

Impact Evaluation Primary Education

Terms of Reference

Author(s):

Antonie de Kemp

Emina van den Berg

8 August, 2006

	Contents	<i>Page</i>
1	Introduction	1
2	Focus on primary education	2
3	Problem formulation	4
4	A model for impact evaluation	5
5	Country studies	9
6	Organisation of the study	10
7	Timeframe	12
	References	14
	Annex I: Methodology	18
	Annex II: Country studies	22
	Annex III: Glossary	25

1 Introduction

In the literature, there appears to be an increasing interest in the (quantitative) measurement of the effectiveness of aid. Some famous studies have tried to measure the effect of aid on growth and poverty (e.g. Burnside and Dollar, 2000 and 2004, and, more recently, Masud and Yontcheva, 2005). At the micro level, there are important examples of impact evaluation of projects (see Duflo 2004, 2005). However, there are not many studies that give insight to the impact and effectiveness at the *sectoral level*, while the sector is increasingly point of focus as a result of the Sector Wide Approach (SWAp) and General Budget Support (GBS). Moreover, the sector is the hinge point in the realisation of the Millennium Development Goals (MDGs).

Therefore, the Dutch Policy and Operations Evaluation Department (Dutch acronym IOB) has included (poverty) impact evaluations in its program of 2005-2009. The goal is to measure (as much as possible) quantitatively the effects of (Dutch) interventions and to provide more insight into the effects of development aid policy. The first evaluations focus upon education programmes, to which the Netherlands has contributed. This ToR gives an outline of the design.¹ Central questions are:

- What affects learning and learning achievement?
- Which interventions are most (cost-) effective?

The objective of the evaluation is:

1. to increase the understanding of and insight in the effects of interventions in the education sector in countries where the Netherlands contributes at the sectoral level or through general budget support;²
2. contribute to the (cost-)effectiveness of educational interventions;
3. add to the development of education policies and education planning;
4. contribute to the report “Results in development”.

¹ This proposal is written by IOB, but owes much to the discussions with and research notes of Jan Willem Gunning and Chris Elbers, who do the Zambia study and who advice on and contribute to the Uganda study. The text of this ToR is the responsibility of IOB.

² The method of analysis allows to give an estimate of the results of the Dutch support.

2 Focus on primary education

Education and the MDGs

At the Millennium Summit in September 2000, 189 nations adopted the Millennium Declaration with eight specific goals, known as the Millennium Development Goals (MDGs). These goals have been commonly accepted as a framework for measuring development progress, and where possible, targets are quantified and time-bound with specific indicators. Before 2015, poverty has to be reduced to half the 1990's poverty-level for all individual development countries. One of the goals is to achieve universal primary education by 2015. By 2015, children everywhere, boys and girls alike, must be able to complete a full course of primary school.

The fourth annual *Education for All Global Monitoring Report of UNESCO (2006)* concludes that steady progress has been made since 1998, especially towards universal primary education (UPE) and gender parity, but that the pace is insufficient for the goals to be met in the remaining nine years to 2015. Primary-school enrolments have sharply increased in both sub-Saharan Africa and South and West Asia, but about 100 million children are still not enrolled in primary school, 55% of them being girls. Many countries are unlikely to achieve UPE by 2015. Girls' primary enrolments have also risen rapidly, especially in some of the lowest-income countries of sub-Saharan Africa, and South and West Asia. However, 76 out of 180 countries have not reached gender parity at primary level and 86 countries are at risk of not achieving gender parity at primary and secondary level by 2015. Moreover, quality remains too low: less than two-thirds of primary school pupils reach the last grade in 41 countries (out of 133 with data). In many countries, primary teacher numbers must increase by 20% per year to reduce pupil/teacher ratios to 40:1 and to achieve UPE by 2015. Many primary-school teachers lack adequate qualifications. Although aid for basic education more than doubled between 1999 and 2003, it is still *inadequate*. According to the report, aid for basic education could increase to US\$ 3.3 billion by 2010, while US\$ 7 billion a year would be needed to achieve universal primary education and gender parity (p. 21).

The Netherlands

The Netherlands strongly supports the realisation of the MDGs, with education being a spearhead: *“Education gives people the chance to contribute to economic, political and social development and makes them more self-sufficient. Basic education is crucial to improving the lives of the poor and those at risk of marginalisation and social exclusion. Investments in education help to create the*

social capital that is needed for development” (Results in development, 2005). The importance that the Netherlands attaches to the education sector is further reflected in the wish to increase the share of education in the development budget to 15% by 2007. A large part of the budget on education goes to the 14 partner countries: Bangladesh, Bolivia, Burkina Faso, Ethiopia, Indonesia, Macedonia, Mali, Mozambique, South Africa, Suriname, Tanzania, Uganda, Yemen and Zambia.

Measuring effectiveness and impact

It becomes increasingly difficult to assess the Dutch contribution. The Sector Wide Approach (SWAp) and General Budget Support (GBS) make it increasingly difficult to isolate the Dutch contribution from the contributions of other donors. In 2003 IOB published the results of a Joint evaluation of External Support to Basic Education (Freeman and Dohoo Faure, 2003). This evaluation was commissioned by a group of thirteen donors and development organizations with research in four partner countries (Bolivia, Burkina Faso, Uganda and Zambia). The objective of the study was to “... *examine the process of external support to basic education provided by international and national funding and technical assistance agencies to partner countries in the South*”.

The final report concluded that too often agencies rely on blueprints and prescribed solutions that are inconsistent with capacities of partners and (therefore) sometimes limit the relevance of projects and programmes. On the other hand, the report noted a tendency to move to programme support and SWAp. But even this approach has not, at least in the short run, resulted in a reduction of the administrative burden for host governments, due to a heavy burden of planning, coordination and monitoring. The basic education study did hardly touch upon the effectiveness of the aid as that was not the main goal of the study. Moreover, the study warned that unambiguous links between external support and basic education outcomes may be difficult or impossible to establish, because in most countries, external support is a small part of total spending on education, though of course its leverage and impact may exceed its volume (Freeman and Dohoo Faure 2003, Annex 2, p. 2).

This *attribution problem* has been aggravated by the Sector Wide Approach and General Budget Support. According to the recent IOB study on the Sector Wide Approach, the evaluation practice on the SWAp is inadequate for an understanding of the effectiveness and impact at the regional and local level (IOB, 2006, p. 15). The report concludes that a greater emphasis upon the evaluation of impact is needed. Such an impact evaluation could not be part of the mentioned study, as the study focused upon the contribution of the SWAp to ownership and the creation of

the conditions for poverty reduction. With the current ToR for an impact evaluation on (basic) education, IOB seeks to narrow the existing ‘evaluation gap’ (CGD, 2005).

3 Problem formulation

As noted, it becomes increasingly difficult to assess the effectiveness of aid. Yet, governments and developing agencies want to demonstrate that their support has an impact (IEG, 2006). What are the best ways to support basic education? Which interventions are most cost-effective? And, how does one measure the impact of the interventions, taking into account all other (exogenous) factors?

There are many evaluations of education, but most of them are process oriented and are directed at isolated interventions, without being able to take into account all other factors that may have a positive or negative impact upon the realisation of our objectives. Moreover, there are several impact studies at the project level, but hardly at the sectoral level. And the sectoral level becomes increasingly important, as donors increasingly combine their efforts in close cooperation with the partner countries. Therefore, the measurement of the effects of Dutch support implies a focus upon the effects of the SWAp.

The proposed evaluation will:

- not be descriptive, but will *quantify* the effects of educational interventions;
- analyse the effects of relevant factors in a single model;
- deal with the problems of attribution and the counterfactual using a statistical/econometric approach.

As a result, it will be possible to assess the (cost-)effectiveness of educational interventions and to generalise the results.

The evaluation focuses upon *primary education*, i.e. the first years of *formal*, structured education during childhood, usually from 6-7 years until 12-14 years.³

Central questions are:

1. In what way have school attendance and learning achievement developed since 2000?

The evaluation focuses upon:

- (i) Access (enrolment and attendance)
- (ii) Equity / gender
- (iii) Quality (learning achievement) .

2. What were the main determinants of these developments?

³ Primary education may be discerned from basic education. *Basic education* comprises basic life skills for youth and adults (and in some definitions early childhood education) as well.

3. Which interventions have the largest and most (cost-) effective impact on educational outcomes?

These research questions are not revolutionary. However, the (relatively) new aspect is a quantitative multivariate measurement of the effects, which combines the main determinants and analyses them together in a single model.⁴ Moreover, while there is a good degree of consensus about the access and quality *outcomes* that need to be improved, there is less agreement on the appropriate mix of *inputs* for any given country (Kingdon, 2005, p. 48).

4 A model for impact evaluation

An impact evaluation of primary education

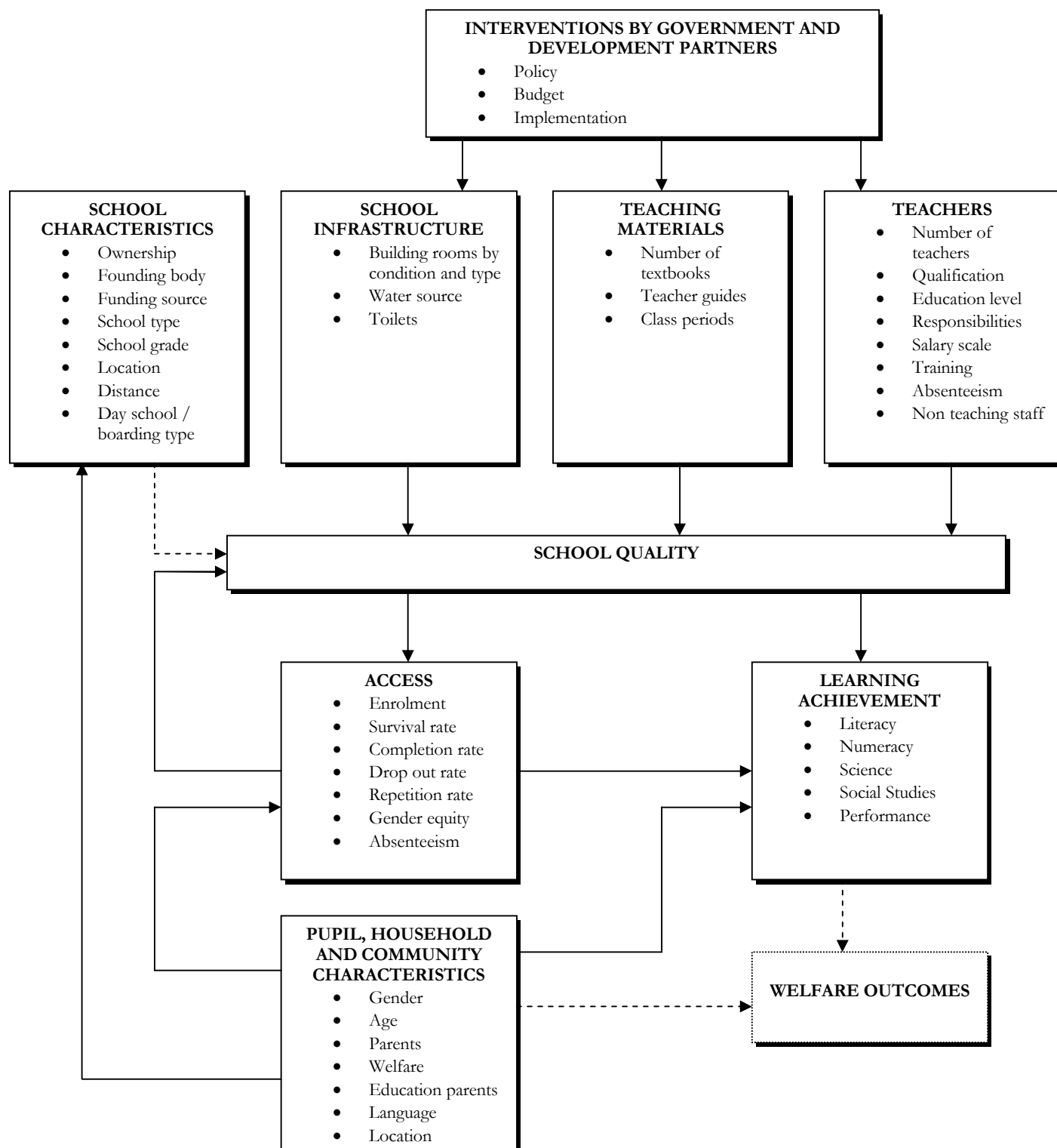
The impact evaluation will use econometrical techniques to estimate the effects of educational interventions. Such an evaluation is based upon an underlying model, which sketches the assumed relations. Figure 1 (see the next page) gives an outline of such a model for the evaluation of the impact of interventions on education. This model is based upon the literature (see for instance Boissiere, 2004, Glewwe and Kremer, 2005 and Kingdon, 2005 for an overview) and the availability of data. The quantitative analysis will be complemented with a *qualitative* analysis.

The interest of the proposed impact evaluation focuses on the (cost-)effectiveness of educational interventions: policy measures and budgets that contribute to the improvement of access, equity and learning achievement. These measures include the abolition of school fees, the building of schools and classrooms and the provision of teaching materials. According to the literature, government policy and implementation capacity is important for determining the provision of schools and equity of access. Equitable access depends crucially upon good government policy and implementation (Boissiere, 2005).

The evaluations will start with a description of the decision making, budgeting and allocation process in the countries of analysis. This description will rely upon studies that have been published before (IOB 2003 and 2006), as well as upon the results of recently published *tracking surveys*. These sources will be complemented with additional research.

⁴ An important example of this approach is the OED evaluation of Basic Education in Ghana (2004).

Figure 1: Model for impact analysis



For Uganda, officers of the Monitoring and Evaluation Department of the Ministry of Education and Sports (MoES) will contribute to this qualitative evaluation. For this goal, they will assist the local consultant in the fieldwork at the district and school level. For both studies (Uganda and Zambia) the analysis of the *intervention histories* is an important part of the study. In both countries, local consultants gather information on the intervention histories at the district and school level.

Interventions translate into action at the school level. For the estimation of the effects of all factors that have an impact upon access and learning achievement (not only interventions but pupil, household and regional characteristics as well), these factors and outcome changes are measured at the school level or at the lowest administrative level possible (preferably sub-county level, but at least at district level). The challenge is to separate the effect of interventions from the other factors affecting educational outcome changes and to single out the effect of individual interventions.

In figure 1, access and achievement are the main *outcome* variables. These indicators are broadly the same as the indicators that the partner countries use for the monitoring of sector progress:

- | | |
|-------------------------------|--|
| <i>Access:</i> | - (gross and net) intake rates
- (gross and net) enrolment ratios
- attendance
- absenteeism
- drop out rates |
| <i>(Efficiency)</i> | - repetition rates
- survival rates |
| <i>Equity / gender:</i> | - access indicators for different groups (including male/female)
- learning achievement indicators for different groups (including male/female) |
| <i>Quality:</i> | - qualifications of primary school teachers
- pupil teacher ratios
- pupil textbook ratios |
| <i>(Learning achievement)</i> | - literacy, numeracy, science and social studies
- primary school leaving exams |

Several studies suggest a relation between access and learning achievement: a large increase in enrolment has – without accompanying measures – a negative impact upon the quality of education and (therefore) upon achievement. DFID concludes in a recent study of education in several African countries that an increase in enrolment has led to pupil-teacher ratios that “in most cases are at levels that have a significant negative impact on quality”.

Many African countries have very high pupil teacher ratios (about 80:1 or 100:1). These high ratios are, together with irregular pay, a main cause of teacher absenteeism (White, 2004). Another important factor appears to be HIV/Aids. In several (African) countries teacher absenteeism is a large problem.⁵ Teacher absenteeism may not only have an impact upon the quantity and quality of schooling, but also on the attendance and drop-out rate of pupils as well.

There appears to be a trade off between increasing access to education and quality.⁶ Increasing access to education must be accompanied by new classrooms, new teachers and textbooks. According to a World Bank study (OED, 2004), the building of classrooms and the provision of school supplies (such as textbooks) are cost-effective instruments that contribute to higher enrolment and better learning outcomes. Therefore, the quality of education depends upon the supply of teachers, schools and so on. One may discern investments in:

- teachers;
- teaching materials
- infrastructure.

Differences in the distance to the nearest school may be used as a proxy for the (mean) distance of pupils to the school. This way it is possible to analyse the impact of distance upon enrolment and achievement.

Specific *school characteristics* may have an impact as well. Many studies find that private schools are more effective in imparting learning to students than are public schools. In many developing (as well as developed countries) private schools show better results than public schools. However, for a fair comparison, you need to control for differences in the number (and quality) of teachers, regional differences and differences between parents and pupils. Several studies find that differences in learning and learning achievement disappear after controlling for these differences (Kingdon, 2005).

Other factors may have an impact upon education outcomes as well. Poor and rural areas have proportionally fewer schools and the quality of education is lower (DFID, 2005). Here one touches upon household and community characteristics. Welfare and education of parents may be important. In Uganda, the cost of education in the form of uniform, lunch and local examination fees is a major cause of dropout (MoES, 2005c). Acana (2005a) finds some evidence that pupils with better educated parents have better test results. Welfare related variables will be based on data and poverty maps.

⁵ One of the proposed case studies will include a survey on teacher absenteeism.

⁶ See for a discussion on this subject Freeman and Dohoo Faure, 2003, pp. 45-49.

The evaluation will analyse the effectiveness of the interventions, taking into account specific characteristics of pupils and exogenous factors such as the households of pupils. Therefore, it seems useful to discern:

- *characteristics of the pupils* (gender, age, where they live when going to school, work at home);
- *specific characteristics of households* (such as welfare and education of parents, language)
- *school related factors* (such as distance to schools, availability of desks and books, qualifications of teachers, contact hours, teacher absenteeism)

An important question is whether the interventions succeeded in reaching the children of the poorest households (incidence question). According to available evidence, subsidies for education are poorly targeted, especially at the secondary and tertiary level (Kingdon, 2005, p. 40).

A more speculative part of the research involves the *assessment of the welfare effects*. For instance, a change in education levels could be translated to a change in life-time earnings on the basis of a relationship between education and wage levels. The computation of welfare effects will be based upon existing research.

5 Country studies

The evaluation aims to analyse the effects of interventions in three different countries: Zambia, Uganda and Bangladesh. The three countries have been chosen on the basis of:

- Dutch support for the education sector in these countries;
- the introduction of the SWAp in these countries;
- the successes of the countries in the increase of enrolment ratios.

Table 1: Dutch disbursements to the education sector, 2002-2004 (in € million)

	2002				2003				2004			
	G	S	P	Total	G	S	P	Total	G	S	P	Total
Total	0	37.9	63.6	101.5	12.5	47.6	43.3	103.4	13.2	57.2	57.6	128.1
Bangladesh	0	0	3.6	3.6	0	0	4.6	4.6	0	4.7	3.3	8.0
Uganda	0	12.6	0	12.6	1.5	10.8	0.2	12.5	3.2	0	0.9	4.1
Zambia	0	0	17.2	17.2	0	6	0.4	6.4	0	7.2	10.3	17.5

G= general; S=sectoral; P= project.

In order to be able to assess the feasibility of an impact evaluation, IOB and the researchers of the VU have been to Lusaka and Kampala to discuss a preliminary proposal with the respective ministries of education and to assess the feasibility of

the proposed study. In both countries, the ministries welcomed the study for several reasons:

- the interest in the improvement of the insight in the cost-effectiveness of educational interventions;
- the contribution of an impact evaluation to planned reviews;
- the contribution to capacity building at the ministry;
- the improvement of the use of the management information systems of the ministries.

Moreover, IOB and the researchers have discussed the availability of data and the means to get the data, needed for the evaluation. Discussions took place with the ministries of education, examination councils (boards), the statistical bureaus and local consultants. On the basis of these discussions, IOB and the VU got a broad overview of the available data and the ways to gather additional data. This information contributed to the development of the model as sketched in paragraph 4.

On the basis of the positive reactions of the ministries, the researchers have written a research proposal. These proposals have been approved by the permanent secretaries of the ministries of education. A draft proposal for Bangladesh has been discussed with DCO and will be discussed with the Embassy and the (two) Ministries of Education in Bangladesh. The proposed evaluations will result in three independent studies and a synthesis report.

A specific characteristic of the studies in these countries is the close cooperation with the MoE and the MoES and capacity building as a central objective of the study. In order to ensure capacity building, officials of the ministries in Uganda and Zambia participate in the evaluation. The participation will be guaranteed through workshops. Moreover, IOB has suggested using the study for an improvement of the use of the Education Management Information system (EMIS).

6 Organisation of the study

The impact evaluation is a joint effort of the Policy and operations Evaluation Department of the Netherlands Ministry of Foreign Affairs and the Ministries of Education in the partner countries involved. The Amsterdam Institute for International Development (AIID) is the main consultant for the Zambia study. AIID advises IOB on the Uganda study as well. The Field Work in Uganda will be done by a local consultant, International Development Consultants (IDC). IOB is responsible for the overall supervision and funding of the study.

Major activities are the gathering and analysis of data. Data include:

- the *Annual School Census* data, for the years 2000-2005;
- national assessment surveys;
- examination data at the primary level;
- demographic and Health Surveys (DHS) and especially the *DHS EdData Surveys*;
- household surveys such as the Population and Housing Census and the Living Conditions Monitoring Surveys (LCMS) and the Household, Income and Expenditure Survey (HIES)
- field work at district and school level.

The planning and evaluation departments of the Ministries of Education involved take part in the data gathering, the field work, the data analysis and the writing of the draft report.

In the Netherlands, there is a reference group for the overall study. The reference group comments and advises on the main draft documents, including the Terms of Reference, draft interim reports and the draft final reports. The reference group consists of:

- Mr. H. Jorritsma, Deputy Director of the Policy and Operations Evaluation Department (chairman);
- Mrs. B. Wils, Research Director Education Policy & Data Center (EPDC);
- Mr. M. Brouwer, Director of the Effectiveness and Quality Department;
- Mr. A. Schuthof, Head Education and Developing Countries Division, Cultural Cooperation, Education and Research Department;
- Mr. C. de Nie, Basic Education Expert, Education and Developing Countries Division, Cultural Cooperation, Education and Research Department;
- Mr. E. Hilberink, Head Coordination and Institutional Affairs Division, United Nations and International Financial Institutions Department.

In *Zambia*, the Reference Group consists of:

- a) The Director, Directorate of Planning and Information (Chair);
- b) The Chief Planning Officer (Vice Chair);
- c) A Senior Statistician;
- d) A Policy and Research Advisor;
- e) An Institutional Development Sector Manager;
- f) A Senior Education Sector Advisor;
- g) The first Secretary, Royal Netherlands Embassy
- h) The Principal Planning Officer - Budgets and Projects (Secretary).

In *Uganda* the reference group consists of the members of the Education Funding Agencies Group (EFAG). This group includes representatives of the donors.

7 Timeframe

The studies for Zambia and Uganda have actually started in February/March when IOB and the VU researchers have visited Lusaka and Kampala. The Zambia study has been approved in April and the Uganda study in May.

Both countries need a report by October. In Zambia, the report may be input for the planned Mid-Term Review and in Uganda the report will be input for the yearly Annual Sector Review. Both studies will be finalised by the end of this year.

IOB intends to start the Bangladesh study by September and to finalise this study in spring 2007. By that time, the synthesis report may be finalised as well.

Table 2: *Planning Uganda*

	Event/Activity	Time
1	Acceptance of the TOR	May
2	Detailed data requests by IOB	May
3	Mission to Kampala for the discussion of the proposal and a kick off meeting with the team	May
4	Data gathering	June
5	Survey on teacher absenteeism	July- August
6	Data analysis	July- September
7	Interim-report on the state of affairs and problems encountered	August
8	Workshops	August / September
9	Draft report	September
10	Discussion of the draft report in Kampala	September
11	Report to the Annual Sector Review	October
12	Additional analysis	September-October
13	Draft report	October
14	Final report	December

Table 2: *Planning of the Zambia study*

1	Event/Activity	Time
2	Acceptance of the TOR	April
3	Detailed data requests by VU	June
4	Draft questionnaire for school survey	June
5	Mission to Lusaka for the discussion of the proposal and a kick off meeting with the team	July
6	Data collection at district level	July / August
7	Data analysis	August – October
8	Draft preliminary report	September
9	Analysis in Amsterdam with Zambian staff	October
10	Discussion of the draft report in Lusaka	September
11	Draft final report	November
12	Final report	January 2007

References

- Acana, Sylvia, *The role of National Assessment of Progress in Education in enhancing the quality of education in Uganda*, Kampala, Uganda National Examinations Board, 2005a.
- Acana, Sylvia, *Using National Assessment of Progress in Education as a quality assurance mechanism in Uganda*, Kampala, Uganda National Examinations Board, 2005b.
- Africa Policy Department DFID, *Review of health and education progress in selected African countries* (RHEP-SAC), Synthesis Report, London, DFID, 2005.
- Baker, Judy L. *Evaluating the impact of development projects on poverty*, Washington DC, The World Bank, 2000.
- Berry, John et al, *Local solutions to global challenges: towards effective partnership in basic education, country study report Uganda*, IOB/ the Netherlands Ministry of Foreign Affairs, 2003.
- Boissiere, *Determinants of primary education, outcomes in developing countries*, Background paper for the evaluation of the World Bank's support to primary education, Washington, OED, 2004.
- Burnside, Craig and David Dollar, *Aid, Policies, and Growth: Revisiting the Evidence*, World Bank Policy Research Working Paper 3251, 2004.
- Carvalho, Soniya and Howard White, *Combining the quantitative and qualitative approaches to poverty measurement and analysis*, World Bank Technical Paper no. 366, 1997.
- Colclough, Christopher, Samer Al-Samarrai, Pauline Rose and Mercy Tembon, *Achieving schooling for all in Africa; costs, commitment and gender*, Aldershot, Ashgate, 2003.
- Cornelissen, W. and V. Chisala, *Sector-wide Approach, Working Document Zambia*, Den Haag, IOB, 2005.
- Cornelissen, W., Frans, D.R., Guhathakurta, M., Rodts, R., *Sector-wide Approach, Working Document Bangladesh*, Den Haag, IOB, 2005.
- Das, J., S. Dercon, J. Habyarimana and P. Krishnan, *Public and private funding of basic education in Zambia: implications of budgetary allocations for service delivery*, World Bank, Africa Region Human Development working paper series, 2004.
- Duflo, Esther, *Scaling Up and Evaluation*, in: Bourguignon, Francois and Boris Pleskovic (eds.), *Accelerating development*, Washington, DC and Oxford, World Bank and Oxford University Press, 2004.
- Duflo, Esther and Michael Kremer, *Use of randomization in the evaluation of development effectiveness*, in: Keith Pitman, Osvaldo N. Feinstein and Gregory K. Ingram, *Evaluating development effectiveness*, World Bank series on Evaluation and development, volume 7, 2005.
- Eilior, Joseph, *Education and the sector-wide approach in Uganda*, Paris, UNESCO, 2004.

- Elbers, Chris and Jan Willem Gunning, *Impact of Dutch Bilateral Aid: Education in Zambia*, Proposal for an Evaluation Study, Amsterdam, AIID, 2005.
- Glewwe, P., Kremer, M., *Schools, Teachers, and Education Outcomes in Developing Countries*, Second draft of chapter for *Handbook on the Economics of Education*, April 2005.
- Greaney, Vincent, Shahidur Khandker and Mahmudul Alam, *Bangladesh: Assessing Basic Learning Skills*, The World Bank Bangladesh, March 1998 .
- IOB, *Local Solutions to Global Challenges: towards effective partnership in Basic Education* (final report), The Hague, The Netherlands Ministry of foreign Affairs, September 2003.
- IOB, *Local Solutions to Global Challenges: towards effective partnership in Basic Education, Country Study Report Uganda*, The Hague, The Netherlands Ministry of foreign Affairs, September 2003.
- IOB, *Local Solutions to Global Challenges: towards effective partnership in Basic Education, Country Study Report Zambia*, The Hague, The Netherlands Ministry of foreign Affairs, September 2003.
- IOB, *Van projecthulp naar sectorsteun, evaluatie van de sectorale benadering 1998-2005*, Den Haag, Ministerie van Buitenlandse Zaken, 2006.
- Kapoor, Anju Gupta, *Review of impact evaluation methodologies used by the OED over past 25 years*, Washington DC, The World Bank, 2002.
- Masud, Nadia and Boriania Yontcheva, *Does Foreign Aid Reduce Poverty? Empirical Evidence from Nongovernmental and Bilateral Aid*, IMF, 2005.
- Kingdon, Geeta, Chapter on Education Economics, in: DFID Economists' Guide, London, DFID, 2005.
- Leliveld, André, *Sector-wide Approach, Working Document Uganda*, Den Haag, IOB, 2005.
- Maluccio, John A. and R. Flores, *Impact evaluation of a conditional cash transfer program, The Nicaraguan Red de Protección Social*, Washington DC, IFPRI, 2005.
- Ministry of Education & Sports, The Republic of Uganda, *The Education Sector Annual Performance report (ESAPR), financial year 2003/2004*, Kampala, MoES, 2004.
- Ministry of Education & Sports, The Republic of Uganda, *The Education Sector Annual Performance Report (ESAPR), financial year 2004/2005*, Kampala, MoES, 2005a.
- Ministry of Education & Sports, The Republic of Uganda, *Uganda Education Statistics Abstract 2004*, Kampala, MoES, 2005b.
- Ministerie van Buitenlandse Zaken, *Aan elkaar verplicht. Ontwikkelingssamenwerking op weg naar 2015*, Den Haag, 2003.
- Ministry of Foreign Affairs (the Netherlands), *Results in Development, Report 2004*, The Hague, The Netherlands Ministry of foreign Affairs, 2005.
- Ministry of Education (Zambia), *Western Province Education Programme, Evaluation Report*, 2003.

- Ministry of Education, (Zambia), *Challenges of taking BESSIP to the Classroom – Towards effective Partnerships in Basic Education*, 2004 (draft).
- Ministry of Education & Sports, The Republic of Uganda, *Aide memoire for the second annual education sector review*, Kampala, MoES, 2005c.
- Murphy, Lynn, *Does increasing access mean decreasing quality? An assessment of Uganda's progress towards reaching EFA goals*, Background paper for EFA Monitoring report 2003.
- Namirembe Bitamazire, Geraldine, *Status of education for rural people in Uganda*, Kampala, MoES, 2005.
- Okech, Anthony, Uganda case study of literacy in education for all 2005, a review of policies, strategies and practices, Paris, UNESCO, 2005.
- Operations Evaluation Department, *Books, buildings, and learning outcomes: an impact evaluation of World Bank Support to basic education in Ghana*, Washington DC, The World Bank, 2004.
- Pitman, George Keith , Osvaldo N. Feinstein and Gregory K. Ingram, *Evaluating development effectiveness*, New Brunswick, Transaction Publishers, 2005.
- Pritchett, Lant, Access to Education, in: Bjørn Lomborg (ed), *Global crises, global solutions*, Cambridge, Cambridge University Press, 2004, pp. 175-234.
- Ravallion, Martin, The mystery of vanishing benefits: an introduction into impact evaluation, *The World Bank Economic Review*, vol. 15, no. 1, pp. 115-140.
- Ravallion, Martin, Evaluating anti-poverty programs, in : R.E. Evenson and T.P. Schulz (eds), *Handbook of Agricultural economics Volume 4*, North Holland, 2005.
- Rawlings, Laura, Operational reflections on evaluating development programs, in: George Keith Pitman, Osvaldo N. Feinstein and Gregory K. Ingram, *Evaluating development effectiveness*, New Brunswick, Transaction Publishers, 2005, pp. 193-204.
- Reinikka, Ritva and Jakob Svensson, Local capture: evidence from a central government transfer program in Uganda, in: *The quarterly Journal of Economics*, 2004, vol. 19.
- Savedoff, W.D., R. Levine and N. Birdsall, When will we ever learn? Recommendations to improve social development through enhanced impact evaluation, Washington, *Centre for Global Development*, 2005.
- Skyt Nielsen, Helena and Niels Westergård-Nielsen, *Returns to schooling in LDCs: new evidence from Zambia*, Centre for Labour Market and Social Research, 1998.
- UNESCO, *EFA Global Monitoring report 2005: Education for All: the Quality Imperative*, Paris, UNESCO, 2005.
- UNESCO, *EFA Global Monitoring report 2006: Literacy for life*, Paris, UNESCO, 2006.
- UNESCO Dhaka, *A Study on the Assessment of Learning Achievements of Street and Working Children, Schools Dropouts and Marginalized Youth*, Institute of Education and Research (IER), University of Dhaka, January 2001.

- Verspoor, Adriaan M. (ed.), *The challenge of learning: improving the quality of basic education in Sub-Saharan Africa*, Paris, ADEA, 2006.
- Walle, Dominique van de and Dorothyjean Cratty, *Do Donors Get What They Paid For? Micro Evidence on the Fungibility of Development Project Aid*, World Bank, World Bank Policy Research Working Paper 3542, March 2005.
- Wils, Annababette, Bidemi Carroll and Karima Barrow, *Educating the World's Children*, Washington, EPDC, 2005.
- World Bank, *Public Expenditure Review*, Poverty Reduction and Economic Management Sector Unit, South Asia Region, Washington DC, (Report No. 24370-BD), 2003.
- World Bank, *Programmatic Education Sector Adjustment Credit Project*, Washington DC, (Report No. 28371), 2004.
- World Bank, *Attaining the Millennium Development Goals in Bangladesh*, Human Development Unit, South Asia Region, Washington DC (Report No. 31846-BD), 2005.

Annex I: Methodology

Introduction

Impact evaluation is the systematic identification of the effects – positive or negative, intended or not – on individual households, institutions, and the environment caused by a given development activity such as a program or project (Baker 2000; World Bank, 2005). In order to be able to answer the research questions, IOB wants to use the techniques of “rigorous impact evaluations”. Using these quantitative (econometrical) techniques, it will be possible to measure the effects of the interventions and other exogenous factors upon enrolment and achievement.

A main reason, why it is in general rather difficult to assess the effectiveness of programmes, is the problem that other factors may interfere. This interference may, if not taken into account, lead to biased results. Education outcomes may be affected by variables other than government interventions. Two related problems are at stake. First of all, there is the already mentioned *attribution problem*. Which effects can be attributed to educational interventions? Many, many other factors interfere and may have an impact as well. An unbiased assessment of the effect of educational interventions upon – for instance – enrolment has to take into account the effects of differences in size, remoteness or poverty status of the households, as these factors may influence enrolment as well. For example, enrolment rates may increase as a result of higher incomes, the lowering or abolition of school and exam fees, a greater awareness of parents of the importance of education, etcetera. Moreover, many factors may have a negative impact upon learning and learning achievement. Poor education outcomes may be due either to low quality of the schooling system (teachers, teaching methods, materials), to under-funding or to other factors that are beyond the education policy. School attendance may be lower in poor and nomadic regions. HIV/Aids has a negative impact upon school attendance and leads to teacher absenteeism.

Therefore, one needs to know what the outcome would have been without the intervention (treatment). Here one touches upon the problem of the *counterfactual*: how would the children have developed without the interventions? What would be needed is a control group, like in medical research. However, in most cases no control group has been selected in advance and it is rather difficult to select one afterwards. How to construct such a control group after the intervention? The control group should have similar characteristics as the group that has been part of the project. For instance, when the project has been directed at very poor rural orphans, it makes no sense to select a control group that consists mainly of urban children from parents with a relatively high income.

Techniques

In the last 25 years, new statistical evaluation techniques have been developed in order to evaluate the impact of development support at the project level (see for instance Baker 2000, Kapoor 2002 and Duflo 2005). These techniques solve the problem that in most cases, no control group has been identified in advance, so that it becomes difficult to measure the impact of the project. Moreover, with the use of these statistical techniques it is possible to quantify the influence of other determinants, so that the impact at the project level can be isolated.

The classical approach seems to use *regression analysis*. In a simple regression framework, the ‘impact’ is analysed as a mathematical function of characteristics and (possible) influences. For instance, education outcomes may be related to age, sex, region and living conditions. In a multivariate equation, one may be able to estimate the impact of the different variables and isolate the effect of the interventions.

Glewwe and Kremer (2005, p. 12) define the *production function* for learning as a structural relationship that can be depicted as:

$$A = a(S, Q, C, H, I)$$

Where A stands for achievement, S for Years of schooling, Q school and teacher characteristics, C for child characteristics, H for household characteristics and I for school inputs under the control of parents.

The proposed impact evaluation focuses upon school and teacher characteristics (Q) and household characteristics (H). Achievement will be measured by assessment surveys and exam results. The school will be the main – but not the only – unit of analysis. For enrolment rates and household characteristics, it will be necessary to aggregate data to a local level (for instance ward or parish level).

Impact will be determined by regressing differences (across schools) in outcome or impact variables on differences in the interventions from which they have benefited and taking into account other (exogenous) variables. However, some determinants may be *unobserved* (excluded from the analysis because there are no (quantitative) data. This may be a problem when they are correlated with variables that are included in the equation. Such a correlation may lead to overestimation of the impact of the observed variables (Glewwe and Kremer 2005, p. 15). For instance, if you want to analyse the difference between public schools and private schools without taking into account characteristics of the parents, this will result in a biased estimate of the effect of public schools. The proposed evaluation will

deal with unobserved variables by looking at changes rather than levels of outcomes. Wherever possible the analysis will be based on outcome *changes*, thereby eliminating unobserved fixed effects.

With access to the appropriate data, it will be able to assess the *cost-effectiveness* of interventions as well (see for instance the World Bank impact evaluation of education in Ghana).⁷

For more isolated interventions – think for instance about more isolated projects – the method of *propensity score matching* will be used to construct a control group. This method forms pairs by matching on the probability that subjects have been part of the project.⁸ With this method it is possible to form a control group with comparable characteristics as the intervention group.

The method of *double difference* aims to eliminate a remaining ‘selection bias’, or: the elimination of differences when participants of a programme differ from a control group. The method measures differences between the two groups, before and after the intervention (therefore the name: double difference). Table 1 gives a graphic representation of the method.⁹

Table 1: *Double difference*

	Intervention Group	Control Group	Difference across groups
Baseline	I_0	C_0	$I_0 - C_0$
Follow-up	I_1	C_1	$I_1 - C_1$
Difference across time	$I_1 - I_0$	$C_1 - C_0$	<i>Double-difference:</i> $(I_1 - C_1) - (I_0 - C_0) =$ $(I_1 - I_0) - (C_1 - C_0)$

Suppose there are two groups, an intervention group I and a control group C. One measures for instance enrolment rates, before (0) and after (1) the intervention. According to this method, the effect is:

$$(I_1 - I_0) - (C_1 - C_0) \text{ or } (I_1 - C_1) - (I_0 - C_0)$$

⁷ Cost-effectiveness refers to the relation between program costs and the effects or outcome. With a regression approach, it is possible to estimate the contribution of (for instance) the building of classrooms or the supply of books to learning achievement. When you know the costs of the building of classrooms or the supply of books, you may calculate the costs of the improvement in learning achievement through these activities.

⁸ The computation of propensity scores involves regression analysis as well (logistic regression or probit estimation).

⁹ Adapted from: J.A. Maluccio and R. Flores (2005).

This method presupposes that differences between both groups can be attributed solely to the intervention.

Data requirements

A specific characteristic of the proposed impact studies is that we will mainly rely on existing data. The data has to be available on a disaggregated level, preferably at the school level. The most important sources of information are:

- the *Annual School Census* data, for the years 2000-2005;
- financial data;
- national assessment surveys;
- examination data at the primary level;
- Demographic and Health Surveys (DHS) and especially the *DHS EdData Surveys*;
- Household surveys such as the Population and Housing Census and the Living Conditions Monitoring Surveys (LCMS) and the Household, Income and Expenditure Survey (HIES).

Qualitative analysis

Although the study will make extensive use of statistical techniques, it is important to combine the results with a qualitative analysis. For this goal, the researchers will make extensive use of the IOB country reports on basic education and the SWAp.¹⁰ These sources will be complemented with additional research:

- For both studies (Uganda and Zambia) the analysis of the *intervention histories* is an important part of the study;
- in both countries, local consultants gather information on the *intervention histories* at the district and school level;
- both studies will use the results of other recent studies, such as tracking surveys;
- for Uganda, officers of the Monitoring and Evaluation Department of the Ministry of Education and Sports (MoES) will contribute to the qualitative evaluation. For this goal, they will assist a local consultant in the fieldwork at the district and school level;

Moreover, the researchers will discuss the results with the ministries of education in the countries involved.

¹⁰ The basic education study was a Joint Evaluation of thirteen donors and development organizations and four partner countries. IOB chaired the Evaluation Steering Committee.

Annex II: Country studies

Zambia

In Zambia, the Ministry of Education (MoE) has developed a five year *Sector Plan (MoESP)* as a follow up to the implementation of the Basic Education Sub-Sector Investment Programme (BESSIP). The Sector Plan covers all sectors of the Ministry including Basic, High School and Tertiary Education. Crosscutting issues have been incorporated into the overall plan, which include Equity and Gender, HIV/AIDS and Special Educational Needs. During the implementation of BESSIP, the Netherlands supported a specific program in the Western Province, the Western Province Education Programme (WEPEP). The WEPEP interventions will be methodologically part of the study.

This year, the MoE will carry out a Mid-Term Review of the MoESP to evaluate the progress of the implementation of the plan to date. In preparation of the Mid-Term Review the Ministry is carrying out a Public Expenditure Tracking Survey (PETS). The findings from this survey will feed into the overall review of the MoESP.

Researchers of the VU, J.W. Gunning and C. Elbers have written a proposal for an impact evaluation of primary education in Zambia. This proposal has been discussed with the MoE. On the basis of these discussions the MoE, IOB and the VU researchers have written the Terms of Reference. With an eye to this mid-term review, MoE is interested in an evaluation of the effectiveness and impact of educational instruments. In addition to that, the MoE has an interest in improving the use of the Ministry database and for the formulation and improvement of education policy on a more permanent basis.

The proposed impact evaluation focuses upon interventions that have been part of BESSIP and MoESP. For a representative sample of schools, the effects of the interventions since 2005 will be analysed. Therefore, the determination of the intervention histories is an important part of the analysis. For this goal the researchers have developed a questionnaire, to be answered at the district level.

Uganda

In the last ten years, the education sector in *Uganda* has changed significantly. The *Universal Primal Education (UPE)* initiative of the government resulted in a large increase in enrolment. Between 1996 and 1997, the number of pupils increased by 70% as a result of the abolition of primary school fees (for up to four children from each family). By 2004, the number of pupils in primary education had

increased to 7.4 mln. This sharp increase in enrolment led to over-crowded classrooms, insufficient learning materials and high pupil/teacher ratios (IOB, 2003; Murphy, 2003). The *Education Strategic Investment Plan* (ESIP) of 1997 and its successor, the *Education Sector Strategic Plan* (ESSP, 2004-2015) were introduced to redress the negative effects of the increase in enrolment and to improve the quality of the education system. The *Aide de Memoire* for the 2005 Sector Review (MoES, 2005c) concludes that the government is making steady progress in its effort to augment quality and efficiency in the sector.

The developments in Uganda show that government interference in the sector – supported by donors – may have a great impact. However, despite a large amount of evaluations on (basic) education in Uganda (see Eilor, 2004 for an overview), insight into the (cost-) effectiveness of interventions is limited.

In *Uganda* the impact evaluation focuses upon interventions that are part of President's 2001 Manifesto and have been described and discussed in the *Education Sector Annual Performance Reports* (ESAPR). For a sample of schools, it will be analysed how these interventions have been translated into action at the school level. For this reason, financial information for a sample of schools will be gathered at the district level.

A specific element of the impact evaluation is a study of the problem of teacher absenteeism. The problem will be analysed on the basis of:

- MoES data on the subject;
- inspection reports, available in the districts;
- a survey among teachers on the reasons of teacher absenteeism.

A local consultant will be responsible for this part of the study. The study will be finalised by October and may therefore contribute to the Annual Sector Review.

Bangladesh

Bangladesh has made significant progress towards the achievement of the MDGs on access to schooling, which include enlargement of access to primary and secondary education, but also convergence on access for boys and girls. The Compulsory Primary Education Act enacted by the Government of Bangladesh in 1990, may be considered as the basis for this leap ahead. It has resulted over the years in a variety of policies and practices, such as the elimination of official primary school fees, the provision of free textbooks, and incentives to encourage the participation of vulnerable children. Gross primary enrolment rates rose from

72 percent in 1990 to 96 percent in 2000. There is also a narrowing of disparity between boys and girls and rural and urban primary enrolment¹¹.

These achievements are particularly impressive when compared to countries in the South Asia region and other countries at similar levels of per-capita income (Sri Lanka, Afghanistan, and India). Bangladesh has achieved levels of primary and secondary gross enrolment similar to those in countries with higher per capita income, such as Thailand, and Indonesia. The quick and wide expansion on access to schooling resulted, however, in capacity problems and over-crowded classrooms, insufficient learning materials, high pupil/teacher ratios (ratio is 1:61 in government schools in 2002) and low teacher-pupil contact time. Moreover, there are significant variations in enrolment rates across regions (see World Bank (2005), p.53, Figure V.2) and there is an inequitable provision in education: poor children are less likely enrolled in school at all levels.

In the past years, Dutch support was mainly composed of contribution to the Bangladesh Rural Advance Committee (BRAC) and participation in the General Education Programme (GEP). The BRAC Education Programme started in July 2004 and will continue until June 2009. The Netherlands' contribution to this programme is currently € 31 million, but there are plans to increase the funding to this programme.

GEP was the foundation of a sectoral approach to primary education: the Primary Education Development Programme (PEDP-I and PEDP II). The Netherlands contribution to PEDP II is € 45 mln. Since 2004, a great part of the Dutch support is directed at the BRAC Basic Education Programme (BEP IV). This programme aims to increase the provision and use of good quality primary and secondary education that will enable learners to retain and use literacy, numeracy and life skills learned.

¹¹ See World Bank (2003) p. 47.

Annex III: Glossary

<i>Primary education</i>	the first years of formal, structured education during childhood, usually from 6-7 years until 12-14 years
<i>Enrolment</i>	number of pupils enrolled at a given level of education, regardless of age
<i>Gross enrolment ratio</i>	the total enrolment as a percentage of the official school-age population
<i>Net enrolment ratio</i>	enrolment of the official age group expressed as a percentage of the corresponding population
<i>School attendance rate</i>	the number of children of the official age for primary education regularly attending school as a proportion of the total population of children of the official age for primary education
<i>Survival rate</i>	percentage of a cohort of pupils enrolled in the first grade who reach each successive grade
<i>Completion rate</i>	the total number of pupils completing the final year of primary education as a percentage of the population at the official primary graduation age
<i>Drop out rate (by grade)</i>	percentage of pupils or students who drop out from a given grade in a given school year.
<i>Repetition rate</i>	the proportion of pupils from a cohort enrolled in a given year who study in the same grade in the following school year
<i>Gender parity index</i>	ratio of female to male values of a given indicator
<i>Pupil / teacher ratio</i>	average number of pupils per teacher, based on headcounts for both pupils and teachers