language specified
Bénin, Bhutan, Burkina Faso, Côte d'Ivoire, Ghana, Malawi, Sierra Leone	Bangladesh, Burundi, Cambodia, Cameroon, Cape Verde, Djibouti, Ethiopia, Gabon, Indonesia, Lao, Madagascar, Maldives, Mozambique, Nepal, Niger, Pakistan, Tanzania, Uganda, Vietnam

Table 14 Percent Out-of-universe and Missing Response Rates in Excess of 1% Among 30 Household Surveys

Country	% out-of-universe responses	% missing responses	Possible explanation
Burundi	14		Erroneous filter
Madagascar	12		Respondents whose age is coded as "0" may actually be over 4 (age filter for literacy)
Uganda	3		
Ethiopia		15	Missing for numeracy. Virtually all those who said they could not read did not answer the numeracy question, although this is not filtered.
Ghana		3	Missing same 801 respondents for all 5 literacy/numeracy questions.
Lao PDR		16	
Malawi		2	
Nepal		3	

Recommended for Reconsideration: Self-reported Literacy

None of the surveys test reading and math skills - levels of literacy and numeracy are self-reported. Self-reporting of literacy is subjective – individuals, cultures and nations have different standards on what it means to be able to read. Furthermore, if the respondents know there will be no further testing of this ability, some may claim to be literate when, actually, they are not. Even if the valid response rates of these questions are high and the standard errors low (as they are), it is unknowable what the responses actually mean and how comparable they are across countries. The 2008 GMR report (UNESCO, 2007) provides a table showing that in Kenya, self-reported literacy is 13-15 percentage points higher than tested results for the percentage of adults with minimum reading ability and cautions that, in general, "conventional literacy data tend in fact to over-estimate literacy levels and should be interpreted with caution" (UNESCO, 2007:62).

DHS administers a reading test only to the respondent, in the individual, rather than the household questionnaire. The reading information, although collected from a limited group within the household, often provides the only internationally comparable information on literacy.

It would be desirable to pilot surveys that include more household members in the reading test. In this pilot, one should take care to 1) have more than one sentence for testing, to ensure that respondents do not overhear one another and repeat what was heard; 2) ensure that the sentences use words commonly learned in early primary school, and not more advanced vocabulary; and 3) that the sentences are of roughly comparable difficulty across languages. It would also be necessary to think about whether the test is only given when all household members are present; to give the test simply to those present at the time of the interview; or only of a certain age; and what the implications would be for the representativeness of the sample.

Possibly Recommended: Literacy Questions for Different Languages

Many countries have multiple major languages – for different ethnic groups, or a mother-tongue and a colonial language – and in seven of the surveys, literacy in multiple languages is queried. Usually, language-specific questions are treated as unique, separate questions, with an own response line in the dataset.

The advantage is providing a clearer picture of the distribution of literacy ability; the disadvantage is that if one is interested in literacy per se (in any language), the syntax to extract literacy has to look for literacy in multiple code lines. In most of these surveys, there are separate questions for each language; only in the Burkina Faso survey was there one language question and the responses coded into different lines on the dataset. This latter approach is more confusing for those working with the dataset.

Not Recommended: Separate Self-response Literacy Questions for Reading and Writing

The Bangladesh, Cambodia, Ghana, Madagascar, Malawi, Nepal, Pakistan, Sierra Leone, Malawi, and Nepal surveys include a filter so that only respondents who report that they are able to read are asked whether they are able to write. In practice, the self-reported ability to read is only a percentage point or two above the self-reported ability to write, therefore, it does not appear to be an efficient use of survey time to separate the questions, given the level of imprecision inherent in them.

Recommended Filter: Age Only

Twenty-seven of the 30 surveys ask about respondent's ability to read and/or write, and as with educational attainment, age filters generally apply. For most countries, the age-filters are the same as for the ever-attended school question; some countries apply a higher age to query literacy:

- Countries filtering in age 10 and above: Burundi, Pakistan, Uganda,

- Countries filtering in age 15 and above: Benin, Gabon, Niger

The higher age filters represent a choice on whose literacy is considered relevant. The literacy rates of children are mostly useful to ascertaining how fast children learn to read in school, whereas adult literacy is an important determinant of the adult's (and their children's) socio-economic position.

Not Recommended: Non-age Filters for Literacy

Four of the 26 surveys apply an additional attended-school filter for the literacy question(s), all in different ways.

- *Madagascar* queries literacy only for those who have not gone to school.

- *Burundi* queries only those who have gone to school but are not currently attending.

- *Vietnam* queries literacy only for those who have less than grade 5.

- The *Uganda* survey does somewhat better and queries literacy only of those who have no schooling or who have completed less than primary school – de facto assuming all those with higher than primary schooling are literate (a reasonable assumption according to tests). This is consistent with the DHS approach.

The disadvantage of these filters is that they rely on assumptions about illiteracy among those who have not been to school (in fact, in Madagascar, 10% of those who had not been to school answer they are literate), and fail to obtain literacy information from the complete group of children and adults.

8.5 Attendance and Enrollment - School Participation

All of the 30 surveys ask questions on school participation. The question on school participation is asked a number of different ways, but typically, the questionnaire tries to ascertain whether the individual is currently attending school. The age filter for this question varies, although it typically starts at ages 5 or 6.

Due to differences in the phrasing of attendance/enrollment questions, the responses have slightly different meanings with regard to what type of attendance is queried and what time-period is included. While each answer may provide the country with the information desired, the data is not entirely comparable at the international level. Below is a collection of the phrases used for school attendance/enrollment:

- *Are you currently attending school? (15 surveys)*

- *Are you currently enrolled? (5 surveys)*

- *Do you attend school this year? (3 surveys)*

- *Did you attend school in the past 12 months? (2 surveys)*

- *Are you currently registered? (1 survey)*

- *Are you currently in school system? (1 survey)*

- *Do you attend any education institutes now? (1 survey)*

- *What is your usual activity? (includes: student. 2 surveys)*

Besides attendance, about two-thirds of the surveys delve into the more specific question on grade or level. Eighteen surveys ask about the grade currently attending/enrolled in and an additional three inquire about the school level attending (but not grade). For comparison, the DHS surveys all ask about grade and level.

Recommended: Specification of Attendance

None of the questionnaires provide a note with a definition or pre-set conditions given on the term attendance. Such a definition is important because the term 'attendance' can be interpreted many ways: "generally attends school", "attended in the last week", "enrolled". Respondents might have different, subjective interpretations of terms like "attendance" or "in school system."

To remedy this problem, three surveys include specific questions on attendance frequency ("*How many days absent in past 30 days*?**"** - included in Bangladesh and Indonesia's surveys; and **"***Days attended in past two weeks*" - included in Malawi survey).

We cannot tell, from our analysis, whether the lack of definitions in the questionnaire leads to more imprecision, nor how much imprecision. It is possible that a comparison of two surveys, executed in the same country at roughly the same time, where one survey provides a definition in the questionnaire, and the other does not, would show whether the lack of definition leads to more imprecision and error (at least for that country).

Recommended: Deal Carefully with Interviews Held when School is not in Session

For some surveys, the interviews occur completely or partially outside of the school session. When dealing with a vacation period, it is important to specify which school year the question on attendance refers to (the past or the coming).

The Malawi survey deals poorly with the issue of vacation. The attendance question is:

> *Are you currently attending school or, if school is not in session, did you attend school in the session just completed and plan to attend next session?*

This question is somewhat convoluted and, in the case that school is not in session, requires multiple steps on behalf of the respondent, which is not desirable. Even if the responses are correct (there is a zero % response rate), the responses give a different attendance depending on whether school was in session or not. If school is in session, attendance is required only in the current year for a positive answer. If school is not in session, a positive answer is given only for those attending two years of school (the past and the coming). This filters out those who will enter school in the coming year, and those who dropped out in the last year.

The standard DHS approach to this issue is to ask about attendance during a specified school year. This approach makes the timing of the survey irrelevant, as the data are then all for the same year, regardless of when the household is surveyed – and regardless of school holidays, whether the child was sick that week, and so on.

8.6 Education Flows

Information on education flows – repetition, promotion, and dropout - is valuable to analysts and policy makers because it provides a picture of how students are progressing through the education system, and therewith an indication of retention and efficiency.

Education flow ratios can be derived from data on grade level and attendance over two consecutive years, or from questions that directly ask about repetition, promotion, and dropout. Half (15) of the surveys ask some questions on flows, but the detail of the information gathered collected varies: only four surveys

ask about grade and level attended during the previous school year – details enough to calculate promotion, dropout, and repetition; one survey asks about grade last year – to calculate repetition rate; six surveys ask about attendance last year but not grade – enough to calculate dropout rates only; and another four surveys ask about the number of years needed to complete a school level, and the number of times any grades were repeated over this period – from which proxies of repetition can be calculated. Table 15 shows the types of questions employed in the 30 surveys covered.

The question sequence that covers attendance this year, last year, and grades in both years is presently used by the DHS and MICS surveys and leads to the most information in the most parsimonious way. All of the formulations that we found in the other surveys are inferior, in terms of efficiency of information collection, to these formulations.

The error response rates of these question sections are relatively high – there are out-of-universe and/or missing responses of 1-8% in half of the 8 surveys with information on repetition.

Not Recommended: Inefficient Question Structures

Both the Nigeria and Sierra Leone survey have a separate section which appears to be designed to obtain three additional pieces of information on primary schooling – school ownership, interruption of school, and frequency of repetition. The questions are: *Ever interrupted school? Ever repeated primary? Times repeated primary? Ever repeated secondary? Times repeated secondary?* With regard to overall flows of education, the information provided through this line of questioning is less specific than with the simpler grade this year/last year sequence. The unique information gathered through the four questions identifies those pupils who repeat multiple times, a valuable piece of policy information.

Four surveys (Madagascar, Malawi, Pakistan, Nepal) look for efficiency and repetition a different way by asking: *At what age did (name) enter school? In what year did (name) enter school?* and/or *How many years did (name) need to complete primary?* It is possible to calculate the number of years in school by subtracting the starting age/starting year with the present age/

Table 15 Types of Questions on School Flows and Which Surveys Employed Them

Type of coverage	Countries	Indicators that can be calculated
Attendance last year and grade last year	Côte d'Ivoire, Madagascar, Malawi, Ethiopia, DHS, MICS	Promotion, dropout, repetition rate
Attendance last year, in same grade?	Cameroon	Repetition rate
Attendance last year but not grade	Benin, Burkina Faso, Djibouti, Gabon, Mozambique, Niger	Dropout rate
Time needed to go through school – primary or secondary	Nepal, Malawi, Pakistan	Proxy for repetition
Ever repeated and frequency of repetition – primary or secondary	Sierra Leone,	Proxy for repetition
How many times repeated a grade in primary	Nigeria	Proxy for repetition

Recommended: Question Sequence on Attendance, Including Level and Grade, this Year and Last Year

Only four surveys use the simple sequence applied by all of the DHS and MICS surveys to ascertain repetition, dropout, and promotion, namely four questions on attendance this year and last, plus grade attended this year and last. The questions are filtered only by age, and *ever attended school* = YES.

None of the other survey structures yield the same richness of information, and many yield less precise information using more or the same number of questions. The CWIQ surveys ask only about attendance last year, but not grade attended, which is a unfortunate as, with this structure we can only estimate very general dropout rates (not even of which school level.)

year (assuming no interruptions), and compare this to the actual grade progress made. Like the above, this only provides vague indirect repetition information, much less precisely than the grade this year/last year sequence. The age-at-entry question identifies late starters individually, but late entry can also be derived from the non-repeating first graders' ages and is not an effective use of survey time.

The Cameroon survey asks one repetition question: *Was (name) in the same grade last year?* The attraction of this formulation is its simplicity; but compared to the grade this year/last year sequence, it misses information about promotion and dropout.

The Madagascar and Lao PDR surveys both inquire about intentions to enroll in school – a unique piece of information that may be compared to actual enrollment, but that gave high out-of-universe errors

for both countries (12 and 8% respectively). Also, it is a good idea to avoid asking respondents to say what will happen in the future because of the uncertainty involved.

The Nigeria has four questions on school interruption – *Did (name) interrupt primary school? Reason? Did (name) interrupt secondary school? Reason?* Separate questions for the two school-levels are not useful, given that the information about grade attendance is already available. The Sierra Leone survey asks two questions: *Did (name) interrupt school? Reason?*- which is more parsimonious.

8.7 Cost of Education

Costs of schooling can be high compared to household income - particularly of poor households (Benaouet-Kattan and Burnett 2004, Benaouet-Kattan 2005 and 2006) and has been shown to be a barrier to school entry and retention. Some countries saw a tremendous surge in enrollment after removing school fees (for example: Malawi in 1994; Uganda in 1997). For policy makers, information on how much households spend on education, and on what items, in addition to information on whether this forms a barrier to school attendance, provides detail that can allow them to focus cost changes in a way that enables more children to attend school.

The DHS EdData surveys have an extended module on education expenditures and ask questions of the parent or guardian of children, with separate questions on each kind of expenditure. However, countries may want to obtain some information about education expenditures, without adding a whole new structure to the survey. In this case, it is important to consider how much detail the respondent is likely to know – in an extended household, will the respondent know the expenditures by all of the household members?

Table 16 displays a schematic of the different cost questions in our 30 surveys.

The recent Global Monitoring Report (UNESCO, 2007) uses household expenditure data from surveys with detailed information – among others, the World Education Indicators surveys sponsored by UIS-OECD and the EdData surveys linked to DHS surveys – but not other household expenditure surveys with more general information. The rationale for this selection is that with a more general formulation of expenditures, it is not possible to know what education expenditures are included - for example: are uniforms clothing or education? Is the bus to school transportation or education?

Of the 30 household surveys analyzed, 13 include a set of education cost questions. Surveys that include a section on education costs are: all seven of the LSS surveys; all three of the IHS surveys; plus the surveys from Bangladesh, Cambodia, Lao PDR, and Madagascar.

The questions on education costs are typically found in the education module. Though we noted some questions on education costs in the 'household expenses' section of surveys, these questions were not recorded systematically, and are not considered here.

In all cases, surveys filter respondents for education costs to include only individuals who are old enough to attend school and who are attending school. In a slight variation, the Lao PDR questionnaire asks about costs for individuals who attended in either the present or the previous school year.

Table 16 Questions on Education Cost

Country	Universe	Includes question on scholarship?	Who pays education cost?	Timeframe
Côte d'Ivoire	Attending or attended last year	No	Who paid?	12 months
Ghana	Age 5+; Has attended in last 12 months	Yes	Who paid?	12 months
Lao PDR	Enrolled this year or last	No	Who paid?	This year or last
Nigeria	Age 5+; attended in past 12 months	Yes	Who paid?	12 months
Sierra Leone	Age 5+; Attended any institution at any time in past 12 months	Yes	Who paid?	12 months
Bangladesh	Age 5+; In school	Yes	Household	12 months
Nepal	Age 5+; Currently attending	Yes	Household	12 months
Pakistan	Age 4+; Currently attending	No	Household	Last 1 year
Malawi	Currently attending	No	Household, family, or friends	12 months
Cambodia	Age 5+; In formal, non-formal or after school	No	Unspecified	Past school year
Madagascar	Age 4+; attended school &	No	Unspecified	Present school year
Vietnam	N/A (in Vietnamese)	Yes	Unspecified	12 months
Bhutan	Age 3+; In school	Yes	You	This academic year
Rwanda	Age between 5 and 30; attended in past 12 months	Yes	You	12 months

Questionnaires vary in the level of detail they provide on specific costs. The Ghana, Madagascar, Nigeria, Sierra Leone, and Lao PDR surveys have detailed questions covering a variety of school costs including: all manner of fees, books and materials, uniforms and clothing, tutoring, lodging, transportation, education related donations, and gifts to educators, as well as the nature and value of any scholarships or discounts and "other" expenses. Eight of these surveys ask respondents to supply the total cost of education; the Lao PDR questionnaire explicitly instructs interviewers to tally subcategories and seek clarification when the sum does not equal the total. At the other extreme, the Nepal survey asks only the total amount paid and the value of any scholarships received. While detail is important, it should not exceed what the respondent can be expected to know.

The surveys also vary with regard to the time scale covered. Most surveys ask for costs over the last 12 months; three surveys ask about costs during the present school year; the Lao PDR questionnaire asks for costs during either the present school year or the previous school year. The different timeframes present tradeoffs: if individuals are asked about school-year costs while in the middle of the school year, important costs such as exam fees, which come due at the end of the school year, are omitted. If individuals are asked to report calendar year costs, true costs may appear distorted for any individuals who switched school types or school levels between one academic year and the next.

Surveys vary in specifying *who paid* for education expenses. Five questionnaires ask *Who paid for most of these expenses?* - after cost questions have been answered; five questionnaires ask for costs paid by *you* or *the household*; three questionnaires use the passive tense so that those who pay are left out of the question altogether; Malawi asks for costs *paid by the household, family, and friends*. Unless the question of who pays is made, it is not clear which education costs are included - respondents may only report the costs that they themselves paid or include also costs paid by others.

We do not have specific recommendations for questions about school costs, but do have one general recommendation. It is important that when such a section is designed, the survey designers have a clear idea of the type of information needed. For example, if the goal is to tie expenditures to household characteristics, the survey must specify household expenditures on items – not expenditures by friends or others.

8.8 Education Quality and Reasons for Attending School

General household questionnaires are also used to obtain information about the perceptions of school quality by parents. This is one important source of information about quality. It does not replace other sources, such as standardized tests, that measure learning.

Seven surveys (the five CWIQ surveys, plus Bhutan and Madagascar) contain direct questions about how the parents perceive school quality for children who are attending school. The five CWIQ questionnaires follow formats similar to this example from Benin:

What causes you to be dissatisfied with the school of (name)?

- *No problems (I am satisfied)*
- *Lack of books/furniture*
- *Mediocre teaching*
- *Lack of teachers*
- *Building in disrepair*
- *Other problem*

The Madagascar survey asks:

- *How would you judge the availability of school staff?*
- *How would you judge the quality of the school buildings?*
- *How would you judge the quality of instruction at the school?*

The Bhutan survey asks:

- *Are the teachers often absent?*
- *Are the teachers competent?*
- *Does (Name) have the school books s/he needs?*
- *Is the teaching program relevant?*
- *Are there too many children per teacher?*

- *Is the classroom spacious enough?*
- *Are there good toilet facilities?*
- *Is there a boarding facility?*
- *Is the boarding satisfactory?*

All of these questions provide unique information, although the responses have elements of subjectivity in words such as: "often," "relevant," "needs," "good," "mediocre," and "judge." The questions also assume that the survey respondent has enough knowledge to pass reliable judgment on all these questions.

In addition to these direct questions, the five CWIQ questionnaires plus fourteen other questionnaires, gather some of respondent's perceptions on the quality of schooling through questions on reasons for not attending-, or never attending school. Generally, individuals responding to these questions are able to choose from a range of options, some of which have to do with school quality, and others of which do not. An example from the Djibouti 1996 questionnaire reads:

What is the reason that he/she does not attend school, or that he/she stopped attending school?

- *Did not want to continue because school is too difficult*
- *Would not have learned anything useful*
- *Too young/old to attend*
- *Not educated enough to gain admission*
- *School too far away*
- *Needed to help with domestic work*
- *Needed to work for money*
- *Sick*
- *Graduated*
- *Other (Specify)*

The Madagascar survey has the most questions on reasons for not attending, or not having attended school. The survey asks: *Did (name) ever attend school? If not, reasons? Did (name) enroll in school last year? If not, reasons? If (name) enrolled, did (name) attend school last year? If not, reasons? If (name) is enrolled, is (name) currently attending school? If not, reasons?* As it turns out, almost all those who enroll also attend school; very little additional information is obtained by querying attendance and enrollment. Table 17 illustrates questions included in questionnaires that ask about the quality of education.

8.9 Getting to School

Nine surveys ask questions on getting to school either in distance or in time spent getting to school (Bhutan, Ghana, Madagascar, Malawi, Nepal, Nigeria, Pakistan, Sierra Leone, and Uganda) – three LSS surveys, two HIS surveys, four country-specific survey types. Depending on the survey, distance to school is measured in hours, minutes, kilometers, or meters, and in some cases hours and minutes. The Madagascar survey queries distance measured in kilometers as well as hours/minutes to school.

Similar problems are evident when questions about time or distance do not specify the unit (e.g.: meters, kilometers) in which responses should be given. As mentioned above, some of the responses to questions about getting to school were highly unlikely, at least, if the commute was taken to be daily. As mentioned,

Table 17 Questions on School Quality

	Reason never attended school?	Reason never enrolled in school?	Reason not attending school this year?	Reason not enrolled in school this year?
Benin, Bhutan, Burkina Faso, Gabon, Madagascar, Mozambique, Niger	Madagascar, Djibouti, Lao PDR, Malawi, Sierra Leone, Uganda	Madagascar, Pakistan	Madagascar, Cameroon, Burundi, Tanzania, Cambodia, Malawi, Bhutan, Côte d'Ivoire, Nepal, Benin, Burkina Faso, Gabon, Mozambique, Niger	Madagascar, Lao PDR

in the getting to school question for Sierra Leone, 5% of the answers exceed 50 hours; for Uganda, 2% of the getting to school answers exceed 10 kilometers and go up to a maximum of 400 kilometers. In these cases, the response must have either pertained to different units (minutes or meters) or to an intermittent frequency – e.g. once a semester to a boarding school. None of the surveys gave maximum levels for the answers, nor specific queries to ascertain the units and the frequency. Questions about 'walking time' to school should also specify *Who* is walking – the young pupil, or an adult.

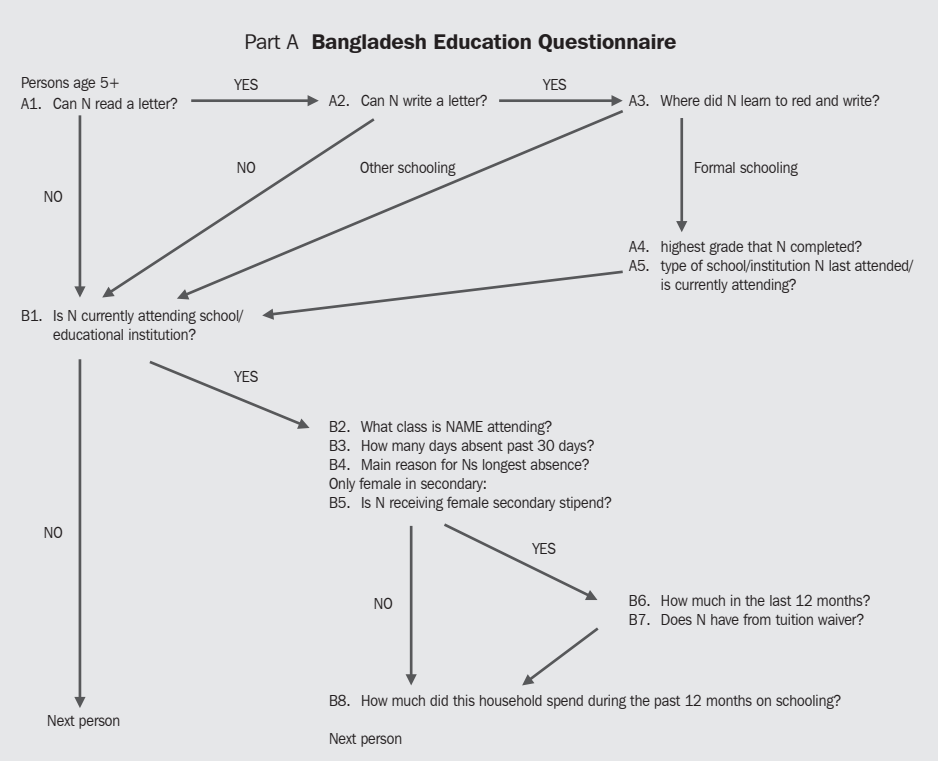
8.10 School Type

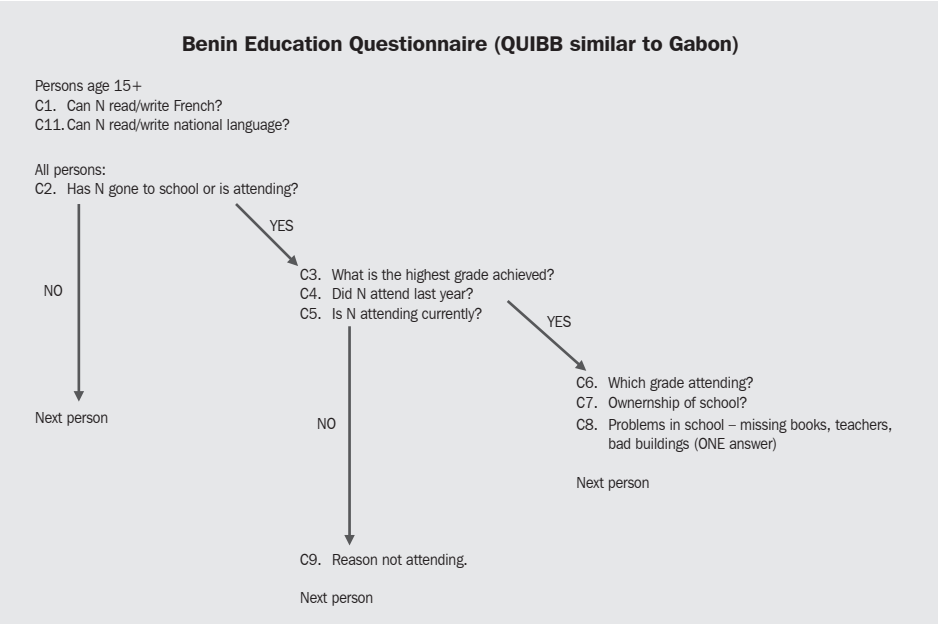
For respondents that are attending school, 21 surveys ask about the type of school attended. This mostly pertains to the ownership of the school – public, private, NGO, etc. Many surveys differentiate between private religious and private non-religious schools.

Three surveys ask about the type of school attended in the current year as well as the type of school attended in the previous year - Sierra Leone, Pakistan, and Madagascar. Such data can be used to draw conclusions on changes in school type choice from year to year, and may be of interest in particular instances where there is an ongoing shift of school types.

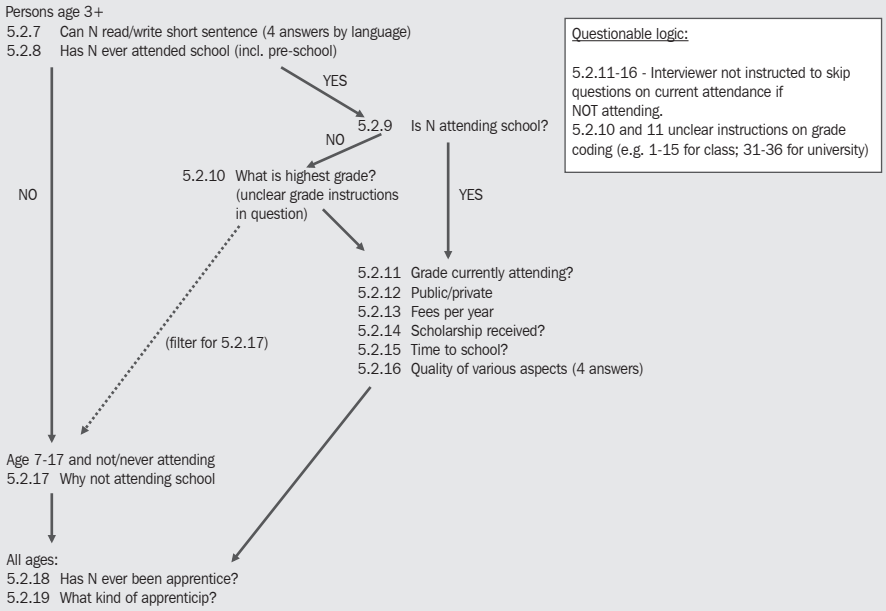
References

Appendix A: Flow Diagrams of Education Module Questions

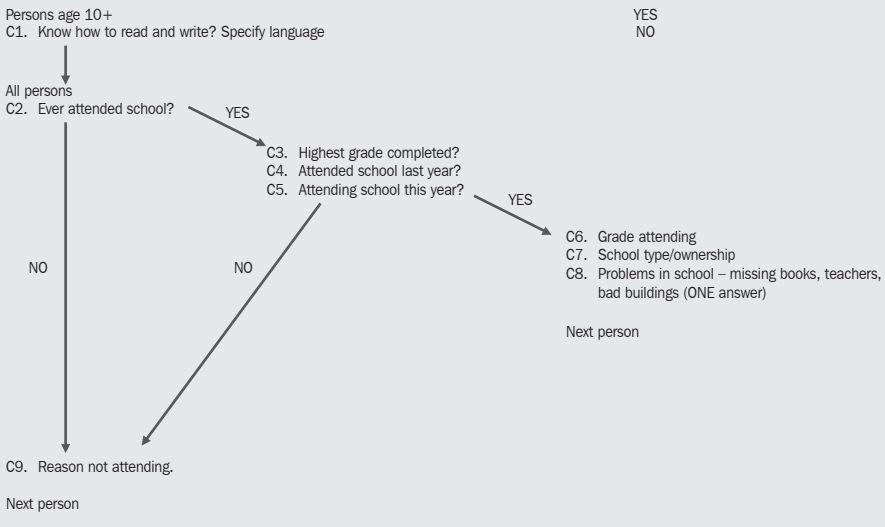




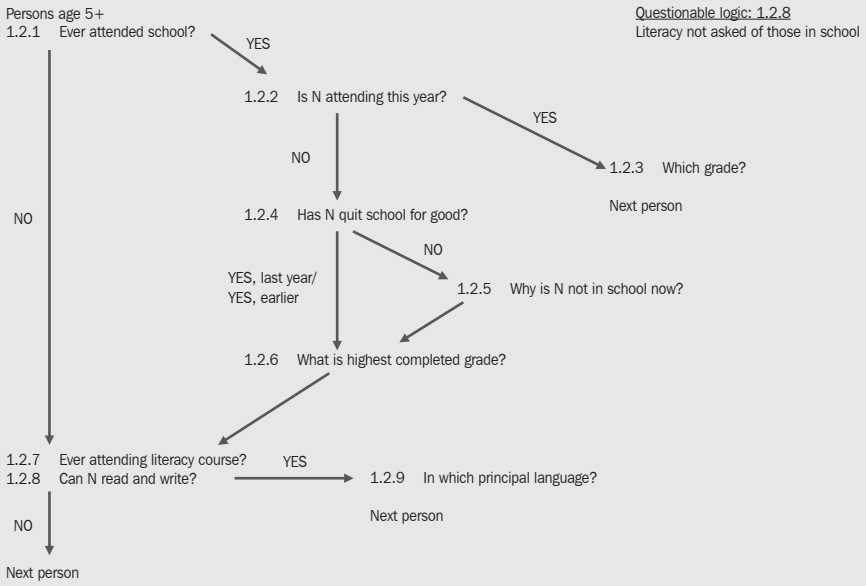
Bhutan Education Questionnaire



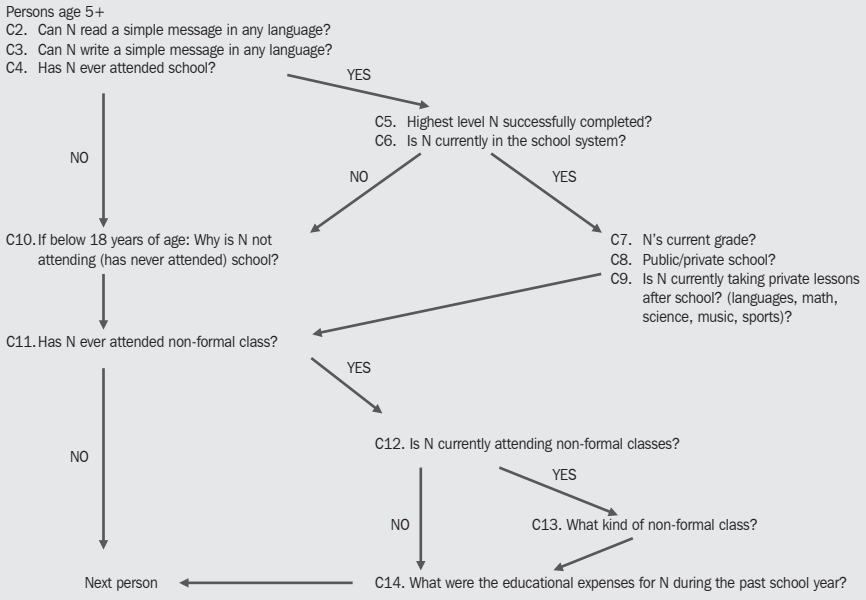
Burkina Faso Education Questionnaire



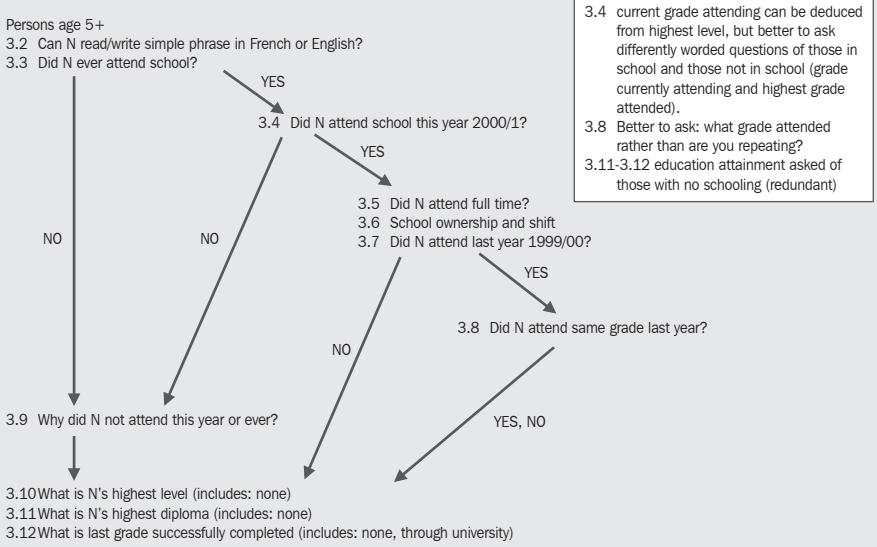
Burundi Education Questionnaire



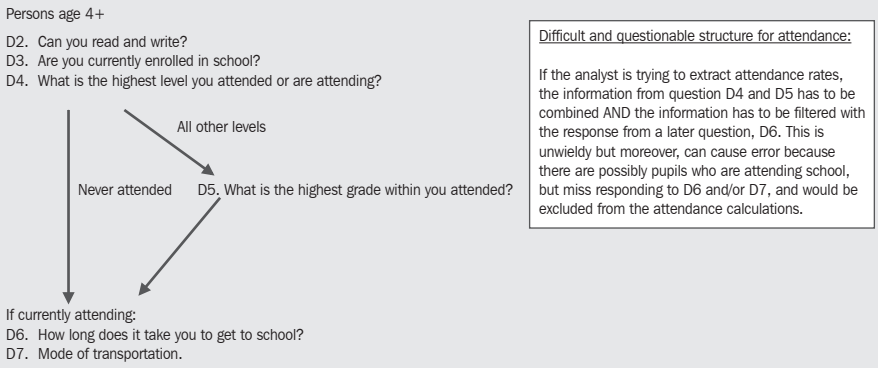
Cambodia Education Questionnaire



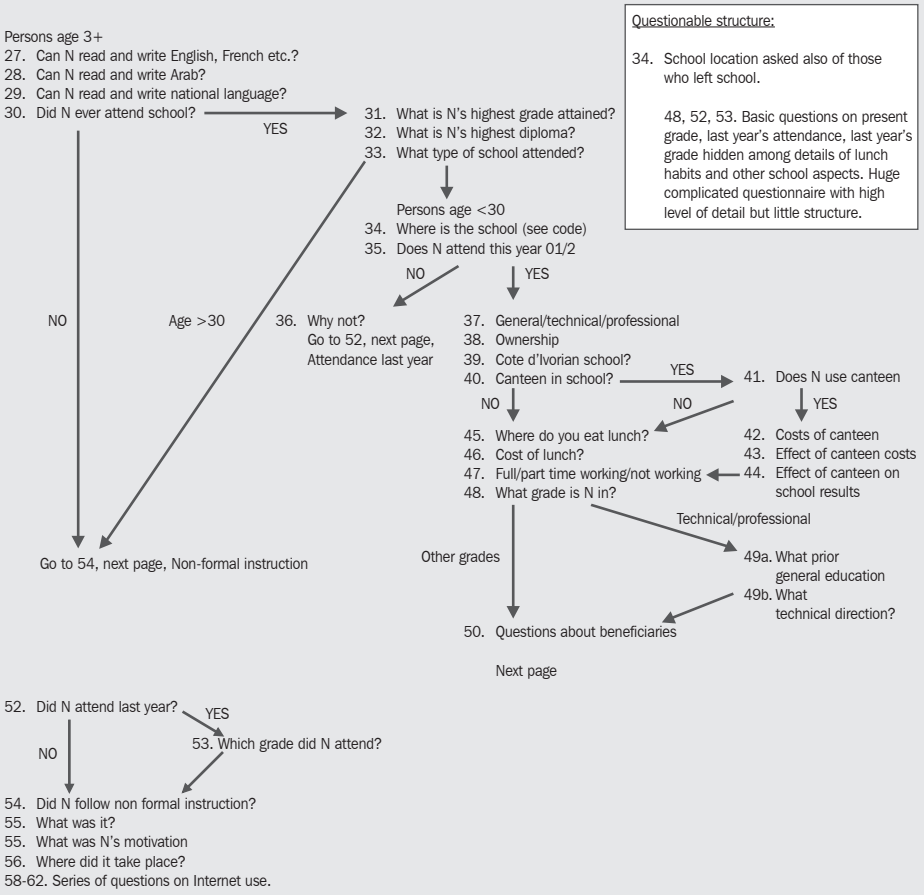
Cameroon Education Questionnaire (ECAM)



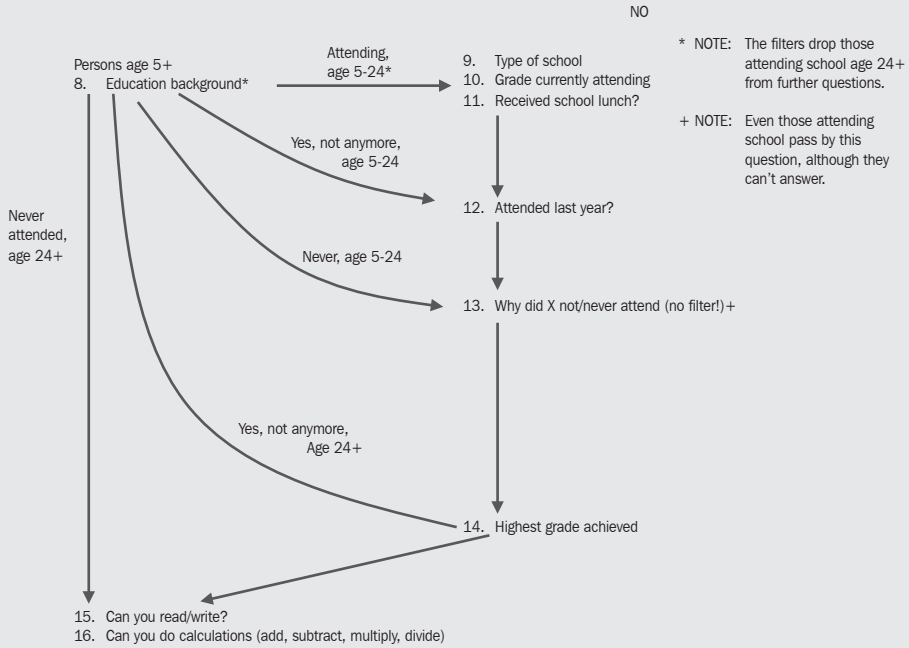
Cape Verde Education Questionnaire



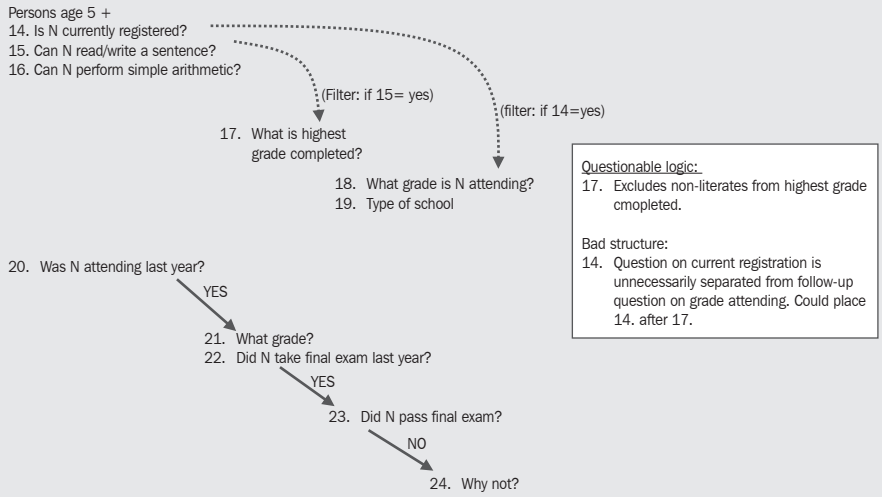
Côte d'Ivoire Education Questionnaire



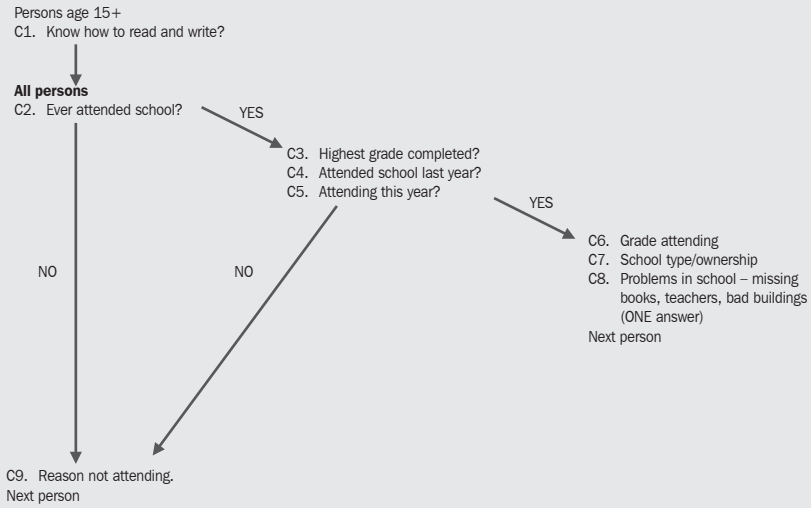
Djibouti Education Questionnaire



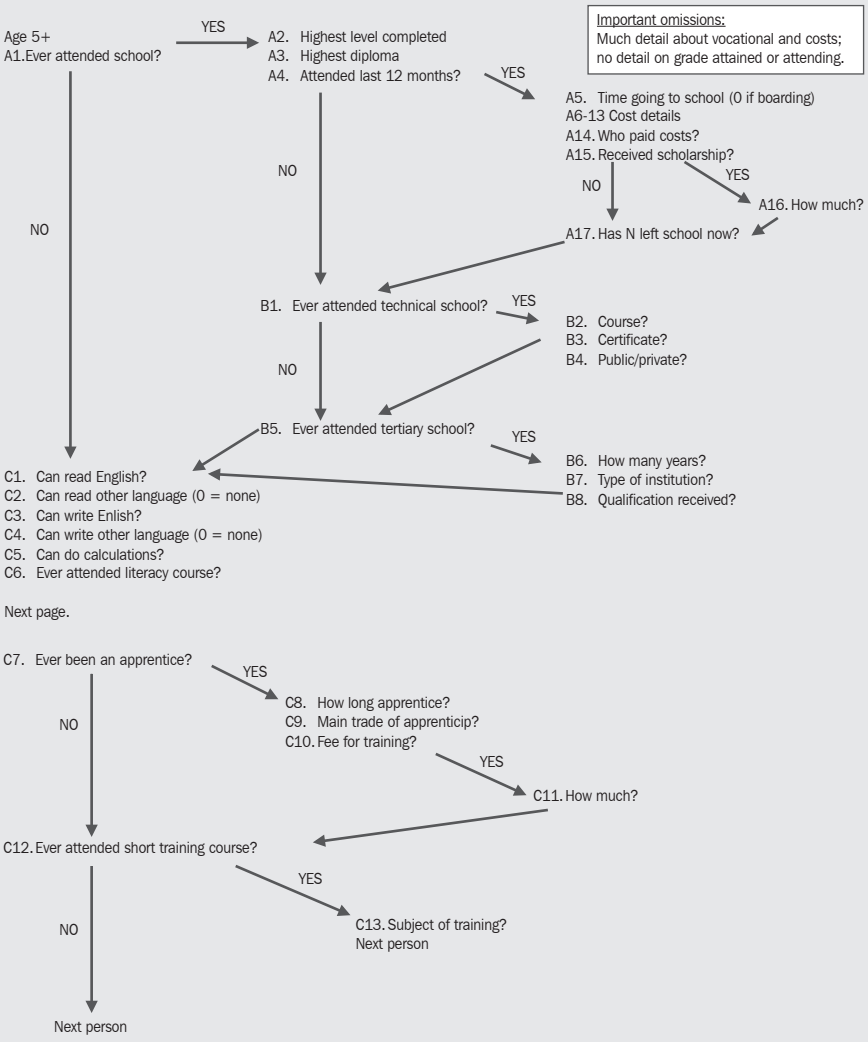
Ethiopia Education Questionnaire



Gabon Education Questionnaire
(poverty evaluation like Mozambique)



Ghana Education Questionnaire



India Education Questionnaire

Special notes:
Highest attainment, literacy, and current attendance are available. Attendance excludes those for whom school is a secondary activity next to employment or other.

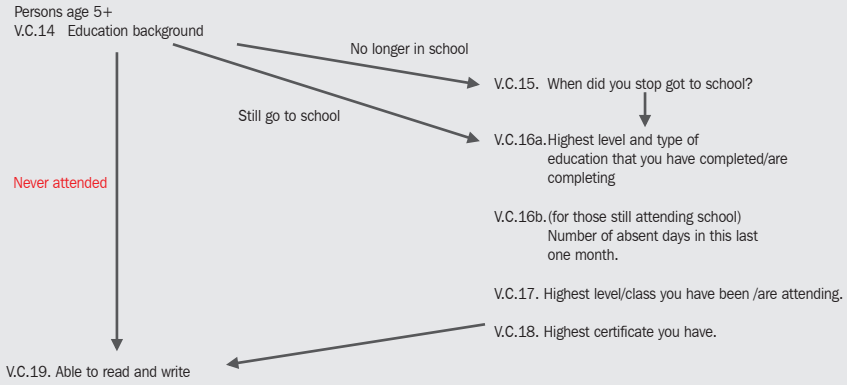
All household members:

4.7. Educational level?
not literate, iterate without formal schooling., literate but below primary, primary, middle, secondary, higher secondary, diploma/certificate course , graduate, postgraduate and above.

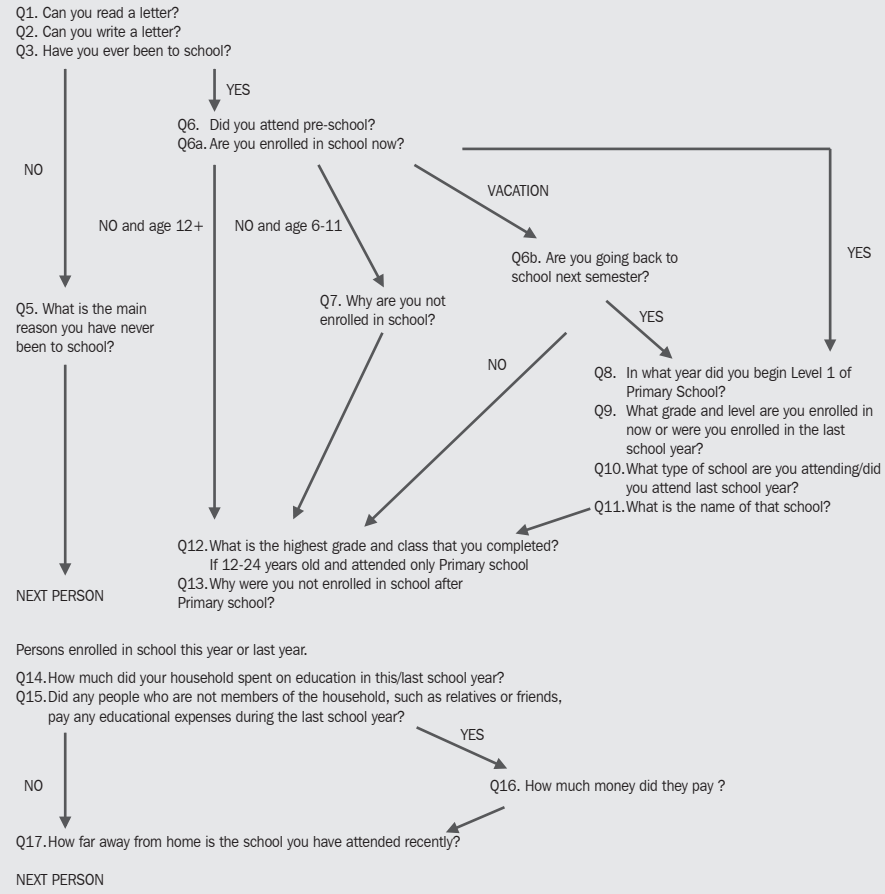
4.8. What is the technical educational level?
no technical education-1;
technical degree in agriculture/engineering/technology/medicine, etc.- 2;
diploma or certificate in : agriculture-3, engineering/technology-4, medicine-5, crafts-6, other subjects-9.

4.9. What is the usual principal activity?
Various employment, unemployment, housework options and attended educational institution-91

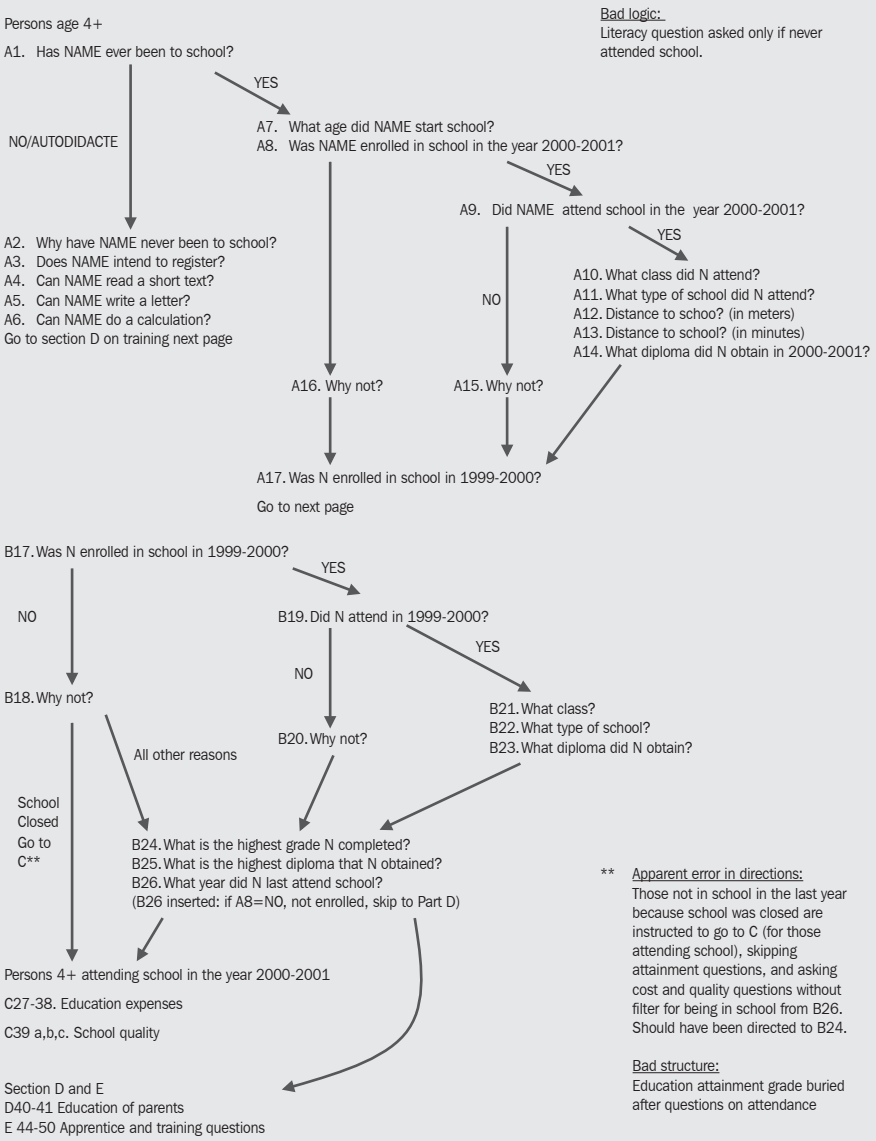
Indonesia Education Questionnaire



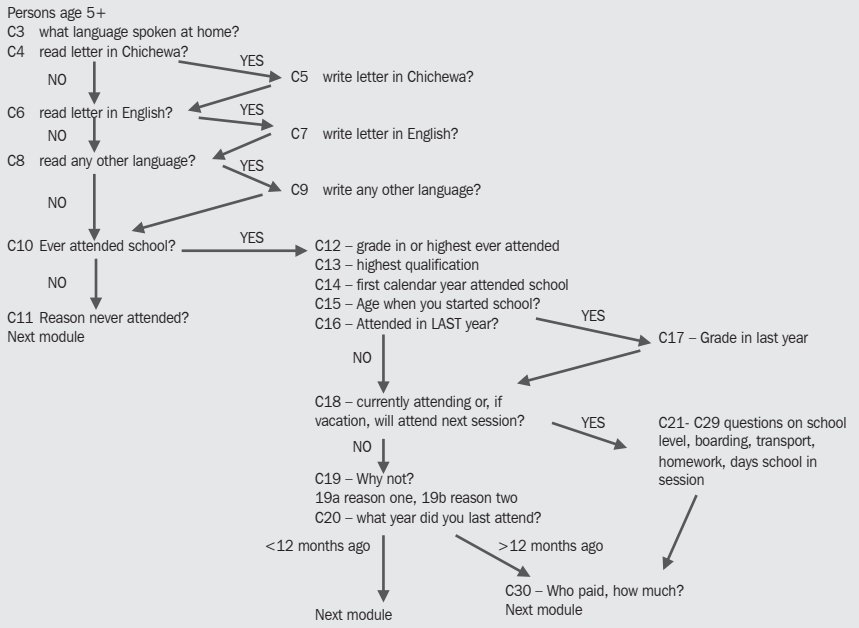
Laos Education Questionnaire



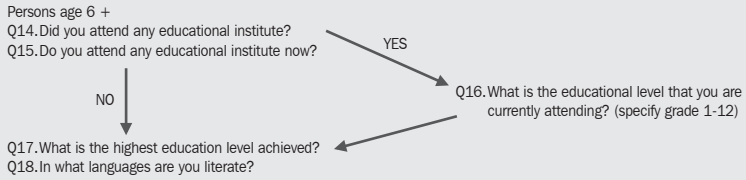
Madagascar Education Questionnaire



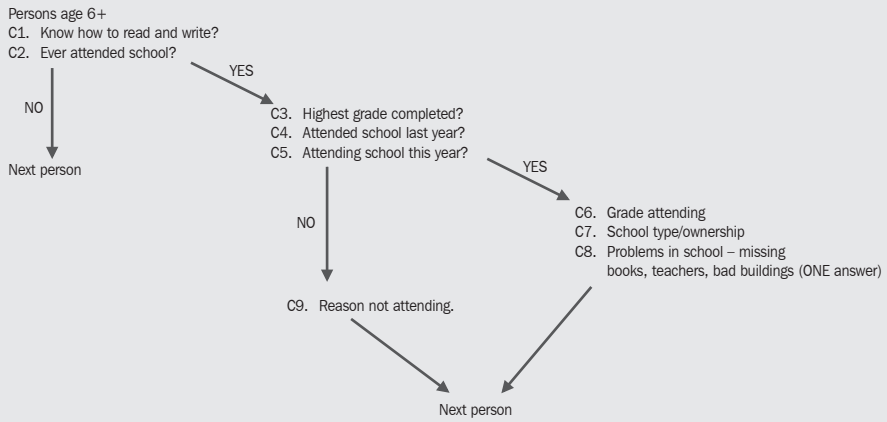
Malawi Education Questionnaire



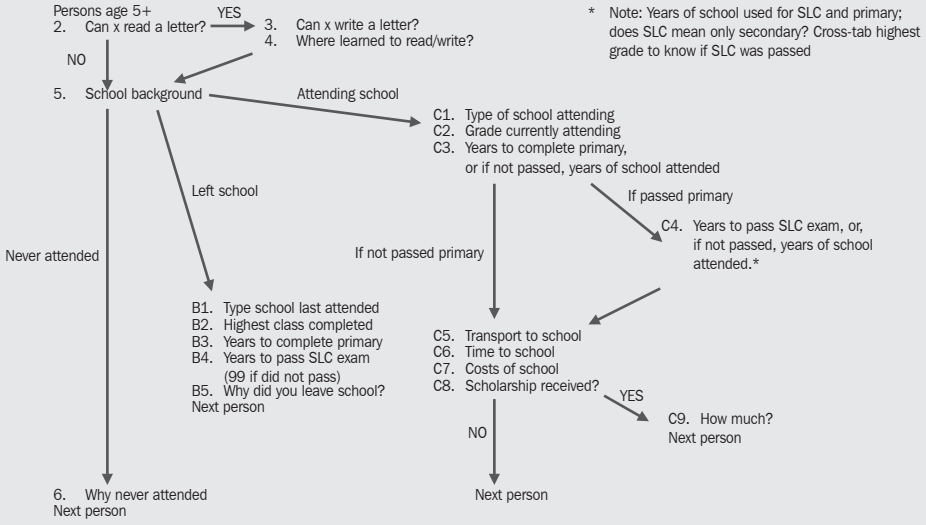
Maldives Education Questionnaire



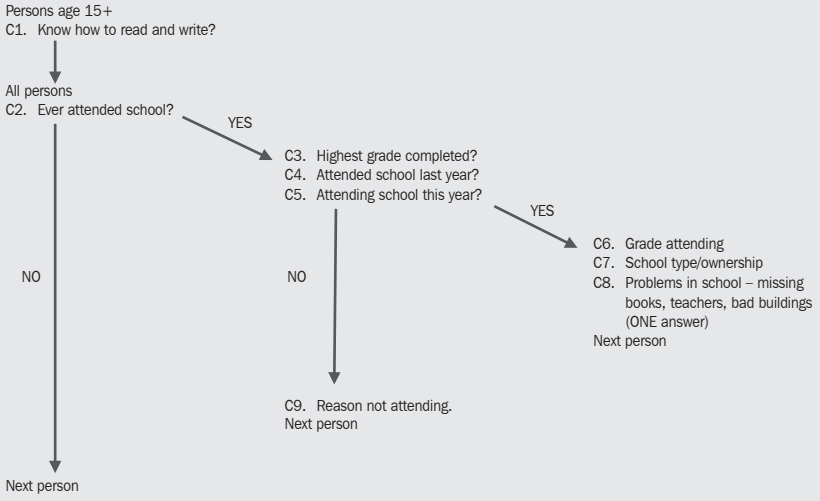
Mozambique Education Questionnaire

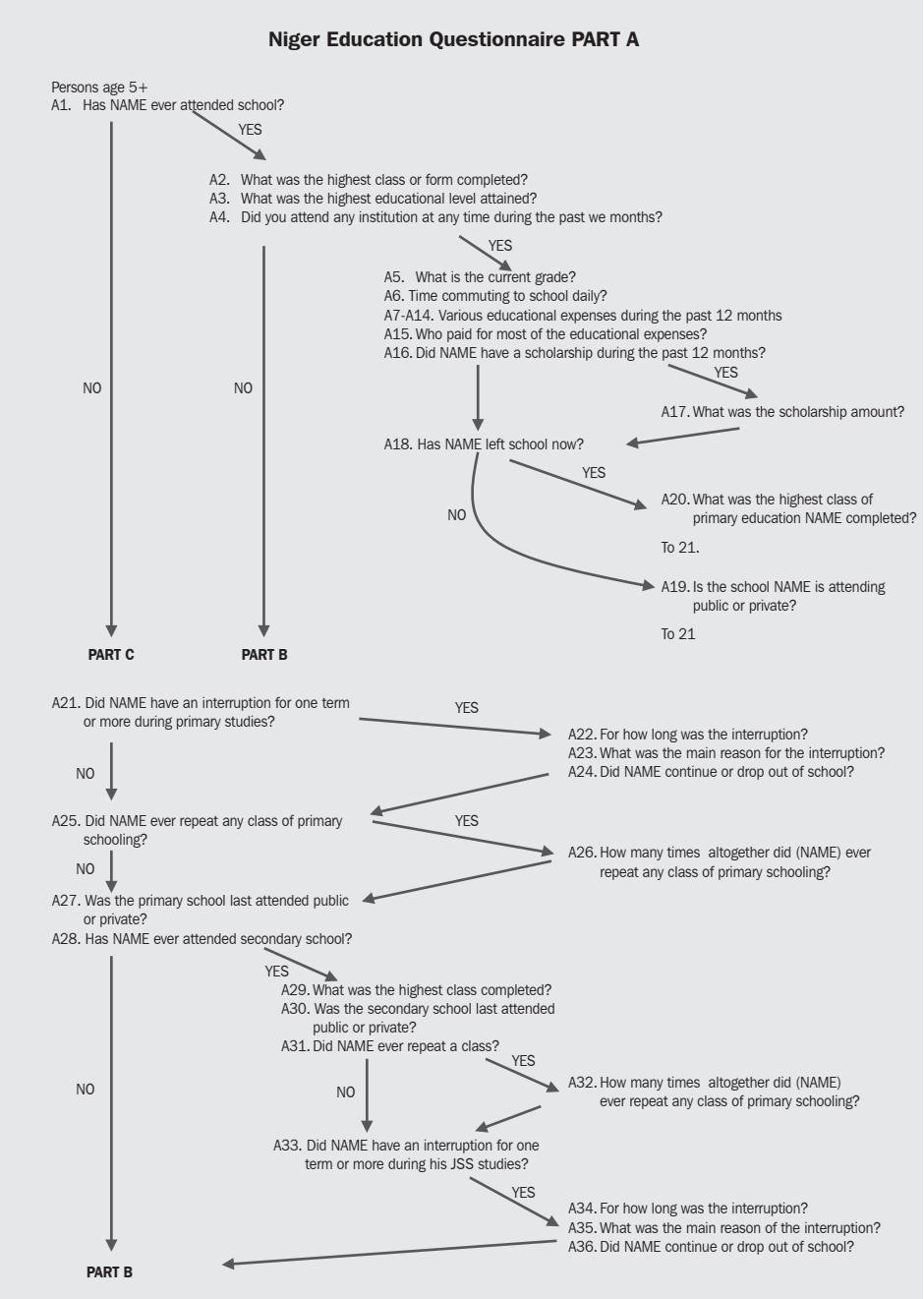


Nepal Education Questionnaire

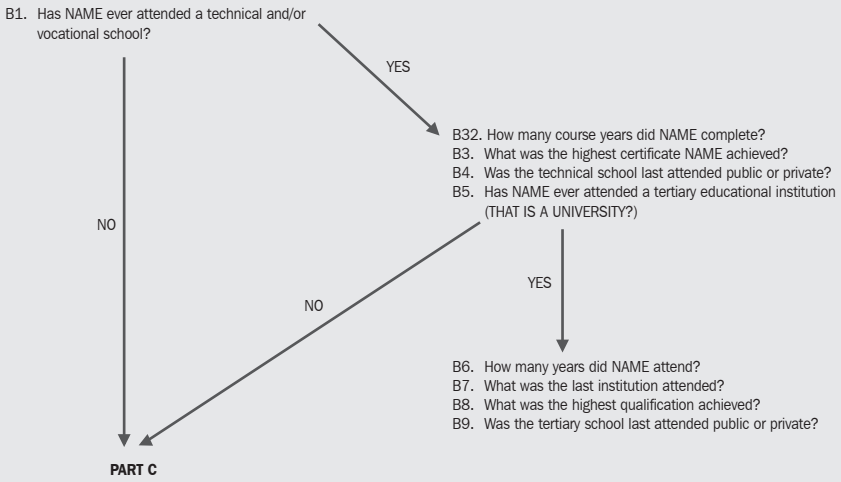


Niger Education Questionnaire (QUIBB format like Gabon)

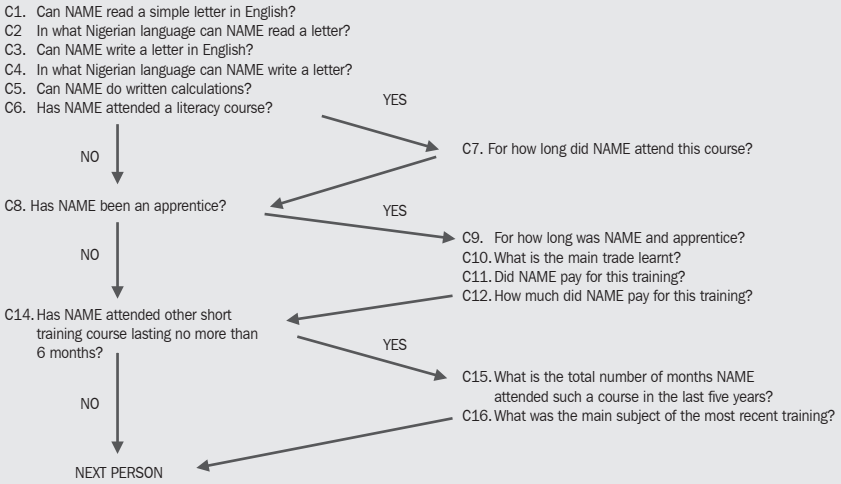



Niger Education Questionnaire PART A
Persons age 5+
A1. Has NAME ever attended school?
YES
NO
NO
A2. What was the highest class or form completed?
A3. What was the highest educational level attained?
A4. Did you attend any institution at any time during the past we months?
YES
A5. What is the current grade?
A6. Time commuting to school daily?
A7-A14. Various educational expenses during the past 12 months
A15. Who paid for most of the educational expenses?
A16. Did NAME have a scholarship during the past 12 months?
YES
A17. What was the scholarship amount?
A18. Has NAME left school now?
YES
NO
A20. What was the highest class of primary education NAME completed?
To 21.
A19. Is the school NAME is attending public or private?
To 21
PART C
PART B
A21. Did NAME have an interruption for one term or more during primary studies?
YES
A22. For how long was the interruption?
A23. What was the main reason for the interruption?
A24. Did NAME continue or drop out of school?
NO
A25. Did NAME ever repeat any class of primary schooling?
YES
A26. How many times altogether did (NAME) ever repeat any class of primary schooling?
NO
A27. Was the primary school last attended public or private?
A28. Has NAME ever attended secondary school?
YES
A29. What was the highest class completed?
A30. Was the secondary school last attended public or private?
A31. Did NAME ever repeat a class?
YES
NO
A32. How many times altogether did (NAME) ever repeat any class of primary schooling?
NO
A33. Did NAME have an interruption for one term or more during his JSS studies?
YES
A34. For how long was the interruption?
A35. What was the main reason of the interruption?
A36. Did NAME continue or drop out of school?
PART B

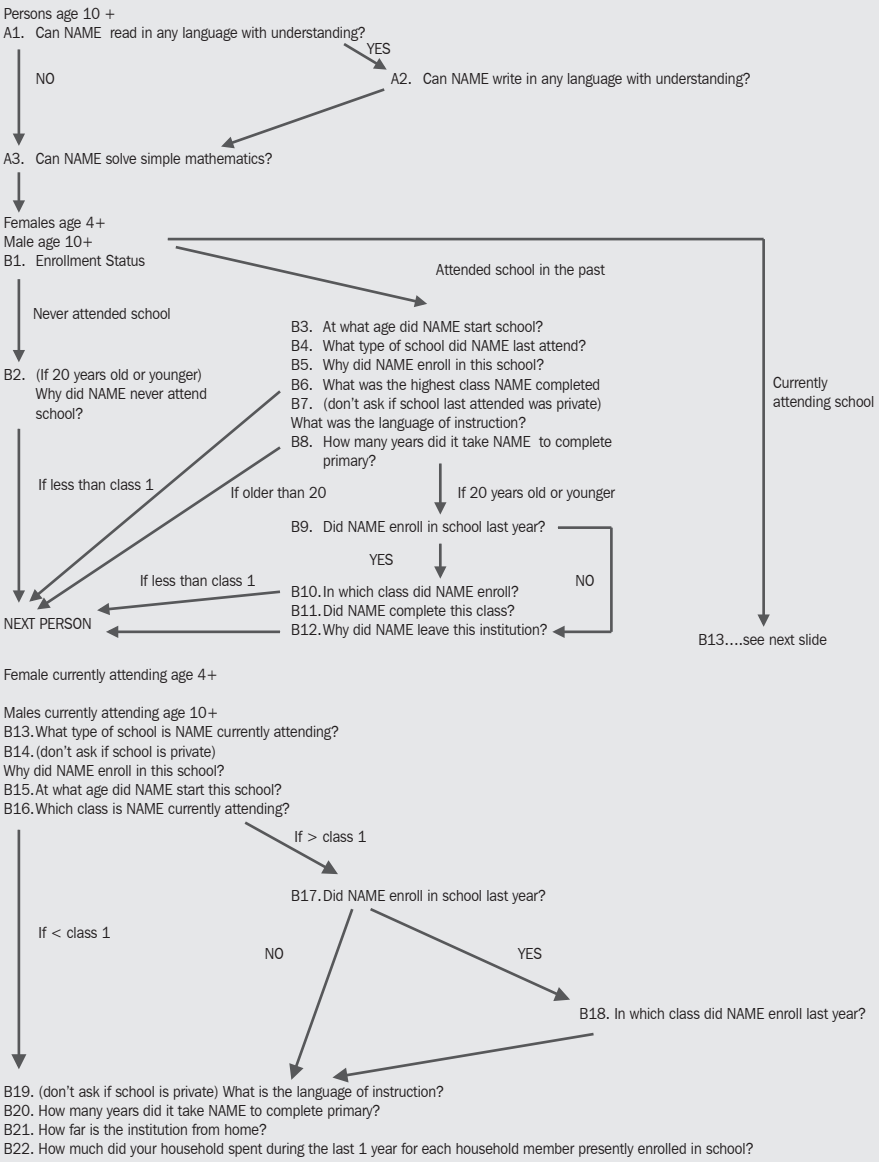
Niger Education Questionnaire PART B *(continued)*



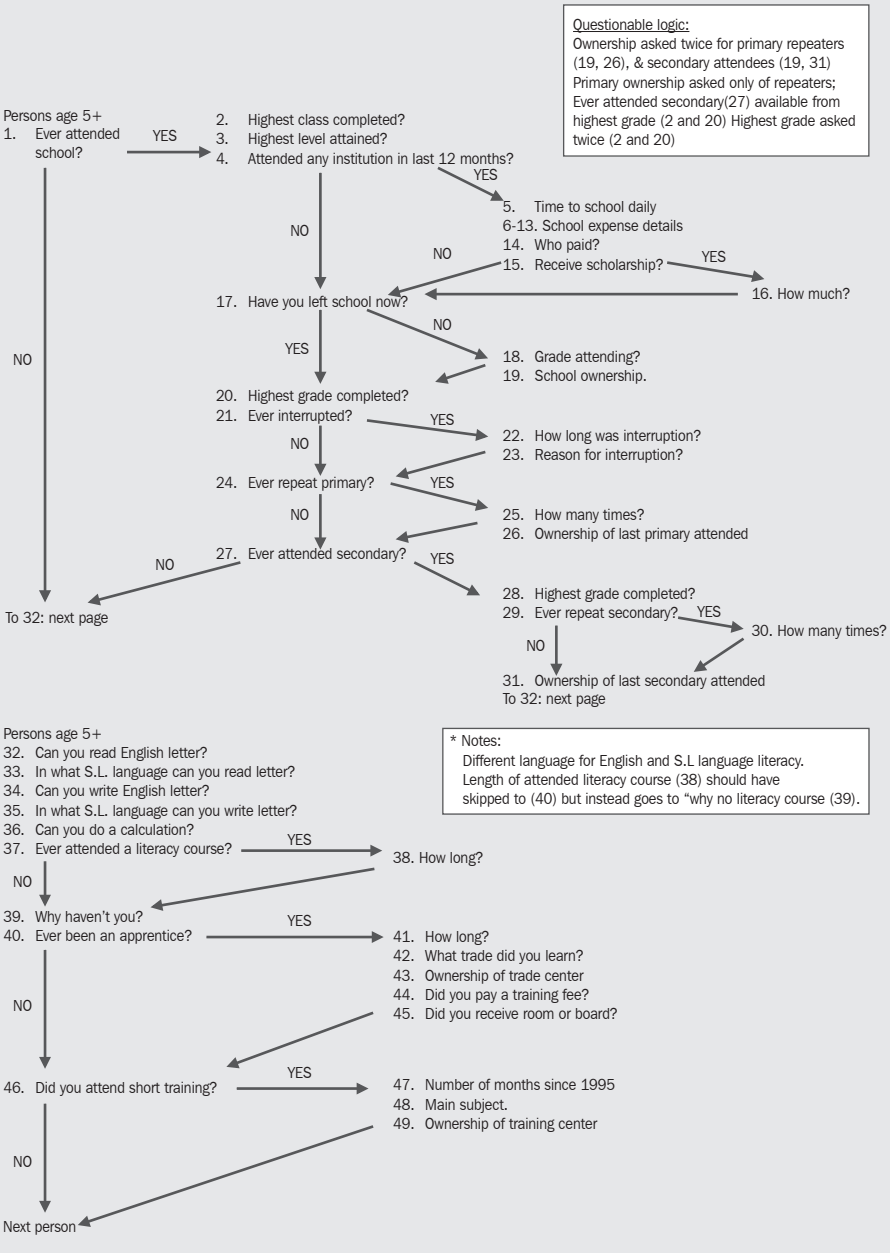
Niger Education Questionnaire PART C *(continued)*



Pakistan Education Questionnaire



Sierra Leone Education Questionnaire (SLIHS)

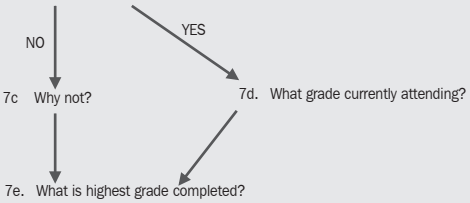


Sri Lanka Education Questionnaire (Income and expenditure survey)

Age 5+
8. Level of education – code on previous page by grade up to secondary
10. Usual activity – includes emloyed, unemployed, student, household, unable to work/retired, other

Tanzania Education Questionnaire

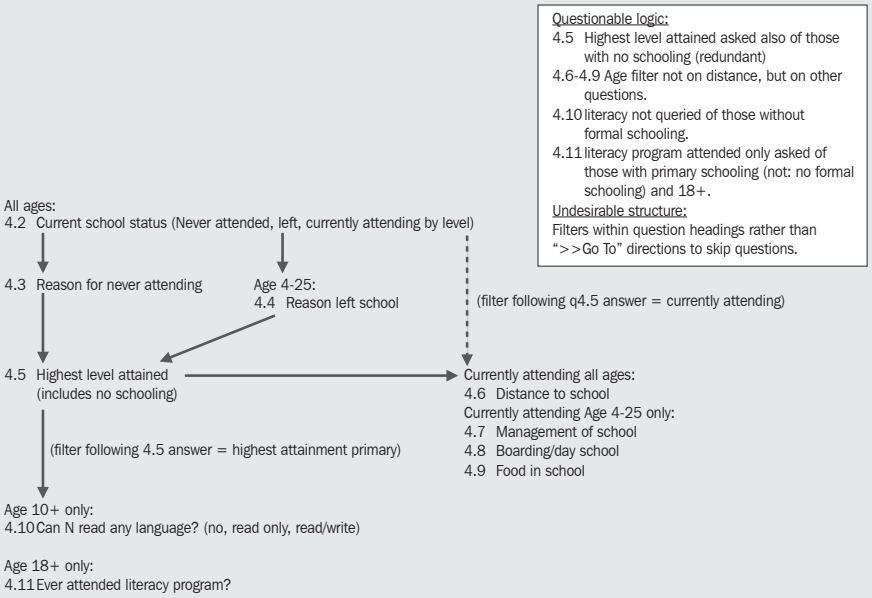
Persons age 5+
7a. Can N read and write?
(Swahili, English, Swahili + English, any other language, none)
7b. Is N in school?



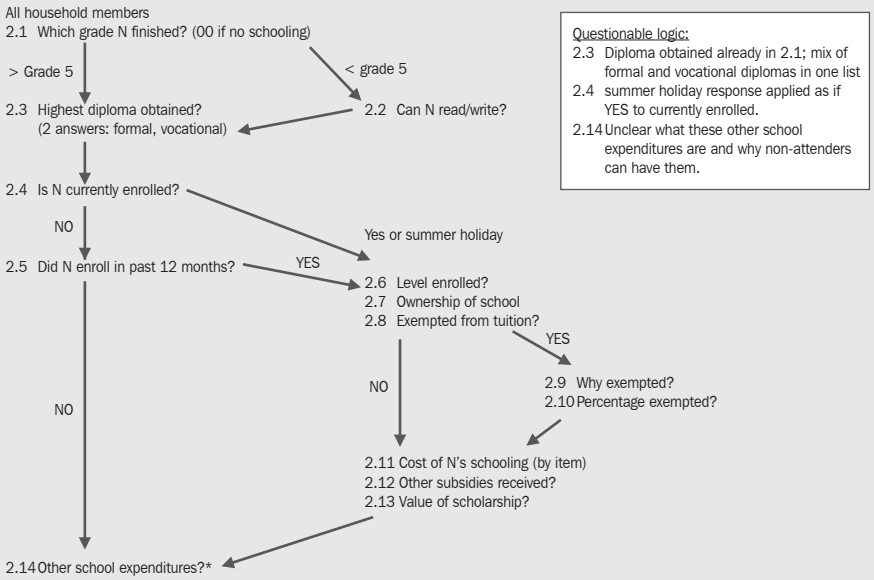
Thailand Education Questionnaire

B06. Attending school (Not, private, public, NA)
B07. Educational attainment (by grade through tertiary)

Uganda Education Questionnaire (Socio-economic survey)

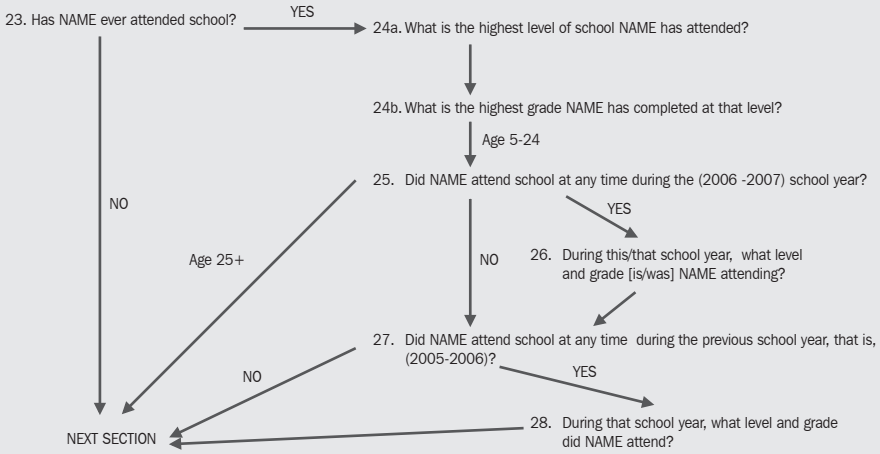


Vietnam Education Questionnaire



Demographic Household Survey (most recent version)

Household Questionnaire - Persons Age 5+

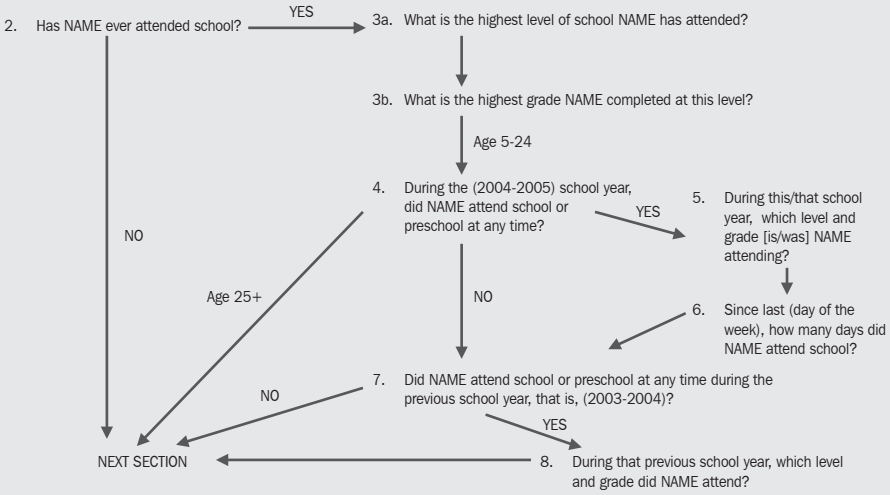


Individual Questionnaire for women

I would like you to read this sentence to me.
Can you read any part of the sentence to me?

Multiple Indicator Cluster Survey

Household Questionnaire - Persons Age 5+



Individual Questionnaire for women

I would like you to read this sentence to me.
Can you read any part of the sentence to me?

About the IHSN

In February 2004, representatives from developing countries and development agencies participated in the Second Roundtable on Development Results held in Marrakech, Morocco. They reflected on how donors can better coordinate support to strengthen the statistical systems and monitoring and evaluation capacity that countries need to manage their development process. One of the outcomes of the Roundtable was the adoption of a global plan for statistics, the Marrakech Action Plan for Statistics (MAPS).

Among the MAPS key recommendations was the creation of an International Household Survey Network. In doing so, the international community acknowledged the critical role played by sample surveys in supporting the planning, implementation and monitoring of development policies and programs. Furthermore, it provided national and international agencies with a platform to better coordinate and manage socioeconomic data collection and analysis, and to mobilize support for more efficient and effective approaches to conducting surveys in developing countries.

The IHSN Working Paper series is intended to encourage the exchange of ideas and discussion on topics related to the design and implementation of household surveys, and to the analysis, dissemination and use of survey data. People who whish to submit material for publication in the IHSN Working Paper series are encouraged to contact the IHSN secretariat via info@ihsn.org.

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