Primary Education in Zambia

IOB Impact Evaluation | no. 312 | April 2008

Buitenlandse Zaken
Ontwikkelings samenwerking

IOB Impact Evaluation | Policy and Operations Evaluation Department | no. 312 | April 2008

Primary Education in Zambia

Printing OBT, The Hague
Design Corps, The Hague
Cover design Eindeloos, The Hague
Lay-out Eindeloos, The Hague
Editing Ticycle vertalingen
Cover picture Kalweo community school, Luapula. Photo: Vincent Snijders
ISBN 978-90-5328-360-8
Ordercode OSDR6623/E
www.minbuza.nl/iob-en
April 2008

Preface

Since the mid 1990s, development agencies, including the Netherlands, started to move from project aid towards sector and general budget support. These new aid modalities emerged because of the perception that the project approach was no longer efficient or effective, due to fragmentation and a lack of coordination, ownership and sustainability. It was felt that pooling funds would be more effective, and that cooperating with existing ministerial institutions would strengthen local capacity and thus make development more sustainable.

The education sector in Zambia is one of the sectors in which this approach has been applied. In the second half of the 1990s the Zambian government wanted to revitalise the education sector after years of neglect. The Government of the Republic of Zambia (GRZ) developed two ambitious plans, in close cooperation with development partners. The first plan looked at improving the access to and quality of education in the basic education sector; the second looked at doing the same in the sector as a whole. Together with the abolition of school fees, the implementation of these plans resulted in a sharp increase in the number of children enrolling.

This evaluation is one of the first attempts of the Policy and Operations Evaluation Department (IOB) to analyse the *impact* of a contribution to a sector (or subsector) as a whole. The basic principle is that evaluation of support received by a sector should focus on the sector as a whole, rather than focusing on the contribution of one specific agency. The evaluation analyses the effectiveness of interventions to which the Netherlands contributed. The study is an impact evaluation in the sense that it analyses the effectiveness of interventions in the sector, taking into account various factors that may have influenced the outcome. As such, it deals with the attribution problem and selection effects.

The first three chapters introduce the study, describe the methodology and provide a brief overview of how education policy developed. The following chapters describe investment results and analyse the impact on access and learning achievement. The study concludes that the GRZ and its development partners have achieved remarkable results, considering the state primary education was in at the end of the 1990s and the limited institutional capacity and human resource base. The report makes several recommendations for improving the quality and sustainability of results in the basic education subsector.

The report was written by Antonie de Kemp (IOB), Chris Elbers and Jan Willem Gunning (Amsterdam Institute for International Development, AIID/Vrije Universiteit, VU), with contributions from Emina van den Berg (IOB) and Kobus de Hoop (Tinbergen Institute).

The study was made possible by the generous support of the Directorate of Planning and Information of the Ministry of Education and the Examinations Council Zambia (ECZ). IOB is grateful for the contribution made by the following:
Nelson Nyangu (Ministry of Education)
Fred Brooker (Ministry of Education)
Bupe Musonda (Ministry of Education)
Noel Mulopa (Ministry of Education)
Joe Kanyika (Ministry of Education)
Yvonne Mweemba Chuulu (Ministry of Education)
Chekani Sakala (Examinations Council of Zambia)
Teza Nakazwe (Examinations Council of Zambia)
William Mayaka (Central Statistical Office of Zambia).

The team is grateful to Mr Cathal Higgins, who discussed the Zambian education system and his views on it with one of our researchers. The authors would also like to thank Mr Vincent Snijders and Ms Given Dhaka, respectively First Secretary and Programme Officer in the education section at the Dutch Embassy in Lusaka, for their contributions to the project and their valuable, detailed comments.

An advisory group consisting of Henri Jorritsma, Deputy Director of IOB, Maarten Brouwer, Director of the Effectiveness and Quality Department (DEK), Marjan Kroon and Chris de Nie of the Cultural Cooperation, Education and Research Department (DCO), Melle Leenstra of the Directorate-General for International

Cooperation (DGIS) and Babette Wils of the Education and Policy and Data Center commented and advised on this report.

IOB is responsible for the report's content.

Bram van Ojik
Director Policy and Operations Evaluation Department

Contents

Abbreviations

ACP	African, Caribbean and Pacific States
ADEA	Association for the Development of Education in Africa
AIEMS	Action to Improve English, Mathematics and Science
ANOVA	Analysis of Variance
AWP	Annual Work Plan
BESSIP	Basic Education Sub-Sector Investment Programme
CDC	Curriculum Development Centre
CS	Community Schools
CSO	Central Statistical Office
DEB	District Education Board
DEO	District Education Officer
DFID	Department for International Development (United Kingdom)
DHS	Demographic and Health Survey
EFA	Education for All
EMIS	Education Management Information System
ESC	Evaluation Steering Committee
ESIP	Education Sector Investment Programme
ESSP	Education Sector Support Project
EU	European Union
GIR	Gross Intake Ratio
GLS	Generalized Least Squares
GRZ	Government of Republic of Zambia
HIPC	Heavily Indebted Poor Country
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
IMF	International Monetary Fund
INSPRO	Inclusive Schooling Programme
IOB	Policy and Operations Evaluation Department
IRI	Interactive Radio Instruction
MCDSS	Ministry of Community Development and Social Services

MDG	Millennium Development Goal
MLG	Ministry of Local Government
MMD	Movement for Multiparty Democracy
MoE	Ministry of Education
MoESP	Ministry of Education Strategic Plan
MOFED	Ministry of Finance and Economic Development
MOU	Memorandum of Understanding
MSTVT	Ministry of Science, Technology and Vocational Training
MTEF	Medium-Term Expenditure Framework
NAS	National Assessment System
NGO	Non-Governmental Organisation
NIR	Net Intake Ratio
ODA	Official Development Assistance
PAGE	Programme for the Advancement of Girls' Education
PCSC	Parent Community School Committee
PEO	Provincial Education Officer
PRP	Primary Reading Programme
PRSP	Poverty Reduction Strategy Paper
PTA	Parent Teacher Association
SACMEQ	Southern African Consortium of Monitoring Educational Quality
SWAp	Sector-Wide Approach
SHN	School-based Health and Nutrition
SPRINT	School Programme of In-Service for the Term
TDP	TEVET Development Plan (TDP)
TED	Teacher Education and Deployment
TEVET	Technical Education and Vocational and Entrepreneurship Training
TESSIP	Technical Education Sub-Sector Investment Programme
TTC	Teacher Training College
WEPEP	Western Province Education Programme
ZBEC	Zambia Basic Education Curriculum
ZERP	Zambia Education Rehabilitation Project
ZCSS	Zambia Community School Secretariat

Summary and conclusions

Introduction

In 1990, delegates from 155 countries agreed to make primary education accessible to all children and to massively reduce illiteracy. These targets were reaffirmed both at the Dakar World Education Forum in April 2000 as well as the Millennium Summit in September that year, when 189 nations adopted the Millennium Declaration comprising eight specific goals known as the Millennium Development Goals (MDGs). One of these goals (MDG 2) is to achieve universal primary education before 2015.

These initiatives enhanced support for basic education in developing countries. At the same time, development partners were changing their policy from project to sector and general budget support.[1] New aid modalities emerged in response to a perceived lack of efficiency and effectiveness of the project approach, which was caused by fragmentation and lack of coordination, ownership and sustainability. It was felt that the pooling of external assistance would result in a more effective approach and more sustainable results. In several countries, the education sector was among the first sectors where the Sector-Wide Approach was introduced.

Zambia is an example. Its government intends to revitalise the education sector after years of neglect. In the 1980s and 1990s, economic developments and a heavy debt burden had forced the Government of the Republic of Zambia (GRZ) to cut budgets for education. As a result, the education sector became dilapidated. Enrolment rates in basic education decreased even though the school-age population was growing fast. Literacy rates did not improve but tended to deteriorate. At the end of the 1990s, the GRZ implemented an ambitious plan, the Basic Education Sub-Sector Plan (BESSIP) for 1999-2002, to improve access to and quality of basic education. In 2003, this plan was followed by a second development

1 For an overview of the development of the Dutch position on sector support, see IOB 2006.

plan, the Ministry of Education Strategic Plan (MoESP) for 2003-2007. This plan covered the whole education sector.

The introduction of the Sector-Wide Approach (SWAp) created the financial preconditions for large investments in basic education and for the abolition of school fees in 2002. In 2000, there were approximately 5,300 basic schools in Zambia; in 2006 this number had increased to more than 8,000 (with the largest growth coming from community schools). Over the same period, the total number of classrooms increased from 25,000 to 35,000. Under BESSIP, the MoE distributed 1.4 million books. Large numbers of new teachers were recruited and trained. The total number of teachers increased by 35%, from 37,000 in 2000 to 57,000 in 2007 (including 44,000 teachers in GRZ schools and grant-aided schools, 4,000 in private/church schools and 8,500 in community schools).

This study reports the results of an evaluation of the development of primary education in Zambia and the effectiveness of investments in this subsector since 2000. As such, it provides insight into the effectiveness of investments in a sector that has been supported by the Netherlands along with a number of other cooperating partners.[2] The following questions are central:

1) In what way have school attendance and learning achievement developed since 2000?
2) What were the main determinants of these developments?
3) Which interventions have the largest impact on educational outputs?

The study is quantitative and based on a statistical analysis of information at the school and pupil levels. The information is obtained from the annual school census and test and examination figures of the Examinations Council of Zambia.

2 The move towards sector support has had important implications for the evaluation of the effectiveness of bilateral support. The consequence of the introduction of sector support and general budget support is a shift towards joint results. Instead of focusing on the contributions made by a specific development agency, an evaluation should focus on the sector as a whole. Evaluating the 'effectiveness' of an individual contribution is neither feasible nor desirable, as it conflicts with the whole idea of a joint effort.

Conclusions

1. *In no more than six years, Zambia has made enormous progress in improving access to primary education.*

The study shows that the government of Zambia, in cooperation with its development partners, has achieved remarkable results, considering the state of primary education at the end of the 1990s and a limited institutional capacity and human resource base. Investments in the education sector were launched only eight years ago, after decades of neglect. The Ministry of Education succeeded in significantly enhancing access to basic education after years of underinvestment by implementing development plans and abolishing school fees in 2002. Within six years, enrolment in primary education had increased by 67% (from 1.6 million in 2000 to 2.7 million in 2007). Private schools and (especially) community schools have contributed significantly to this achievement, but even apart from their role, the general level of growth is an impressive achievement. Investments in teachers and teacher training, in schools and classrooms and in school facilities and books have been and are important instruments for reducing dropout and repetition and improving progression and completion rates. Completion rates improved from 67% to 82% in 2005. Although the gender gap has decreased and parity has almost been achieved at the lower basic level, gender disparities remain at the middle basic and upper basic level.

2. *The Sector-Wide Approach, with pooled funding, was a condition for the successful implementation of the two development plans and the introduction of Free Basic Education in 2002.*

The example of Zambia shows that a sector-wide approach can be an effective strategy for enhancing education within a relatively short period of time. Within ten years, the GRZ and its cooperating partners in the education sector have moved from a project approach to sector support. The pooling of funds has created the means for a broad, holistic and integral approach to the basic education sector. Overall, cooperating partners financed approximately 32% of the education expenditure, including roughly 35% of the total expenditures on basic education. This way, cooperating partners facilitated the enrolment of approximately 800,000 pupils. The successes achieved within the education sector contributed to the further harmonisation of the efforts by development partners and their alignment with the priorities of the GRZ.

3. *The example of Zambia shows that it is difficult to simultaneously improve the level of enrolment and the quality of education. At the same time, the country shows that is it possible to significantly raise the enrolment level within a few years without any considerable negative effects in terms of pupils' test and examination results.*

Between 2000 and 2006, the total number of pupils who took the grade 7 exam increased by 62%. Notwithstanding the high increase in enrolment, average test and examination results did not deteriorate. This is an impressive achievement: first, the most vulnerable children also gained access to education which one would expect to have a negative impact on average learning achievements. It is well documented – and confirmed by this study – that children from poor and less-educated parents do not perform as well as children from wealthier and better-educated parents. Second, the large increase in enrolment led to higher pupil teacher ratios and higher pupil classroom ratios which generally have a negative impact on the learning environment. In a way, the successful investment policy undermined its own success: it enabled the recruitment of more teachers and building of more classrooms to reduce pupil teacher ratios and pupil classroom ratios, while at the same time attracting new entrants.

4. *The quality of basic education remains low and results are unstable.*

However, whereas Zambia was successful in improving access to education, the quality of education, as measured by test and examination results, is still low. Zambia does poorly in comparison to neighbouring countries. Approximately 70% of the grade 5 pupils do not attain the minimum level of English, whereas no more than 6% actually achieve the required level. For math, test results are improving but examination results show an opposite trend. Annual fluctuations are relatively large, which suggests a more fundamental problem: at lower aggregate levels, learning achievements are highly unstable. At the school level, test and examination results show enormous annual fluctuations. The findings indicate that specific programmes are unsustainable in the long run. While further research from EMIS or Zambian researchers is warranted, the evaluation points to several weaknesses in Zambia's basic education system. These weaknesses are related to severe underfunding, a lack of qualified and motivated teachers and head teachers and a lack of effective management capacity at the school and district levels.

5. *The education policy has generally been pro-poor, even though both the distribution of investments and access are still regressive.*

The education system is still regressive. Large differences in pupil teacher ratio and pupil classroom ratio exist between and within schools. Pupil teacher ratios are considerably higher in remote rural areas and poorer districts than in urban areas and wealthier districts. Community schools in particular, which contributed significantly to the overall increase in enrolment, are understaffed. In those schools, book pupil ratios are also much lower than in GRZ schools and (particularly) private schools. Enrolment rates are higher in the highest wealth quintiles and the wealthiest regions. Dropout rates are highest among poor children. However, differences are now smaller than they were at the beginning of the millennium: increasingly more children from poor households gained access to education and regional disparities in teacher pupil ratios are diminishing, even though enrolment rates are growing rapidly. A point of concern are the growing disparities in pupil classroom ratios between poorer and wealthier regions.

6. *The effectiveness of investments in schools, teachers, classrooms and books can and should be improved.*

The analysis shows that investments in schools, teachers, classrooms and books *may* be effective in raising the quality of education. These investments are desperately needed but they could be more effective. In many schools, recruitment of additional teachers would not be very effective as the lack of classrooms is more pressing. The effectiveness of double shifts is questionable.

Whereas GRZ and its partners have invested in schools, classrooms, desks, books and teachers, the importance of capacity building at all levels has been undervalued. As a result, management, monitoring and accountability structures are underdeveloped. The monitoring function is unduly focused on input and process indicators and aggregated MDGs. GRZ and contributing partners have promoted decentralisation without simultaneously guaranteeing that the preconditions for decentralisation are met. This situation has contributed to numerous implementation problems. At the districts, inspectors (standards officers) do not have access to the fuel they need to regularly visit schools and they lack adequate handbooks for school inspections. The districts do not link the results of their inspections to monitoring data from the annual school census. Decentralisation cannot be effective without appropriate capacity building.

Issues for future policy

Although Zambia has, together with the cooperating partners, achieved remarkable results in primary education, massive investments will still be needed to realise a sustainable improvement of the quality of education. Until recently, investments of the Government of the republic of Zambia in the Education Sector have been low in comparison with other countries. High contributions of cooperating partners were needed to realise the goals of Free Basic Education, universal primary education and improvement of the quality of education. The MoE and its cooperating partners now face the challenge of improving the quality of education and creating a more sustainable learning environment. Recent developments are encouraging. Domestic resources in total education expenditure increase and the GRZ has made a commitment in the Fifth National Development Plan and the National Implementation Framework to scale up spending. At the same time, it must be possible to enhance the effectiveness of investments in (basic) education.

1. *Invest in school management*

If there is one magic bullet, it is the effectiveness of investments in the quality of school (and district) management. Investments in teachers, classrooms and books are required but these would be more effective if the MoE at the same time succeeds in raising the quality of school and district management. Investing in school management is one of the most cost-effective methods to improve the quality of education. Effective school management can make the difference. A head teacher with well-developed management skills, supported by an effective district manager and inspectorate, creates a stimulating learning environment, holds the teachers accountable and reduces teacher and pupil absenteeism.

2. *Invest in district management and the inspectorate*

Strengthening management does not only mean investing in the management of the school, but also investing in the district management and the inspectorate. Investments in books, classrooms, teachers and teacher training are more effective if the school is well-managed and investing in the quality of management means training, establishing an effective support structure at the district level and an effective inspection apparatus.

3. *Invest in the quality and use of monitoring information*

The monitoring and evaluation functions need to be further expanded in order to become instruments for the improvement of the quality of education. The MoE can be proud of its Education management Information system (EMIS), but this system

can be used more effectively. EMIS provides basic (input) information, but this information is not linked to output and outcome information. Monitoring and evaluation functions need to be expanded in order to become instruments for the improvement of the quality of education. Information provided by the annual school census needs to be linked with information from ECZ. At the district level, the results of inspections may be computerised and linked to EMIS data. The evaluation capacity of the Directorate for Planning and Information needs to be strengthened.

4. *Invest in books*

Improving the availability of books is one of the most cost-effective methods for improving learning achievement. For Zambia, the estimated coefficients are not particularly high. This leads to the conclusion that books are generally used ineffectively. Teacher training needs to be improved in order to ensure effective teaching and the effective use of books.

5. *Invest in school facilities*

Other studies showed that investing in *school facilities* is likely to be very cost-effective. A good learning environment has a significant impact on school attendance and learning outcomes. Adequate school facilities (including desks, blackboards, electricity and water and sanitation) contribute to a stimulating and healthy learning environment and have a positive impact on pupil attendance and learning achievement.

6. *Invest in teachers*

A high pupil teacher ratio has a negative impact on learning achievement and in that sense the recruitment of teachers in 2007 must be welcomed. Nevertheless, teacher recruitment can be made more effective by improving teacher education and in-service training. The analyses show a significant, though not very large, effect of better-educated and more qualified teachers. The study did not indicate that providing *additional* (in-service) teacher training is an effective measure. This means that the current training practice is not very effective and should be improved.

7. *Invest in classrooms*

At the same time, it is necessary to invest in classrooms. Despite the building programme, there is still an enormous backlog in classroom construction. The recruitment of teachers is not cost-effective when they must share classrooms. Teacher recruitment without accompanying classroom construction will lead to higher costs, but not necessarily to more time for children in school. Schools with

double shifts do not perform better than schools without. Investments in classrooms are especially necessary in rural (backward) areas.

8. *Invest in new schools*

Investments in the construction of *new schools* are more expensive, but smaller schools produce better results than (very) large schools. Moreover, a reduction of the distance to the school will improve attendance, reduce dropout and lead to better results. Supporting community schools may be a cost-effective strategy to realise this objective.

1 Introduction

At the 1990 *World Conference on Education for All* in Jomtien, delegates from 155 countries agreed to make primary education accessible to all children and to massively reduce illiteracy before the end of the decade. The *World Declaration on Education for All* adopted at this conference urged countries to intensify their efforts to meet the basic learning needs of all and to have realised universal access to primary education by 2000. The Jomtien EFA targets were not achieved, but they were reaffirmed at both the Dakar World Education Forum in April 2000 as well as the Millennium Summit in September that year, when 189 nations adopted the Millennium Declaration comprising eight specific goals known as the Millennium Development Goals (MDGs). One of these goals (MDG 2) is to achieve universal primary education before 2015. That year, children everywhere, boys and girls alike, must be given the opportunity to complete a full course of primary school. Moreover, MDG 3 targets the elimination of gender disparity in primary and secondary education preferably by 2005, and at all levels by 2015.

The 1990 World Conference gave an important impetus to the education sector in developing countries. In 1992, the Zambian government produced a policy document called *Focus on Learning*. Four years later, the government gave a new boost to education by formulating *Educating Our Future*. This document marks the beginning of an intensive cooperation relation between the Government of Zambia and donor agencies within the framework of a sector-wide approach. *Educating Our Future* marked the start of BESSIP (the Basic Education Sub-Sector Plan) for the period between 1999 and 2002. BESSIP aimed at improving access to and quality of basic education. In 2001/2002, the government abolished school and examination fees for primary education. In 2003, the Ministry of Education (MoE) developed a five-year *Sector Plan* (MoESP) as a follow-up to the implementation of the Basic Education Sub-Sector Investment Programme. The Sector Plan covers all sectors of

the ministry, including Basic Education, High School and Tertiary Education.[3] Crosscutting issues were incorporated in the overall plan, including Equity and Gender, hiv/aids and special educational needs (for disabled children, orphans, etc.).

The investments made by the Government of the Republic of Zambia (GRZ) were facilitated by the introduction of the Sector-Wide Approach (SWAp). The strategy of the Sector-Wide Approach (SWAp) included cooperation with donors and the pooling of funds and resulted in a more focused, coordinated and efficient approach. The Sector-Wide Approach made free primary education possible and contributed to the development of large investment programmes to support the resulting increase in enrolment. Consequently, the education sector in Zambia has undergone significant changes over the last ten years.

This report aims to evaluate the achievements in the basic education sector and analyse the impact of investments in schools, teachers and learning materials on access and learning achievements. Chapter 2 provides a brief outline of the research questions and the method of analysis. Chapter 3 follows with a brief description of the education policy and the interventions in the education sector since 2000. Chapter 4 describes the results of investments in schools, teachers, classrooms and books. The next chapters analyse the effects on access (chapter 5) and learning achievement (chapter 6). Chapter 7 analyses the effects the various investments have had on the poor. Chapter 8 analyses a specific problem, namely, the lack of stability in learning achievements.

When the report was finalised at the beginning of 2008, more recent figures (for 2006 and 2007) became available. The most important figures have been included in this report.

3 Skills training, which falls under the Ministry of Science, Technology and Vocational Training, is not included.

2 Research questions and method

2.1 Research questions

This study analyses the effectiveness, or *impact*, of investments in primary education in Zambia. The overall goal of the study is to evaluate the *impact* of selected education interventions in terms of access and educational results. The specific objectives are to:

- improve insight into the effectiveness of education programmes;
- improve the understanding of other factors that may have a positive or negative impact on educational outcomes;
- contribute to possible improvements of investments in education;
- help the MoE to use existing databases more effectively.

Throughout this study, the word 'impact' is used in a specific sense, in accordance with the definitions of a growing number of impact studies. It refers to *effects* – positive or negative, intended or unintended – on individual households, institutions, and society as a whole caused by a given development activity, such as a programme or project (Baker, 2000; World Bank, 2005). The study evaluates the effectiveness of educational interventions in terms of access and learning achievements. The following questions are central:

1) In what ways have school attendance and learning achievement developed since 2000?
2) What were the main determinants of these developments?
3) Which interventions have the largest impact on educational outputs?

The evaluation focuses on the effectiveness of educational interventions: policy measures and budgets contributing to the improvement of access, equity and

learning achievement. These measures include building schools and classrooms, providing teaching materials and training teachers.

2.2 Measuring impact

The road to the measurement of impact of programmes is paved with methodological problems. Programmes may seem (in-)effective, but in fact, many factors apart from direct interventions may have determined the results. Take for instance drug testing: normally, researchers give control groups a placebo to make sure that the beneficial effects are caused by the active components and not just by increased attention or the mere idea that the drug is effective. In education, outcomes may be affected by many different variables apart from (government) interventions. Pupils' social background, economic developments, conflict situations, etc. may have an impact as well.

For an adequate assessment of interventions, 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 children have developed without the interventions? What would have happened in the absence of the intervention(s)?

Three related problems need to be addressed. First of all, there is the attribution problem. Which effects can be attributed to educational interventions? Many other factors interfere and may have an impact as well. An unbiased assessment of the effects of educational interventions on, for instance, enrolment must take into account the effects of the size, remoteness and poverty status of households, as these factors may also determine enrolment rates. For example, enrolment rates may improve as a result of an increase of incomes, the lowering or abolition of school and exam fees, increased awareness of the importance of education among parents, etc. Moreover, there are also certain factors that have a negative impact on learning and learning achievement. Poor education outcomes may be due to the low quality of the schooling system (teachers, teaching methods, materials), to underfunding or to factors beyond the education policy. One of these factors is hiv/aids, which has a negative impact on school attendance and leads to teacher absenteeism (UNESCO, 2004).

The attribution problem is related to selection effects. Selection effects may occur when the characteristics of the intervention and control group(s) are different. The neglect of selection effects may lead to biased estimates (White, Sinha and

Flannagan, 2006, pp. 3-4). For instance, various studies find that repeaters produce lower test and examination results than pupils who have not repeated. Several authors therefore jump to the conclusion that repetition does not have a positive effect and that it is simply a waste of resources. But such a conclusion seems to neglect several selection effects: intelligent children with well-educated parents are more likely to perform well and therefore not repeat. Poor and less intelligent children, on the other hand, will probably not achieve good results and are therefore more likely to repeat. So, both groups of pupils (i.e. repeaters and non-repeaters) have different characteristics, which makes it impossible to draw conclusions based on a comparison between them.

As long as selection is based on observable characteristics, these may be included in the analysis. However, not all characteristics are observable. This is the third problem: selection on unobservables. If the effects of one particular intervention are evaluated, it is not necessary to include all relevant factors in the model as long as these other factors are not correlated with the intervention. This is what causes the problem of unobservables and endogeneity. For instance, one may be interested in the effect of class size on learning achievement.[4] Class size may be endogenous or correlated with school management (see for instance Glewwe and Kremer, 2005). However, school management is seldom included in the analysis. Moreover, it is often assumed that the school choice of motivated (and probably well-educated) parents is correlated with class size, as these parents tend to send their children to schools with low pupil teacher ratios. Numerous studies have attempted to measure the impact of class size on learning achievement and many of these concluded that there is no significant – or even no positive (!) – relationship between class size and learning achievement. The neglect of the endogeneity of class size – or other unobserved selection effects – is a likely explanation for these counterintuitive results.

There are a number of standard techniques to solve the problems identified and excellent studies are also available of the impact of individual projects. However, only a limited number of studies provide insight into the impact and effectiveness at the sectoral level, although the sector is increasingly important for the realisation of the MDGs. An important reason for the lack of impact studies at the sectoral level is their complexity (see Elbers and Gunning, 2006). Rigorous methods

4 In traditional usage, a variable is endogenous if it is determined within the context of a model. In econometrics, it is used to describe any situation where an explanatory variable is correlated with the disturbance term. Endogeneity arises as a result of omitted variables, measurement error or in situations where one of the explanatory variables is determined along with the dependent variable.

for evaluating impact are designed for individual projects rather than sector aid or general budget support and at higher levels of aggregation, the interventions to be evaluated are more heterogeneous.[5] It is possible to use multivariate techniques to deal with this heterogeneity, but these require large samples.

The authors of this study were aware of the numerous potential pitfalls in impact evaluation. Different methods were used to solve the methodological problems encountered. Basically, regression techniques were applied to solve problems of (observed) confounding factors and selection effects. In addition, propensity score matching techniques were used to create (ex-post) control groups that are comparable with the intervention groups. The problem of selection on unobservables was addressed by using data from several different sources and through triangulation.

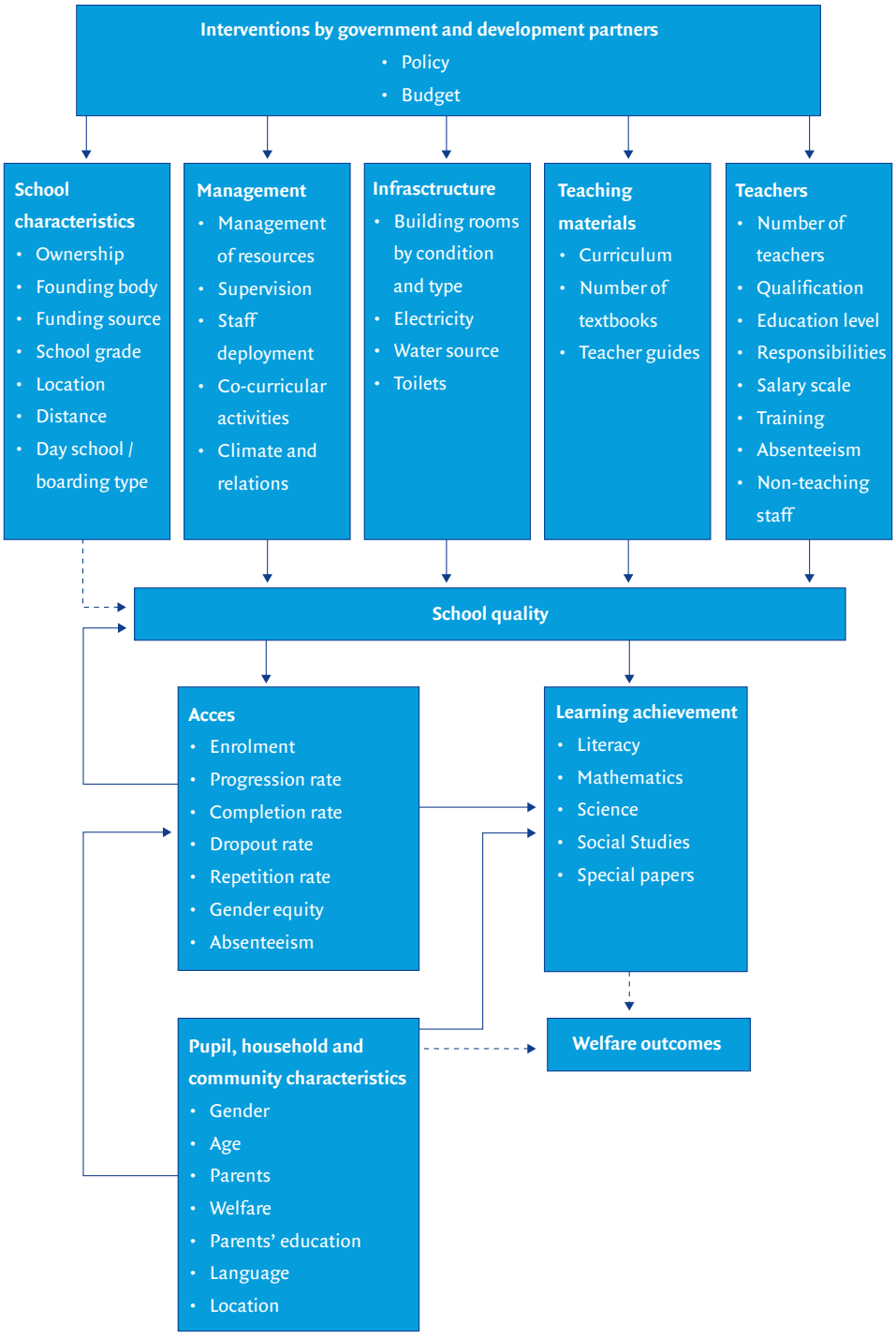
2.3 The intervention logic

The 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 building of schools and classrooms and the provision of teaching and learning materials. Figure 2.1 outlines the intervention logic.[6]

The figure distinguishes inputs (policy, budget), outputs (schools, teachers, books), outcomes (enrolment, progression rates and learning achievement) and impact (welfare outcomes). Inputs translate into interventions (or investments) in schools and the resulting outputs in turn have an impact on access and learning achievement. This study analyses these effects at the school level, taking various other factors into account that may have an impact on access and learning achievement (such as specific pupil, household and regional characteristics).

5 Heterogeneity in treatment is a precondition for an impact evaluation at the sectoral level.
6 The model is based on the literature (for an overview, see Boissiere, 2004, Glewwe and Kremer, 2005 and Kingdon, 2005).

Figure 2.1 *Intervention logic*



The success of educational policies is generally measured in terms of outcome variables. In figure 2.1, access and achievement are the main *outcome* variables. Many studies suggest a relation between access and learning achievement: a large increase in enrolment (without compensation measures) has a negative impact on the quality of education and (therefore) on achievement. In several African countries, an increase in enrolment has led to very high pupil teacher ratios (reaching up to 80:1 or even higher), which have had a significant negative impact on quality (DFID, 2005). Together with irregular pay, these high ratios are a major cause of teacher absenteeism (White, 2004). Hiv/aids also contributes to absenteeism and attrition. In several (African) countries, teacher absenteeism is a serious problem. It may not only have a negative effect on the quantity and quality of schooling, but also on pupils' attendance and dropout rates (DFID, 2005).

There is a trade-off between improved access to and quality of education.[7] Increasing access to education must be accompanied by more schools, classrooms, teachers and textbooks. According to a World Bank study (White, 2004), the building of classrooms and provision of school supplies (such as textbooks) are cost-effective instruments that contribute to higher enrolment and better learning outcomes (see also Kingdon, 2005). This is especially the case in developing countries where teacher quality is often low and other facilities are either scarce or of poor quality (Lewin and Stewart, 2003 and Ward, Penny and Read, 2006). Therefore, the quality of education depends on the number of teachers, schools, etc.

Specific school characteristics may have an impact as well. Private schools seem more effective in imparting learning to students than public schools. In many developing (as well as developed) countries, private schools show better results. However, for a fair comparison, one needs to control for differences in the number (and quality) of teachers, regional differences and differences between parents and pupils. Several studies found that the observed differences in learning and learning achievement disappear after controlling for these other factors (Kingdon, 2005). A specific characteristic of basic education in Zambia is the important role of community schools. These schools were set up by local communities and not by the government.

7 For a discussion, see Freeman and Dohoo Faure, 2003, pp. 45-49.

In poor and rural areas, there are proportionally fewer schools and the quality of education is lower (DFID, 2005). Other household and community characteristics that may be relevant include welfare and parents' education.

The mathematical model

This study analyses the effectiveness of interventions, taking a number of specific characteristics of pupils into account, as well as exogenous factors such as pupils' households. The study uses a regression-based approach, with school-level interventions or outputs as regressors and access and learning achievement as dependent variables. This approach is known as the 'estimation of education production functions' (see Glewwe and Kremer, 2005). Differences in access and learning achievements are explained by:

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

The main unit of analysis is the school. It therefore seems appropriate to distinguish a number of specific school-related factors: school characteristics, infrastructure, learning materials, teachers and management. In a formal mathematical notation (see for instance Glewwe and Kremer, 2005 and Nannyonjo, 2007):

$$Outcome_i = a + b_i S_i + c_i M_i + d_i I_i + e_i L_i + f_i T_i + g_i P_i + h_i H_i + k_i R_i + \varepsilon_i$$

S, M, I, L, T, P, H and R denote vectors of observable characteristics, a denotes the estimated constant, b_i through k_i denote the estimated coefficients and residual ε indicates all unobserved characteristics. These are the characteristics included:
S = vector of specific school characteristics
M = vector of management characteristics
I = vector of infrastructural characteristics
L = vector of learning materials
T = vector of the number and quality of teachers
P = vector of pupil characteristics
H = vector of household characteristics
R = vector of regional characteristics.

2.4 Data

The study is mainly based on the linking and analysing of secondary data (data that were not collected for the specific purpose of this study). The main sources of information used are:

- the *Annual School Census* for the years 2000-2005;
- the *National Assessment Tests* for 1999, 2001 and 2003;
- *examination data* (grade 7) of the Examinations Council of Zambia for 2001-2006;
- the Demographic and Health Survey (DHS) for 2003 (especially the *DHS EdData Survey 2003*);
- the *Population and Housing Census* of 2000;
- a specific survey conducted for this study;
- SACMEQ II data.

The first source is the EMIS database (Education Management Information System) of the Ministry of Education. This is a rich data source covering school enrolment, dropout rates, teachers, books, furniture, classrooms, toilets, etc., based on the annual school census. It covers the period between 2000 and 2005. One of the attractive features of this database is its panel nature (providing information on each school at various moments in time). The EMIS database is a continuous effort of the Ministry of Education and its value will increase over time. It is the main source of information on school characteristics for this report. Second, a separate survey was conducted within the framework of this evaluation, which covered a sample of schools. The purpose of this survey was to obtain more detailed information on the 'intervention histories' of the sampled schools. Data were obtained from administrative records at district headquarters.

Two databases were used for impact measurement in terms of learning achievement: the bi-annual National Assessments (1999, 2001 and 2003) of grade 5 school children and examination scores of grade 7 pupils (2001, 2003, 2005 and 2006). Both the National Assessments and the Examination Scores basically apply the same grading standards, i.e. different scores indicate differences in performance rather than differences in assessment standards. This makes it possible to compare results both over time and across schools.

The National Assessment Surveys are the main instrument for monitoring progress in basic education. The ECZ has conducted surveys in 1999, 2001, 2003 and 2006.

These surveys test pupils' learning achievements in grade 5, both in English and in math. The data cover test results as well as a wealth of information on schools, pupils and their parents. Each survey contains a random sample of approximately 350-400 schools.[8] Exam scores are available for more schools and for more recent years than test results. It should be noted that (for both data sources) scores for maths and English are highly correlated: if at one particular school pupils score well in English, they also score well in mathematics.[9]

Examination results were linked to the EMIS database based on province, school name and specific school characteristics, such as running agency (government, churches, private organisations or communities), the number of pupils in grade 7 and the number of examination candidates. This made it possible to link differences in educational achievement (over time and across schools) to particular school characteristics. This link is central to the analysis in this report. In order to analyse learning achievement, the EMIS database was linked to the National Assessment Tests for the years 1999, 2001 and 2003 and to the examination figures at grade 7 for the years 2001, 2003, 2005 and 2006.

One of the complicating factors is that not all pupils take their grade 7 examination at their own school. A number of pupils, especially those from community schools, must go to an examination centre (another school) to sit their examinations. For the analysis in this chapter this means that schools that are not recognised as an examination centres could not be included in the analysis of learning achievement. Moreover, a number of schools host the candidates from other schools. The results of these schools therefore include the results of pupils from one or more other schools. The analyses take this problem into account, though it has not been possible to disentangle the results of each separate school. An obvious recommendation for future data collection is to add the name of the school to each examination result.

The combined databases cover the vast majority of Zambian schools that also function as examination centres. The 2005 database contains approximately 267,000 grade 7 pupils from 5,000 schools and 272,000 grade 7 examination

8 Unfortunately, only a limited number of schools are included in more than one assessment. This makes a dynamic analysis impossible. The analysis in this section is therefore almost exclusively based on variation across schools for a given year.

9 In 2001, the correlation coefficient across schools was 0.82 for the Examination Scores and 0.63 for the National Assessment.

candidates. For the analysis, the data of 3,747 schools with 220,000 grade 7 pupils were linked to 246,000 examination candidates.

In addition to the assessment test and the examination data, this study has conducted a number of analyses based on the results of the SACMEQ II tests for Zambia (see Annex 6).

Although the analysis focuses on the school level, it is important that also household and community (or regional) characteristics are taken into account. In order to do this, the impact evaluation uses two sources. The first is the DHS Education Survey of 2002. Based on this survey, it is possible to establish a relation between pupil and household characteristics and school attendance. The second source is (a sample of) the 2000 Population and Housing census. Census information is an important instrument to assess socio-economic differences between regions. The study has linked census data with other data at the ward level.

The reliability of the data has been checked intensively by means of:

- triangulation (for instance, by comparing the number of grade 7 pupils with the number of examination candidates);
- analysis of changes over time;
- comparing census information to field survey data;
- analysing ratios (including pupil teacher ratios, pupil repeater ratios, pupil orphan ratios, etc.).

Schools with improbable ratios were deleted from the analysis. Even if these ratios are correct, there is no point in adding such outliers, as they could have a disproportionate effect on the outcomes.

3 Education policy

3.1 Introduction

Zambia was a relatively rich country at independence in 1964. However, it was hit hard by the world economic crisis of the 1970s and its economy collapsed between 1975 and 1990. As a result, the government was forced to cut the education budget and consequently the sector was severely underfunded.

In 1996, the Government of the Republic of Zambia produced a policy document called *Educating Our Future* (1996), which marked the start of renewed attention to the education sector. In close cooperation with its development partners, the Ministry of Education launched two ambitious investment plans that were developed in order to turn the tide and assure that Zambia would meet the EFA goals and subsequent Millennium Development Goals on education.

This chapter describes the development of the Zambian education policy since the mid-1990s and the role of cooperating partners in this process. Section 3.2 outlines the demographic, political and economic context and the next section offers a brief overview of the state of (primary) education at the end of the 1990s. The following section is the heart of this chapter. It describes the development and implications of the two investment plans, as well as the development of sector cooperation. Section 3.5 contains financial information, whereas section 3.6 offers a brief description of the education system. The chapter ends by describing a number of challenges (3.7) and a summary and several conclusions (3.8).

3.2 Context

Zambia is one of the poorest countries of sub-Saharan Africa. Around 68% of the 10.9 million Zambians are classified as poor (living below the poverty line of USD 0.93 a day). In 2000, the infant mortality rate was estimated at 95 per 1,000 life births. Recent data show that approximately 60% of all children are

malnourished. The hiv/aids pandemic has tremendously affected the population. Nearly one million Zambians are either HIV positive or have AIDS. Over 750,000 Zambian children have been orphaned by hiv/aids, which killed an estimated 100,000 people in 2004. AIDS is the main reason why life expectancy at birth dropped from 54 years at the end of the 1980s to 38 years in 2005.[10] 45% of the population are children in the age group of 0-14 years, and the older population (65+) only accounts for 3% of the population.

The majority of the population (60%) live in rural areas. The population is divided among 73 different ethnic groups. In addition to English as the national language, there are approximately 20 distinct languages, seven of which are used in education: Bemba, Kaonde, Lozi, Lunda, Luvale, Nyanja, and Tonga. Administratively, the country is divided into nine provinces and 72 districts. Two provinces, Lusaka and the Copperbelt are predominantly urban. The other seven provinces – Central, Eastern, Northern, Luapula, North-Western, Western and Southern – are predominantly rural.

Figure 3.1 *Map of Zambia*

In 1964, the United National Independence Party (UNIP) won the first legislative elections and Kenneth Kaunda was elected prime minister. Later that year, he became the first president. Kaunda implemented a socialist policy that included

10 Bureau of African Affairs, November 2006 (www.state.gov/r/pa/ei/bgn/2359.htm).

central planning and nationalisation of the copper industry. All political parties except UNIP were banned.

The world economic crisis in the second half of the 1970s and the first half of the 1980s prevented the implementation of any education reform. In 1976, copper prices fell sharply and this had a devastating effect on the Zambian economy, which was highly dependent on copper exports. Although the Zambian economy is primarily agrarian (85% of the population working in agriculture), copper production accounts for 95% of export earnings and 45% of government revenue. Kaunda attempted to diminish the dependency on copper through import substitution and diversification of the economy. He took out massive loans from the International Monetary Fund (IMF) and the World Bank to cover government budget deficits. The new economic strategy failed, however, and Zambia became heavily indebted.

In 1991, Kaunda lifted the ban on political parties. That year, the Movement for Multiparty Democracy (MMD) won the elections with 76% of the votes and MMD leader Frederick Chiluba became the country's president. During the 1990s, the MMD transformed the country from a centrally planned economy to a market-oriented economy. In accordance with structural adjustment policies, Chiluba started liberalising the economy by restricting government interference, privatising state-owned enterprises, such as the important copper mining industry, and removing subsidies on several commodities, most notably cornmeal. The effect of the market reforms was not immediately noticeable and during the first years of the 1990s, growth figures remained low. The main economic sectors performed poorly (White and Dijkstra 2003, pp. 434-435). GNI per capita declined from USD 590 in 1975 to USD 300 in 2000.

By the mid-1990s, Zambia's per capita foreign debt was among the highest in the world. At the end of the century, its external debt was approximately USD 6.5 billion; twice its GDP. In 2001, when current president Levy Mwanawasa won the elections, Zambia first received debt relief under the Heavily Indebted Poor Countries (HIPC) Initiative, which represented 6% of the total approved budget. Under this initiative, budget allocations for debt servicing were shifted to the social sectors, i.e. education and health. In March 2005, when Zambia reached its HIPC Completion Point, its total foreign debt stood at approximately USD 7 billion. As a result of HIPC relief and the Multi-lateral Debt Relief Initiative, Zambia's debt stock was reduced to USD 0.5 billion by the end of 2006 (GRZ, 2006). Since 2003, the economy has been growing by more than 5% per year. For 2007, real GDP growth may even

be higher than the targeted 6%. In 2006, the rate of inflation dropped into single digits for the first time in Zambia's recent history. Unemployment has remained high, however. Between 1999 and 2005, economic growth had been concentrated in a limited number of sectors such as mining, construction, large-scale agriculture and wholesale and retail trade and did not create many new jobs in the formal economy (GRZ, 2006).

3.3 Education at the end of the 1990s

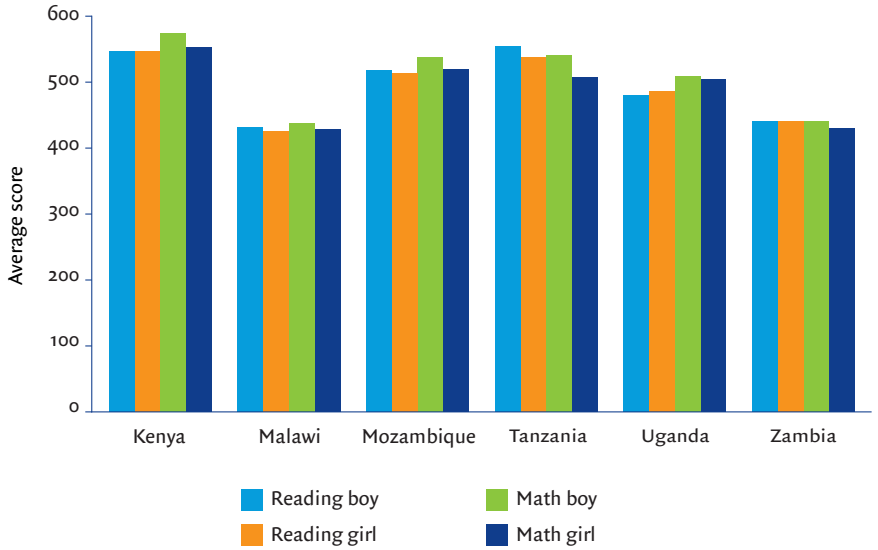
Economic developments had forced the government to reduce its expenditures on education. Real expenditure on education dramatically declined between 1984 and 1995 (White and Dijkstra, 2003, p. 426). In 1998, per capita expenditure for pupils at the primary school level was only USD 17, which is half the amount of 1985 (MoE, 2007). At the end of the century, average real government expenditure on education (per capita) was no more than about 60% of the level at the beginning of the decade (Das et al., 2004). This underfunding of the education sector led to cuts in non-salary recurrent expenditures and investments. The school infrastructure deteriorated and most schools lacked adequate furniture, textbooks and learning materials. Moreover, there were not enough schools and especially in the rural areas children had to walk long distances to the school. In urban areas, schools were overcrowded.

Zambia's hiv/aids crisis further undermined the educational system by significantly increasing teacher absence and attrition rates and causing a dramatic increase in the number of school-age orphans. The percentage of children who had lost a father, a mother or both their parents, grew from 22% in 1990 to 28% in 1995.

As a result of these developments, the literacy rate of the population deteriorated. In 2001, 75% of the children left primary school illiterate (World Bank 2001, p. 70). Literacy rates for men aged 40-49 (approximately 90%) were considerably higher than the literacy rates of younger males (80-85%). Literacy rates for women were traditionally much lower (60-65%), but for women aged 15 to 24, they even dropped below 60% (CSO, 2003). Women have always had a disadvantaged position in primary education, but were gradually falling even further behind their male peer groups. The expansion of primary and secondary education slowed down, and even declined. In spite of the population growth (approximately 3.2%), enrolment in primary education remained stable throughout the 1990s. By 1999, 37% of the children in the school-going age were not enrolled. In the rural areas, this percentage even amounted to more than 60%.

In 1999, net enrolment rates in Zambia (63%) were comparable with those in Kenya (64%) and much higher than those in Mozambique (52%) and Tanzania (48%) (UNESCO, 2007). Nevertheless, the education budget (2% of GDP) was low compared to other southern African countries (4-5%). As a result of long underinvestment in education, Zambian children scored relatively low on international tests (see figure 3.2). In 2000, pupils in Kenya, Mozambique, Tanzania and Uganda produced better results for reading and mathematics than pupils in Zambia. Only Malawian pupils showed lower figures.

Figure 3.2 *International comparison of learning achievement for reading and math (2000)*



Source: SACMEQ II.

3.4 Sector-Wide Approach and Sector Planning

The World Conference on Education for All in 1990 in Jomtien gave an impetus to the education sector, although it took almost ten years before the plans developed there were turned into concrete action. As a result of the economic situation, the MoE policy document *Focus on Learning* (1992) failed to mobilise the resources needed to develop formal education in schools. A first boost to education was triggered by *Educating Our Future* (1996), which addressed the entire formal education system and particularly focused on democratisation, decentralisation and productivity. The document emphasised quality, curriculum relevance and diversification, efficient and cost-effective management, capacity building, cost

Musenga upper basic school, Northern Province.

sharing and revitalised partnership, flexibility, pluralism and responsiveness. The following year (1997) the GRZ adopted the *Education Sector Investment Plan* (ESIP). Based on ESIP, the GRZ developed plans for two sub-sectors. The Ministry of Science, Technology and Vocational Training set up the *Technical Education and Vocational and Entrepreneurship Training* (TEVET) *Development Plan* (TDP) for skills training. The Ministry of Education developed the *Basic Education Sub-Sector Investment Plan* (BESSIP).

3.4.1 Basic Education Sub-Sector Investment Plan (1999-2002)

BESSIP addressed the issues of access and quality improvement by providing teaching and learning materials, promoting curricular reform and the training of teachers, mainstreaming gender and decentralising education management and administration. BESSIP was planned to cover the period between 1999 and 2003. Its main objectives were to:

a) increase enrolment at grades 1-7 and reverse the decline in enrolment by providing access to education for all eligible children;
b) improve learning achievements, especially in literacy and mathematics.

By implementing this plan, the MoE sought to realise 100% enrolment by 2005 while at the same time reducing repetition and dropout. Second, by that time at least 65% of the pupils were to reach satisfactory levels for English and at least

50% of the pupils were to achieve satisfactory results for mathematics. By 2015, every pupil was to be given the opportunity to proceed to the higher basic level (grade 8). By 2005, 60% of schools were to meet the minimum education standards and the average pupil teacher ratio was to be 40:1.

BESSIP sought to improve *access* to education through:

- constructing new schools in order to reduce walking distances to a maximum of five kilometres;
- reducing school costs for parents by providing grants to schools;
- enrolling children who had dropped out or had never gone to school;
- offering more bursaries to vulnerable children (girls, orphans, the poor and children in rural areas).

At the same time, the *quality of education* was to be improved through:

- providing textbooks (by 2005, no more than two pupils were to share one book for English, mathematics or Zambian languages);
- more focused and decentralised training;
- implementing a national assessment of the education system;
- revising the basic school curriculum;
- teaching initial literacy through familiar languages.

A *Primary Reading Programme* (PRP) was set up in order to enhance reading and writing skills at the lower (grades 1-4) and middle (grades 5-7) basic education levels. The programme's main purpose was to improve pupils' literacy through the use of local languages. The programme's target was that 80% of the children would achieve nationally agreed reading standards in specific grades. To facilitate this, children in the first classes would start to learn to read and write in one of the seven main Zambian languages before moving on to English. The programme was based on a three-pronged approach:

a) children in grade 1 receive lessons in a familiar local language;
b) in grade 2, the acquired skills are translated into English;
c) in grades 3-7, pupils follow lessons in English as well as their Zambian languages.

The Zambian Examinations Council has set up National Assessment Surveys (NAS) as an instrument for monitoring progress in basic education. These surveys were held in 1999, 2001, 2003 and 2006. They test the learning achievements of 20 grade 5 pupils per school in English, mathematics and Zambian languages. The surveys cover 350-400 schools. Tests consist of 35 questions for English and 45 for math (30 and 40, respectively, in 1999).

BESSIP had a slow start. In 1999, only 19% of the pooled funds were actually spent (Chisala and Cornelissen, 2003, p. 86). The slow restructuring process at the Ministry of Education and the slow pace of decentralisation hindered effective implementation of BESSIP at the local level. The programme was more successful in its second phase, however.

In February 2002, the President announced Free Basic Education for grades 1-7. Statutory fees for these grades were abolished in order to improve enrolment and retention, especially of vulnerable children. Moreover, school uniforms were no longer compulsory.[11] Free Basic Education was implemented immediately. Parent Teacher Associations (PTAs) proved to be an important mechanism for disseminating information on the new FBE policy.

The introduction of the FBE policy was announced rather suddenly and it was hardly prepared. Within a short period of time, the MoE had to devise a grants scheme to compensate all schools. In 2002, they were compensated through a total grant of ZMK 27 billion (approximately USD 6.5 million) divided over 5,081 schools, including 579 community schools (BESSIP Completion Report, p. 18). Initially, each school received an equal amount, regardless of its size. Each school received ZMK 7.8 million (approximately USD 1,900), divided over three equal instalments of ZMK 2.6 million (Mwansa et al., 2004, p. 38). This policy favoured the smaller schools and many of these were rural schools. However, for many schools these grants were inadequate to purchase critical resources needed for effective teaching and learning. Moreover, grants were often not released on time (Duncan, Macmillan and Simutanyi, 2003). In 2003, the MoE developed a new allocation scheme, which took school size into account. The largest schools (grade 1 and 2) received ZMK 3 million, whereas the smaller schools (grade 3, 4 and 5) and community schools received ZMK 2.6 million per quarter (Mwansa et al., 2004, p. 38). For many

11 In 2001, the MoE had already abolished examination fees for the Primary School Leaving Certificate Examination (PSLCE).

schools, the grants were insufficient and several schools reacted by raising PTA fees at the upper basic school level (grades 8 and 9; Mwansa et al. 2004, p. 45).

3.4.2 Ministry of Education Strategic Plan (2003-2007)

In February 2003, the MoE launched a five-year *Ministry of Education Strategic Plan* (MoESP 2003-2007) as a follow-up to BESSIP. The Strategic Plan recognised the need for further investment in the education sector. At that time, Zambia did not spend heavily on education compared to surrounding countries (MoE, 2003, p. 18). In 2001, the budget allocation to education was 20%, whereas in other countries in southern Africa it reached 25-30%.

The Sector Strategic Plan expanded the focus from basic education to the whole sector, including basic school, high school and tertiary education.[12] Whereas the emphasis of BESSIP had been on enrolment at grades 1-7, the MoESP stressed the need to also expand enrolment in grades 8 and 9 (the higher basic education level). In addition, remote and disadvantaged areas would be given special attention. These would be targeted for additional resource allocation, teacher deployment and construction or rehabilitation of infrastructure. For Basic Education, the Strategic Plan set the objective of increasing the grade 7 completion rate to 85% by 2007. Total enrolment in the lower and middle basic levels was to improve from 1.9 million in 2002 to 2.3 million in 2007. Upper basic enrolment was to increase by almost 50% (from 219,000 in 2002 to 326,000 in 2007).

The MoESP intended to improve the quality of education as well. According to the strategic plan, the quality of education had been compromised by an overloaded and compartmentalised curriculum, dismal pupil teacher contact time and a lack of educational materials (MoESP 2003, p. 23). There was a shortfall of 400,000 school places (8,500 classrooms) and a backlog of 6,000 teachers' houses. Moreover, 60% of the classrooms and 70% of the teachers' houses needed to be rehabilitated.

The Sector Plan sought to increase the number of teachers (especially female teachers) in rural areas by increasing incentives in terms of promotion, upgrading opportunities and hardship allowances. It was anticipated that by 2005 39,000 teachers would be needed at the middle basic level (including 6,400 private school teachers) and (an additional) 9,400 teachers at the upper basic level (including 2,100 private teachers). The (continued) use of 'double shifting', with more than

12 Not including skills training and TEVET.

43% of the teachers taking double shifts, was regarded a necessary evil in the efficient utilisation of classrooms.

The plan anticipated an increase in expenditure for (middle) basic education (grades 1-7) from ZMK 215 billion in 2001 (USD 77 million) to ZMK 496 billion (USD 179 million) in 2006 – an increase of 131% (constant prices 2001). The budget share allocated to (middle) basic education was to increase from 44% in 2001 to 53% in 2006.

3.4.3 Sector cooperation

The GRZ's prioritisation of the education sector coincided with donors' intention to shift from projects to sector support. It was felt that development assistance had too often been based on un-coordinated projects and led by agents that were not sufficiently supported at the national level. As a result the sustainability of projects was questioned on many occasions. Moreover, project support frequently contributed to institutional fragmentation and incoherent policies. The perceived disadvantages of this 'donor by donor' and 'project by project' approach included (BESSIP Completion Report 2004, p. 15):

- fragmented donor aid did not contribute to a high impact on the development of education;
- projects did not contribute to the capacity building efforts made to increase sustainability;
- it caused a strain on the ministry's management systems.

In contrast, the rationale behind the Sector-Wide Approach (SWAP) was that:

- pooling of external assistance would result in a more effective approach;
- cooperation with existing ministerial institutions would strengthen local capacity;
- pooling of resources would create an attitudinal shift that makes people realise that external aid is complementary rather than an alternative.

As early as 1997, the Education Sector Investment Plan (ESIP) was developed in order to improve coordination between the different policies and programmes in the education sector as well as the pooling of funding. Several development agencies, including the Netherlands, Ireland Aid, DFID and Norway, supported the initiative. Other agencies felt that the country was not yet ready to change to sector support. The World Bank supported the idea of pooling funds, but considered

ESIP too ambitious. It therefore suggested starting with the basic education sector. As a result, the MoE launched BESSIP, which was set up in line with the Sector-Wide Approach (SWAp). Due to BESSIP, the MoE realised effective cooperation with a number of development agencies. The plan coordinated support from international agencies and thus improved the effectiveness of interventions. In the initial stages of BESSIP, development partners had their own rules and guidelines and a number of agencies still wanted to earmark their contributions (in order to enforce their own priorities or to guarantee their visibility at home). Several donors wanted BESSIP to be compatible to their own projects (BESSIP Completion Report 2004, p. 52). The Netherlands (in Western Province), Ireland Aid (in Northern Province) and NORAD (in the Copperbelt) were still carrying out their own province-wide programmes. A number of agencies expressed their concern that the ministry would not have the capacity to ensure accountability of public finances, ownership of the programme and transparency. Over the years, BESSIP contributed nevertheless to a strong donor coordination, which significantly improved development partners' influence on the implementation of the plan (BESSIP Completion Report, 2004). BESSIP created a model for Zambian ownership and more effectively coordinated support. By the end of BESSIP, fourteen development agencies were involved. Several of these agencies, including USAID, the Netherlands, Ireland Aid, Danida and Finida provided technical assistance.

Although the Ministry of Education preferred pool funding, BESSIP was funded through four different modalities (BESSIP Completion Report, 2004, p. 21):

1) pool funding: six cooperating partners (Danida, DFID, Finland, Ireland Aid, the Netherlands and NORAD) deposited their funds into a joint bank account controlled by the Ministry of Education;
2) the depositing of funds in a separate bank account, also controlled by the MoE, and used for all BESSIP components (World Bank, ADB);
3) the depositing of funds in another separate bank account, which was to be used for specific (earmarked) components (ADB, Danida and Finland);
4) project funding within the BESSIP framework (USAID, JICA, UNICEF, Save the Children (Norway)).

The second investment plan, the Ministry of Education Strategic Plan (MoESP), marked a new stage in the development of sector cooperation. Until 2003, sector support had mainly been restricted to funding basic education, but the MoESP paved the way for sector support. During the implementation of BESSIP, several

development agencies continued to operate their own projects (including the Western Province Education Programme of the Netherlands). The MoESP contributed an increase in donor funding and improved coordination. The MoESP incorporated numerous projects that had continued to operate independently under BESSIP (Chisala and Cornelissen, 2005, p. 90).
Under the MoESP, cooperating partners had three ways to disburse funding directly to the ministry:

1) direct sector support: contributions from development agencies are channelled directly to MoE in a common bank account managed by the MoE;
2) designated support: funds are channelled into separate agency accounts under the control of the MoE;
3) other funding: funds (for specific projects) in separate bank accounts controlled by individual agencies.

In February 2003, the Ministry of Education and nine development agencies signed a *Memorandum of Understanding* (MoU) based on the MoESP. The ten agencies coordinated their support in the sector pool.

The sector-wide approach within education was part of the harmonisation process that was beginning to take shape in 2002. This process aimed at enhancing the effectiveness and efficiency of development cooperation by promoting cooperation and alignment. In 2003, the GRZ and its cooperating partners signed the Harmonisation in Practice (HIP) Framework for Action. In April 2004, the GRZ and several of its partners signed a Memorandum of Understanding.[13] HIP was initially donor driven, though the GRZ gradually took a more leading role.

In October 2005, the GRZ and cooperating partners officially agreed to work out a *Joint Assistance Strategy for Zambia* (JASZ). The purpose of the JASZ is to focus and organise development assistance and reduce transaction cost for the GRZ around the four pillars of the Paris Declaration of 2005: harmonisation, alignment, management for results and mutual accountability. The JASZ 2007-2010 was signed in May 2007 and is the donors' response to the government policies in the Fifth National Development Plan 2006-2010. It includes a country context analysis as well as a strategy to enhance ownership, alignment and improved donor coordination. The document is signed by all bilateral and multilateral agencies in

13 Denmark, Finland, Germany, Ireland, Japan, the Netherlands, Norway, Sweden, United Kingdom, UN and the World Bank. Canada signed at the end of 2004.

Zambia: Canada, Denmark, EC, Finland, Germany, Japan, the Netherlands, Norway, IMF, Ireland, Sweden, UK, USA, World Bank, African Development Bank the UN system. One of the agreements within the JASZ is to work on a division of labour to 'decongest' sectors which have many CPs (such as education) and spread them more evenly, including to 'orphan sectors' that do not receive much support. For the education sector, with 12 donor agencies, this has led to a reduction of active donors. Finland and CIDA (Canada) have decided to withdraw from the education sector. The Netherlands and Irish Aid have been identified as the lead donors to be the contact for government and coordinate and speak on behalf of other donors in the sector.

During the JASZ negotiations, the GRZ indicated its preference for general budget support as the main aid modality. At the end of the MoESP in 2007, key cooperating partners such as DFID, EC and Norway will leave the pool and move to general budget support. Other cooperating partners indicted to have more hesitations and suggested that an intermediate step, such as sector or programme support, may be required in several sectors.

In May 2007, representatives from all donors appraised the zero draft of the National Implementation Framework 2008-2010 (NIF), which is the successor of the MoESP. One of the conclusions of the appraisal was that the sector remains heavily under-financed. The share of education is around 4% of GDP against a regional average of 5%. Education's share in the national budget was 16.4% in 2007 against the FTI indicative benchmark of 20% for developing countries. The appraisal team concluded that an expansion of joint external funding for the education sector was justified, but that a number of conditions should first be met: increased domestic resource mobilisation and allocations to the sector, improved planning and budgeting, and more pro-poor resource allocations.

3.4.4 Dutch support to the education sector

For several years, the Netherlands has been one of the main donors in the education sector in Zambia. Until the early 1990s, Dutch contributions in the sphere of education targeted higher and vocational education. The World Conference at Jomtien (1990) marked a change in its policy towards basic education. In 1992, the Dutch government recognised that support for basic education was not in line with the problems and needs of developing countries. At that moment, several computations showed that a tenfold increase of international support would be required in order to realise the EFA goals. Already then, the Netherlands had concluded that donors would have to collaborate more effectively and adjust their

policies to national priorities. While still mainly implementing its own projects, the Ministry of Foreign Affairs gradually moved in the direction of sector support.

The main shift occurred in 1998, when the new minister for Development Cooperation announced the introduction of the Sector-Wide Approach as the main organising principle for bilateral aid (IOB, 2006). In accordance with this new policy, the ministry formulated its policy principles in the document *Education: a basic human right, development cooperation and basic education: policy, practice and implementation* (Netherlands Ministry of Foreign Affairs, 2000). Dutch policy on basic education aimed at sustainable improvement of high-quality education systems in developing countries, which are accessible to all and contribute to a more democratic and equitable society.

Dutch policy objectives included:
- improvement of the quality and relevance of basic education;
- equal opportunities for people from disadvantaged groups;
- reduction of gender disparities.

Cooperation within the framework of the SWAp was conditional on:
- the priority given to education and within the education sector;
- a gradual budget increase for basic education;
- a national action plan specifying how the EFA goals were to be realised.

Now, in 2007, 15% of the development budget is allocated to basic education.

Before the shift towards sector support, the Netherlands supported several projects in Zambia, primarily in Western Province. The education sector was included in the 1996 development programme. Apart from several smaller projects, the Netherlands supported the World Bank's Zambia Education Rehabilitation Project (ZERP).

Between 1998 and 2002, the Netherlands, in close cooperation with the Government of Zambia, supported and implemented the Western Province Education Programme (WEPEP) within the context of BESSIP. This programme was formulated at a moment when the BESSIP framework was nearing completion, and started right before BESSIP was implemented. The programme was developed in response to the need to improve the state of education in Zambia and in Western Province in particular. Western Province was targeted for additional support because it had the highest incidence of poverty and change was needed more urgently than anywhere else in the country. At the start of the project, the province was classified

as the poorest province in the country and was facing urgent problems that hindered children's enrolment and school attendance. In 1998, 89% of the people in Western Province were poor (whereas the country average for that year was 73%). Population density is low, which results in large distances between schools and service centres. Each year, seasonal flooding forces many people to move to higher grounds. At the start of the project, the province had a poor infrastructure and there were not enough schools and teacher's houses.

The total cost of the programme was EUR 3.5 million. Almost half of the budget (47%) went to the first objective: improvement of quality in education. Another 32% was spent on decentralisation issues, 16% was for PAGE, a project directed at the education of girls, and 5% for a technical advisor. UNICEF implemented the PAGE component within WEPEP.

WEPEP was discontinued in 2003, when the Netherlands signed the MoU. From that moment, Dutch support has been an integral part of the MoESP. Together with several other donors, the Netherlands has played a central role in the harmonisation process – even after BESSIP was launched – and is one of the two lead donors in the education sector (the other is Ireland Aid). Since 2002, the Netherlands has been one of the donors promoting the decentralisation process. In addition, the Netherlands supports several NGOs in the education sector. In 2004, the Netherlands financed the terminal benefits of 7,700 teachers and the recruitment of a comparable number of new teachers (EUR 9.2 million; USD 11 million).[14]

Table 3.1 *Dutch support to the education sector in Zambia (1998-2006; in million EUR)*

	1998	1999	2000	2001	2002	2003	2004	2005	2006
WEPEP	0.5	0.7	0.7	0.7	0.9				
BESSIP	0.2	3.3	3.6	3.6	8.5				
Sector support (MoESP)						5.5	6.9	8.4	10.9
General Budget Support									0.9
Other (projects)	0.7	0.4	1.3	1.0	0.2	0.9	10.6	1.5	1.6
Total	**1.4**	**1.4**	**5.6**	**5.3**	**9.6**	**6.4**	**17.5**	**9.9**	**13.4**

Source: Netherlands Ministry of Foreign Affairs.

14 Also see chapter 4.

3.5 Budget and expenditure

In the 1990s, Zambia's expenditure on education was low, ranging between 2% and 2.5% of GDP. At the turn of the century, the budget had fallen to 2% of GDP, a figure that was significantly lower than neighbouring countries. Even in the first years of the twenty-first century, Zambia devoted lower shares of its budget to the education sector than most other countries, including Uganda, Kenya, Lesotho and Malawi.[15] The Education Public Expenditure Review of 2006 concluded that Zambia has a low-cost, low-quality education system, especially at the basic school level (World Bank, 2006, p. 18-19). The share of education in total GRZ expenditure is approximately 18%.

Table 3.2 *Development of education expenditure as a % of GDP (1998-2006)**

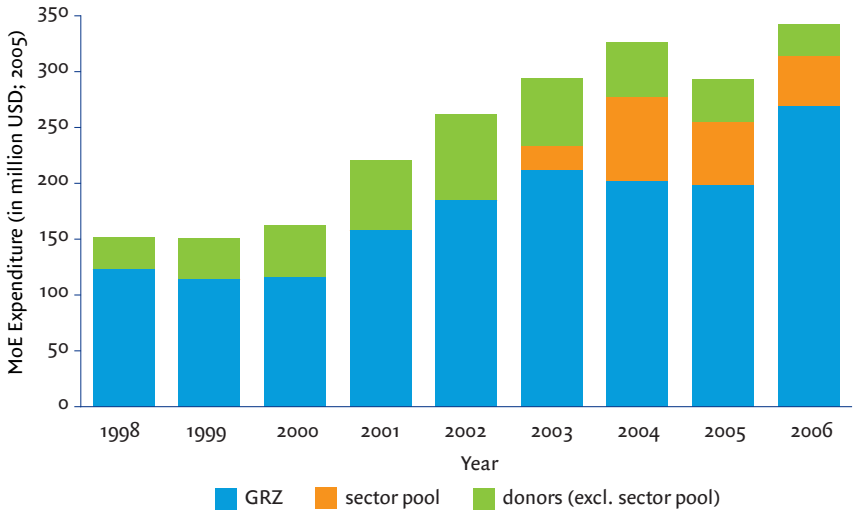
	1998	1999	2000	2001	2002	2003	2004	2005	2006
GRZ	2.3	2.1	2.0	2.6	3.0	3.3	3.0	2.8	3.6
External*	0.0	0.6	0.8	1.1	1.2	1.3	1.8	1.3	1.0
Total	2.3	2.7	2.8	3.7	4.2	4.6	4.8	4.1	4.6
External contribution		22%	28%	29%	29%	28%	38%	32%	21%

* Contributions to the MoE budget.
Source: MoE (various sources) / computation IOB.

BESSIP and the MoESP gave a strong impulse to the MoE budget. In 1999, 22% of the MoE budget was financed externally and this figure rose to 38% in 2004 and 2005. The Fifth National Development Plan recommended scaling up spending from 3.8% of GDP in 2006 to 6.2% by 2010. As a result of a GRZ budget increase, the share of GRZ funding to MoE has grown from 68% in 2005 to 84% in 2007.

15 It must be noted that in case of Uganda a fair comparison is complicated due to the general budget support to the country.

Figure 3.3 *Internal and external resources for education (1998-2006; in constant prices 2005 (USD))*



Source: MoE / computation IOB.

BESSIP

The total BESSIP budget for 1999-2002 was USD 513 million, but actual expenditures were much lower. In 2002, the expenditure rate of the government budget was almost 100%, but donor funds have been significantly under-utilised, particularly for (externally financed) projects. An important reason for this situation was the low expenditure on school infrastructure and education materials as a result of procurement procedures.[16] Over a period of four years, almost 30% of total BESSIP expenditure was financed with external resources.

16 These low figures for external funds are partly explained by a lack of data on the depletion of the resources.

Table 3.3 *BESSIP: budget and expenditure (1999-2002; in million USD)*

	1999	2000	2001	2002
Domestic				
Budget	50.2	51.0	63.0	76.9
Expenditure	43.2	43.9	42.1	76.3
Depletion	86%	86%	67%	99%
External				
Budget	65.9	56.3	63.7	85.6
Expenditure	20.2	27.5	35.8	33.2
Depletion	31%	49%	56%	39%
Total				
Budget	116.1	107.3	126.7	162.5
Expenditure	63.4	71.4	77.9	109.5
Depletion	55%	67%	62%	67%

Source: MoE 2004 / BESSIP Completion Report.

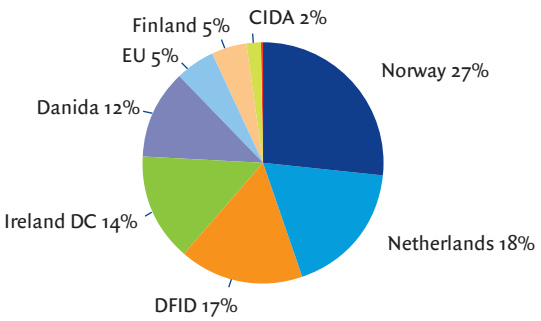
MoESP

Before June 2003, donor support had been channelled mainly through BESSIP, covering only basic education. After MoESP was introduced, the sector pool became the main external funding modality. Its share in total expenditures increased to approximately 23% in 2004. The role of other external resources (designated and project) decreased to 15% in that year.

Figure 3.4 presents the cumulative distribution of the resources contributed to the sector pool by various countries (2003-2005). The graph shows that within the sector pool, five countries together account for up to 88% of the entire budget.

A large part of the sector pool budget is reserved for sector pool grants (approximately USD 16 per pupil in 2004). Sector pool grants are divided among public schools and increasingly also to community schools. Schools must spend these grants according to a specific formula: 35% on textbooks, 25% on rehabilitation and maintenance, 35% on exercise books, pens, etc. and 5% on special education. In practice, the rules for this distribution are excessively rigid and the total sum per child is small.

Figure 3.4 *Contributions to the sector pool (2003-2005)*



Source: MoE / computation IOB.

Almost 60% of the total budget goes to basic education. This percentage has increased over time. In 2002, the comparable figure was 54%.[17] GRZ finances about 64% of the total expenditure on basic education. The contribution of the sector pool was 19% in 2005, whereas the contributions of agencies outside the sector pool account for approximately 17%.

Table 3.4 *Resources and expenditure on education (2005)*

	GRZ	Sector Pool	Designated	Project	Total
Basic education	38%	11%	5%	5%	59%
High school	7%	5%	1%	0%	13%
Tertiary	12%	2%	1%	0%	15%
Administration and support	10%	1%	0%	1%	13%
Total	**68%**	**19%**	**7%**	**6%**	**100%**

Source: MoE / computation IOB.

17 In 2000, approximately 55% of the total budget went to basic education (excluding administration and support); in 2005 this percentage had risen to 67%.

3.6 The education system

3.6.1 Structure

The government is the main provider of education and training, even though privately owned schools, schools run by churches and, especially, community schools also play an important role. Private schools are supported and managed by a private individual or group and pupils' parents or guardians pay school fees. Church schools are entirely supported by a religious group or church agency. In addition, grant-aided schools receive school grants even though they are managed by churches. Community schools are founded and run by communities. They may receive school grants as well and/or are supported by churches or NGOs.

Four different ministries are involved in the formulation and implementation of education and training policy: the Ministry of Education (MoE), Ministry of Youth, Sports and Child Development (MYSDC), Ministry of Community Development and Social Services (MCDSS), and the Ministry of Science, Technology and Vocational Training (MSTVT). The Ministry of Local Government also plays a role in policy on pre-primary education.

The Ministry of Education is the main provider of basic, high school and tertiary education. The country's 14 teacher colleges also fall under the responsibility of the ministry. The ministry has an administrative staff of approximately 4,400 employees operating from the headquarters, the nine Provincial Education Offices (PEOs) and 72 District Education Offices (DEOs). In order to strengthen decentralisation, MoE has set up Education Boards at high schools and districts. District Education Boards are responsible for (basic) education in a particular district and for the allocation of education facilities, including the staffing of schools. Members of the Board are appointed by the District Education Boards Secretariat (DEBS). The District Education Standards Office (DESO) is responsible for monitoring and evaluating school performance. The Provincial Education Office (PEO) is responsible for the high schools and for the coordination and implementation of district programmes and the monitoring and supervision of policy standards. Public funding flows to schools through Education Boards for high schools and through the DEBS for basic schools. Parent Teacher Associations (PTAs), introduced in the mid-1990s, act as a liaison between parents, teachers, and the school administration. They are often responsible for fundraising, formulating priorities and the allocation of funds.

Figure 3.5 *Structure of the education system in Zambia*

Age	Ed. Yr	Type of schooling			Other
30	24	University Education (Doctorate, Masters And Bachelors Degrees)			CONTINUING EDUCATION
29	23				
28	22				
27	21				
26	20				
25	19				
24	18				
23	17				
22	16				
21	15		Various Training Programmes		
20	14				
19	13				
18	12	High school (Grade 10-12)		Various Vocational Training Programmes	
17	11				
16	10				
15	9	B A S I C — Upper basic (Grade 8-9)			BASIC EDUCATION
14	8				
13	7	Middle basic (Grade 5-7)			
12	6				
11	5	Lower basic (Grade 1-4)			
10	4				
9	3				
8	2				
7	1				
6		Pre-school education			
5					
4					
3					

Source: MoE.

The education system consists of nine years of basic education (grades 1-9), three years of high school (grades 10-12) and, after that, several years of tertiary education (depending on the particular course). Tertiary education includes schooling at universities, colleges of commerce, technical colleges, teacher training colleges and skills training institutes. Figure 3.5 offers an overview of the educational structure. Basic education is divided into three levels: lower basic (grades 1-4), middle basic (5-7), and upper basic (grades 8-9).

The system is currently in transition from seven years of primary education (presently referred to as the middle basic level) to nine years of basic education. Until recently, most secondary schools still offered education at grades 8 and 9 (the upper basic level) in addition to three years of high school.[18]

The rationale behind this transition was that in a country where most secondary education was provided by boarding schools, it would be more feasible to meet the objective of nine years of basic education for all if each of these nine years was actually provided at local basic schools (World Bank, 2006). Though every pupil is required to complete a full nine-year course of basic education, the lack of facilities at the upper basic level (grades 8 and 9) has forced the ministry to limit the number of pupils admitted to grades 8 and 9. Which pupils are admitted to the upper basic level is decided based on their exam results at grade 7. Only the pupils with the best examination scores are admitted to grade 8. The MoE has announced its intention to abolish the grade 7 examination in 2010 (MoE, 2007, p. 40). By that time, National Assessment Surveys (NAS) are to monitor learning achievements at this level.

3.6.2 Community schools

One of the main characteristics of the Zambian education system is the central role played by community schools. Community schools are founded by communities to meet the basic education needs of those children who are not in formal schools. In many instances, these schools are run by parents, though increasingly they receive assistance from the government, donors, churches and NGOs. A large number of these schools have wattle-and-daub constructions and temporary provisions. Classrooms and water and sanitation facilities are of poor quality. Teaching and learning materials are generally inadequate. Pupils often sit on the floor. The vast majority of teachers are unqualified (Chondoka, 2006, p. 7). Teachers are mostly volunteers; young men and women with grade 9 or grade 12

18 Only 15% of Zambian high schools have stopped teaching grades 8 and 9. In 2004, approximately 20% of the 250,000 pupils in grades 8 and 9 were enrolled in secondary/high schools (World Bank, 2006, p. 10).

Paraffin community school, Luapula. Photo: Vincent Snijders.

backgrounds from within the community. Occasionally, teachers receive small allowances or in-kind contributions from parents, but most of them receive no salary at all. For many community school teachers, it is an opportunity to acquire teaching experience. Teachers receive in-service training through local workshops organised by local DEBS offices.

The concept of a community school was not entirely new to Zambia. The European missionaries had already established similar schools and called them 'village schools' or 'bush schools' (Chondoka, 2006). The first community school in postcolonial Zambia dates from 1992, when an American woman established a school in a residential area south of Lusaka. Around 1995, more community schools began to emerge in areas without GRZ schools, where parents could not afford the high school fees that were charged, where the distance to the nearest GRZ school was too far or where GRZ schools were considered overcrowded.[19] It is estimated that by 1996 approximately 55 community schools had been set up. Since then, their number has grown exponentially, making it very difficult to give reliable estimates on a yearly basis.

19 These fees were prohibited in 2002 with the introduction of free Basic Education.

Community schools are equally found in urban and in rural areas (see table 3.5). A recent study shows that the main factor determining the location of rural community schools is distance to the nearest government school (Chondoka, 2006, p. 7). In urban areas, these schools are set up in locations with large concentrations of children who are unable to get access to a public school due to costs or other factors (DeStefano, 2006).

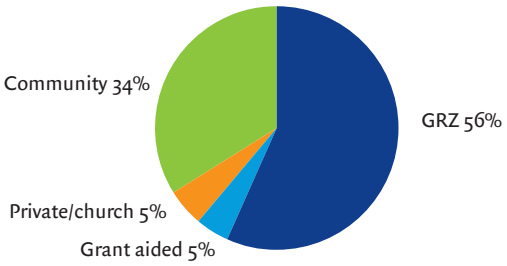
Table 3.5 *Share of community schools in the total number of basic schools by province and location (2005)*

	Rural	Urban
Central Province	29%	23%
Copperbelt	35%	23%
Eastern Province	29%	16%
Lusaka	30%	43%
Luapula	27%	30%
Northern Province	31%	26%
North-Western Province	24%	24%
Southern Province	31%	24%
Western Province	18%	21%
Zambia	**28%**	**29%**

Source: MoE / EMIS.

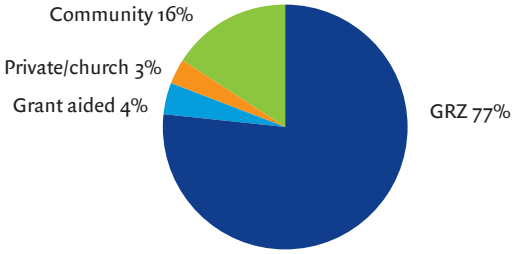
The abolition of school fees and the possibility for community schools to receive school grants have contributed to the improvement of data on community schools in the school census. The number of community schools increased from 55 in 1996 to almost 2,700 in 2006. Nevertheless, even though the 2006 census indicates that there are approximately 2,700 community schools, it is estimated that the actual number may actually exceed 3,000. Enrolment in these schools increased from 6,600 in 1996 to almost 470,000 in 2006. In general, community schools are relatively small. In 2000, they accounted for 17% of the basic schools and 8% of the pupils in basic schools; in 2006 these figures had increased to 34% and 16%, respectively.

Figure 3.6 *Distribution of basic schools by type (2006)*



Source: MoE / ESB 2006.

Figure 3.7 *Distribution of pupils in basic schools by school type (2006)*



Source: MoE / ESB 2006.

Pupils in community schools generally belong to the poorest and most vulnerable social strata. Less than one third of community school families live in permanent structures, compared to 46% of public school families (DeStefano, 2006). The schools are attended by a relatively large number of orphans. In 2005, almost one in three children in community schools had lost his or her mother, father or both parents. In governments schools this ratio is one in five. These children lack parental support. According to a study in Central Province, many orphans do not come to school regularly, while many of them are too hungry to concentrate in class when they do come (Chondoka 2006, p. 9).

Table 3.6 *Percentage of orphans by school type (2005)*

	lost mother	lost father	lost both parents	orphans total
GRZ	6%	9%	5%	20%
Private / church	6%	9%	8%	23%
Grant-aided	7%	11%	7%	26%
Community	10%	12%	9%	31%

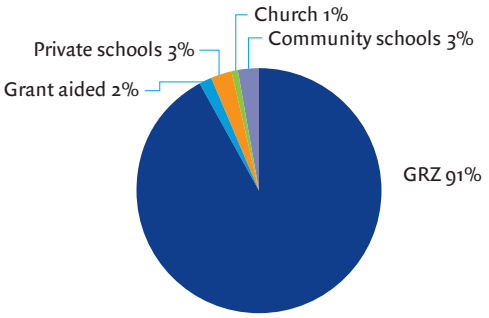
Source: MoE / EMIS.

There is enormous variation between community schools, more than between GRZ schools or private schools. Whereas many schools are solely supported by the community, other schools are supported by churches or NGOs. DeStefano (2006) discerns three types of community schools:

a) schools that are launched and managed by the community and rely almost entirely on the support of the community. These schools tend to be severely under-resourced;
b) schools that are founded and sponsored by a church or NGO with the intention of eventually turning over ownership and operations to a Parent Community School Committee (PCSC). In many cases, church or NGO representatives remain in charge of the management of the school;
c) schools launched (sponsored) by individuals, which are run like private schools with little or no involvement from the community.

Due to their limited size, many of these schools employ multi-grade teaching, especially in rural areas. In the past, most community schools did not follow the normal curriculum. Instead, they used the SPARK curriculum, which provides primary education in four years. The SPARK curriculum had been designed to meet the specific needs of community school children, who were generally older (between 9 and 16 years). The SPARK curriculum has now become less relevant as increasingly more pupils of community schools enrol at the age of 7. In 2004, 10% followed the SPARK curriculum (Chondoka, 2004). Most community schools follow the regular basic school curriculum (ZBEC) and their pupils sit the grade 7 examination. Pupils must pass the seventh grade end-of-cycle examination if they want to be admitted to the upper basic level. Most pupils have to sit these examinations at another school, which functions as an examination centre (see chapter 2). In 2005, only 108 community schools were identified as examination centres. Children of the other community schools take their examination elsewhere (normally a GRZ school).

Figure 3.8 *Examination centres by agency (2005)*



Source: ECZ / MoE.

Community schools are normally managed by PCSCs. These register the school with the MoE, recruit teachers, mobilise resources etc. A PCSC normally consists of 7-10 members, including parents, teachers and prominent members of the community (DeStafano, 2006). Teachers are accountable to the PCSC. In addition, the District Education Standards Office also inspects these schools.

In 1996, the Zambia Community School Secretariat was set up to monitor and coordinate the activities of community schools. In 1998, the ZCSS signed a memorandum of agreement with the Ministry of Education. This agreement recognised the ZCSS as the sole umbrella organisation for community schools (DeStefano, 2006). The memorandum gave communities, NGOs and churches the freedom to start a school and formalised the criteria for government support. The ZCSS had been active for a decade when it was discontinued in 2006 due to financial mismanagement.

The government has formally recognised community schools as an important addition to the formal school system. The MoE has established regulations and quality control procedures to ensure that the growing numbers of community schools are formally registered and eligible for government support. Community schools are formally recognised and registered if they enrol children who (DeStefano, 2006):

- have never been to school, but are older than the age of entry to basic education;
- have no other education alternative in the community;
- are orphans or otherwise vulnerable children;
- are disadvantaged with regards to access to the school system.

All officially registered community schools receive some MoE support (school grant, textbooks, professional guidance and sometimes a GRZ funded teacher seconded to the community schools). In 2005, the MoE instructed the districts to allocate 30% of their sector pool grants to community schools. In addition, schools with functioning PCSCs that have been operational for at least two years are eligible for grants to cover teachers' allowances. However, most community schools started without prior knowledge of the MoE and are severely underfunded. Whereas the majority of the community schools receive a limited amount of MoE support (a grant, salaried teachers or professional guidance), many other schools not even receive a school grant. Though the MoE formally supports community schools, its practical interest seems to be rather limited. Actual support depends on the specific policy of the particular district boards.

3.6.3 IRI Centres

Another methodology to reach children in remote areas is the Interactive Radio Instruction (IRI). The idea of interactive radio instruction was developed as an alternative approach for educating children who were not attending school. At the introduction of IRI, it was estimated that approximately 800,000 children were unable to access basic education. The IRI initiative, known as '*Learning at Taonga Market*', targeted orphans and other vulnerable children.

The IRI initiative consists of radio programmes that are based on the national curriculum, as well as printed materials and mentor training. The programme covers Zambia's basic school curriculum for grades 1 to 5 (EDC, 2004). The programmes are aired on Zambia National Broadcasting Corporation's Radio 2 and several community radio stations. Using radio sets, children listen to specific lessons broadcasted from Lusaka. Teachers and pupils react to questions and exercises posed by the radio programme (World Bank, 2005).

In 2000, the programme was piloted in 21 centres in Lusaka and Southern Province targeting a total of 1,254 pupils (EDC, 2004). In 2001, the programme was scaled up to cover all nine provinces of Zambia. The IRI programme was implemented in close cooperation with the communities. The communities are expected to support and assist the mentor, provide a place for the learners to meet, a radio, batteries and a blackboard and to help collect local materials for the learning kit. The mentor is a volunteer teacher from the community. The MoE has helped communities to start up IRI centres. On a number of occasions, such as in North-Western Province, the MoE chose to introduce IRI to existing community schools. In practice, the

Radio for Interactive Radio Instruction, used in a government school.

distinction between IRI centres and community schools is blurred. Large numbers of community schools, as well as government schools, participate in the IRI programme. In 2004, EDC counted 647 IRI centres with a total enrolment of almost 40,000 pupils. According to EDC (2004, p. 22) this figure includes 188 community schools. That year, the ministry reported 210 IRI centres (and 265 in 2005). More than 2,000 community schools make use of the IRI methodology from time to time.

In 2002, the Examinations Council of Zambia evaluated the programme. ECZ concluded that IRI learners performed as well as students in formal schools, if not better (World Bank 2005, p. 17).). However, in the National Assessment Survey of 2006 IRI learners belonged to the low performers. There are also disadvantages to the system. First of all, teachers need to translate all (English) lessons into the local language for the lower grades. Second, broadcasting is not always reliable: transmission may be bad and the programmes do not always start in time. Nevertheless, some GRZ and community schools make use of the lessons on the radio as an alternative to frontal teaching.

3.7 Challenges

An argument for SWAp and GBS is that by making use of local systems donors contribute to strengthening them. However, several studies point to a weak institutional capacity at central and local level. The MoE is not well coordinated

with provincial and district offices and there is a lack of well-trained staff at all levels (MoE 2007, p. 69). Bureaucratic reporting procedures are inefficient, time-consuming and lead to delays in service-delivery. Whereas donors try to cooperate with the MoE within the framework of the Paris Declaration and the JASZ strategy and are actively involved in working groups, they occasionally tend to take the lead. Within that process, donors may lobby for their own themes and priorities and consequently contribute to a lack of prioritisation.

Capacity building at all levels therefore remains central to the success of sector and budget support. The JASZ has recognised that the effective implementation of the FNDP may be hindered by the general weakness of institutional implementation and absorptive capacity across the public sector and has prioritised capacity building as the key to making support more effective. Effective service delivery depends on effective school management, effective functioning of districts boards and regular school inspections based on an effective standards assuring system. The National Implementation Framework devotes some attention to the need for capacity building at the district and school levels, but it remains to be seen whether this is sufficient. Capacity building is not simply the acquisition of skills through training; it needs to be complemented by monitoring, performance assessment and accountability.

The low level of accountability is a second factor reducing the effectiveness of the education sector. Although increased access to financial information has enhanced transparency and the development of a system of checks and balances has promoted accountability (Transparency International, 2005), the accountability function still needs further development. Even though there is little evidence of corruption or 'leakage' at the district and basic school level, newspapers regularly report on abuse of allowances and school grants by district and school staff members. Moreover, delays in the disbursement of grants to public schools are common (Das et al., 2004, Transparency International, 2005). Low motivation and a lack of accountability contribute to teacher absenteeism.

Third, the monitoring function is still unduly focused on input and process indicators and aggregated MDGs. The monitoring and evaluation functions need to be further expanded in order to become instruments for the improvement of the quality of education. Information provided by the annual school census should be linked with information from ECZ. There is an urgent need to start the process of developing evidence-based policy making (Copenhagen Development Consulting). The link between management information, planning and budget should be

developed more thoroughly. Management information from EMIS could be utilised more effectively. EMIS provides basic (input) information, but this information is not linked to output and outcome information. The utilisation of education information data is inadequate (Copenhagen Development Consulting, 2007). One of the reasons is the lack of adequate computer equipment, especially at provincial and district offices and staff trained in planning functions.

3.8 Summary and conclusions

This chapter has presented a brief overview of the development of (basic) education policy in Zambia since the end of the 1990s. In accordance with the principles formulated at Jomtien in 1990, the Zambian government developed plans to improve the basic education sector. After decades of underinvestment, the education sector received a boost when the policy document *Educating Our Future* was formulated in 1996. In 1997, the GRZ adopted the *Education Sector Investment Plan* (ESIP) that was based on this document. This plan aimed at improving the coordination between policies and programmes in the education sector and called for the pooling of funding. The investment plan was elaborated in separate plans for two sub-sectors, a *Training Sub-Sector Investment Plan* (TDP) and the *Basic Education Sub-Sector Investment Plan* (BESSIP) of 1999. BESSIP focused on the improvement of access to the basic education sector and was planned for the period 1999-2003.

In February 2003, the MoE launched the five-year *Ministry of Education Strategic Plan* (MoESP 2003-2007) as a follow-up to the BESSIP. This plan was not limited to basic education, but presented a holistic approach to basic, high school and tertiary education. Whereas BESSIP primarily focused on the improvement of access, the sector strategic plan aimed at improving the quality of education. The Sector Plan called for an increase in the number of teachers (particularly female teachers) in rural areas by increasing incentives in terms of promotion, upgrading opportunities and hardship allowances.

The development of BESSIP and the MoESP coincided with the moment a number of cooperating partners expressed their intention to improve the coordination and efficiency in the education sector by means of the Sector-Wide Approach (SWAp). Under BESSIP, this primarily implied a joint funding of the investment plan and in the context of the MoESP and the subsequent Memorandum of Understanding, the transition to genuine sector support took place. After years of stagnation, the

GRZ and its development partners together succeeded in revitalising the education sector. Starting in 2000, the number of enrolments would rapidly increase. The experiences it gathered in both the education sector and the health sector, motivated the GRZ and its cooperating partners to further expand their efforts in the process of cooperation and harmonisation. This harmonisation process began to take shape in 2002 and resulted in the *Joint Assistance Strategy for Zambia* (JASZ), which was signed in May 2007. As a result, two bilateral donors have been appointed, while two other donors have withdrawn from the education sector. At the end of the MoESP, some agencies will move to budget support, leaving a much smaller sector pool.

Conclusion

Within ten years, the GRZ and its cooperating partners have shifted their approach to the education sector from project support to sector support. By pooling the available funds they created the means to develop a broad holistic and integral approach to the basic education sector. Two major constraints complicating the further development of the sector are a lack of capacity at all levels and a lack of funding.

Lack of capacity at the MoE was among the main reasons for the World Bank to advise a less ambitious sector-wide approach to the basic education sector. This proved to be an effective strategy. BESSIP had a slow start, partly as a result of capacity constraints. Moreover, it took several years to harmonise the efforts of all members of the donor community. Even now, after ten years, several donors still pursue their own development projects. Cooperating partners tend to take the lead when processes do not develop fast enough. On the other hand, MoE officials tend not to resist the way this changes their position. Reducing the number of cooperating partners to two 'lead donors' may contribute to a strengthening of the MoE's role, provided that capacity building is prioritised at all levels, especially at the local level.

Second, whereas BESSIP, and later MoESP, were highly effective in raising external resources for (basic) education, the expenditure of the GRZ remained relatively low. As a result, in the first years of the twenty-first century, Zambia's education system was still low-cost, low-quality. Recent developments show that the GRZ is now gradually increasing its investments in the education sector, supported by the Fast Track Initiative.

Overall, Zambia is an example of a successful implementation of the Sector-Wide Approach. Changes may develop slowly, but it is important for the GRZ as well its cooperating partners, to have realistic expectations of the possibility of improving an entire sector within a short period of time.

The GRZ's main challenge will be to maintain its role as the owner of the entire process; a challenge indeed, considering its weak institutional capacity at central and local level. Capacity building at all levels, will be vital to the success of sector and budget support and therefore to the success of the (further) development of the education sector.

4 Output: investment results

4.1 Introduction

Chapter 3 presented a brief overview of the development of (basic) education policy in Zambia. Mainly as a result of economic problems, the development of education stagnated in the 1990s. Enrolment figures remained stable throughout the decade (1.6 million pupils at the middle basic education level), even though the population grew.

Low enrolment and low quality necessitated substantial investments in the schooling and training of teachers, infrastructure and provision of instructional materials. BESSIP made valuable contributions to all of these investments. At the same time, BESSIP gave a strong boost to primary education, resulting in a significant increase in enrolment between 1999 and 2006. By 2006, total enrolment in primary education had increased 67% (to 2.7 million pupils) compared to 1999. This dramatic development necessitated new investments. It was essential that the number of teachers, classrooms and books kept pace with this growth in enrolment.

This chapter outlines the results of these investments, (mainly) for the years 2000-2005/2006. It focuses on investments in teachers, teaching materials and school infrastructure. Apart from developments over time, the chapter also provides insight in a number of regional differences.

4.2 Teachers

During the late 1990s, Zambia experienced a sharp decline in the number of teachers. The total number of teachers fell from 40,500 in 1997 to 35,000 in 1998 and 33,000 in 1999 (Joint Evaluation of External Support to Basic Education). BESSIP adopted a new strategy to reverse this process by improving teacher education and training. This strategy focused on the improvement of both access

Teacher in Henry Kapata basic school, Kasama, Northern Province.

and quality. The *Zambia Teacher Education Course* (ZATEC) was set up in order to double the teacher output of the (ten) existing government primary teacher training colleges. One of the ways to accomplish this goal was by reducing the residential programme from two years to one; the second year being a practical year in which students teach in schools while studying by distance learning. The improvement of teacher training focused on three separate interventions:

1) physical upgrading of teachers' training colleges;
2) curriculum development and improvement of the training strategy in accordance to the Zambia Teacher Education Reform Programme;
3) creation of a support structure for teachers in basic education.

Within BESSIP, the organisation of education courses was made more accessible to female trainees. As a result of the new teacher programme, the number of female trainees gradually exceeded the number of male trainees. Total output increased from 1,850 graduates in 1998 to 3,815 in 2002 (BESSIP Completion Report, p. 19). Now, approximately 4,000-5,000 students graduate from Teacher Training Colleges each year. The annual increase in the number of teachers employed by the MoE is significantly lower, however, due to high teacher attrition and budgetary restrictions. The total number of teachers in basic schools, including private and community schools, grew from 37,000 in 2000 to 50,000 in 2005 (a 37% increase). That year, GRZ employed 39,000 teachers. In 2005, 7% of all teachers were

untrained and the vast majority (68%) owned a Primary Teacher's Certificate. The percentage of female teachers remained stable at 48%. Recent figures of the MoE show a further increase to a total of 57,000 teachers in 2007 (with more than 44,000 teachers in GRZ and grant aided basic schools).

Figure 4.1 *Number of teachers in basic education (2000-2007)*

Source: ESB, 2005-2007.

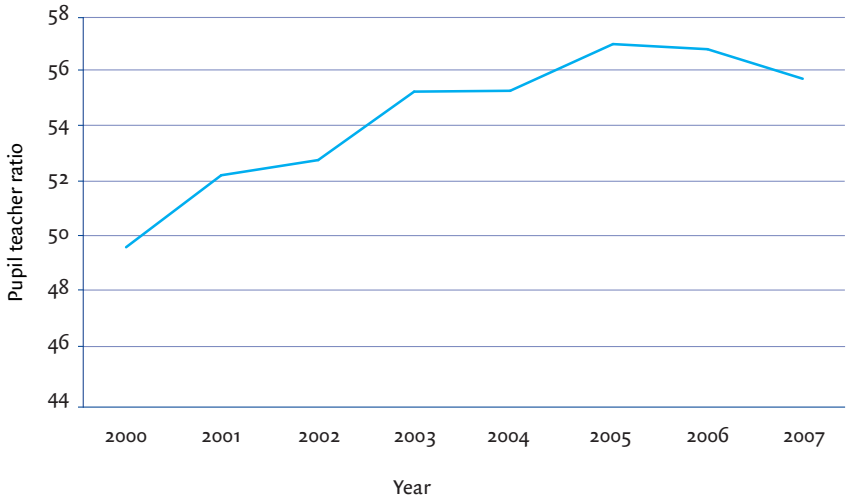
The growth in the number of teachers was insufficient to keep up with the growth of enrolment. After public service wages had been increased in April 2003, the MoE was forced to impose a hiring freeze in 2003 and 2004 to avoid exceeding the wage bill limit set within the context of HIPC debt relief. As a result, large numbers of new teachers who had just graduated from one of the Teacher Colleges in 2003 and 2004 became unemployed. By September 2004, the MoE merely employed 97% of the total number of teachers of September 2002. Moreover, a number of the teachers who had recently retired remained on the payroll because the ministry of finance was unable to pay their terminal benefits (World Bank, 2006, Annex 2, p. 3). No earlier than 2005, the Ministry of Finance authorised the recruitment of 7,000 new teachers after the retirees had finally been removed from the payroll.[20]

Even though between 2000 and 2005, the number of teachers increased by 37%, this figure lagged behind the increase in enrolment, which grew by 58% over the

20 This recruitment was made possible by a EUR 9.2 million gift from the Netherlands the severance package of retired teachers. This enabled MoE to remove them from the payroll.

same period. As a result, pupil teacher ratios increased from 49:1 between 2002 and 2003 to 57:1 in 2005. Currently, Zambia is in the process of making up the arrears in the number of teachers. In 2007 the Ministry of Education recruited another 10,000 teachers. Recent figures for 2006 and especially 2007 indicate that the pupil teacher ratio is improving (decreasing), notwithstanding a further growth of enrolment. This is an enormous achievement. At this point, however, the target ratio of 40:1 is not within reach. This ratio implies a total of almost 80,000 teachers teaching almost 3.2 million pupils currently enrolled in basic schools. Moreover, large numbers of community schools still rely on volunteer teachers.

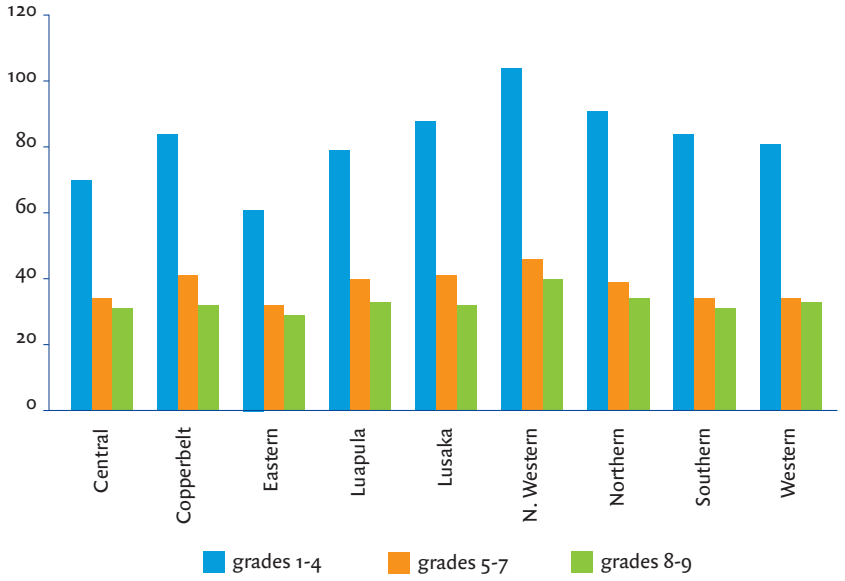
Figure 4.2 *Development of the pupil teacher ratio in basic schools*



Source: ESB, 2005-2007.

The lack of teachers poses a problem that is even more serious due to their unbalanced distribution, both between schools and within schools. Figure 4.3 shows substantial differences between provinces and between grades. Pupil teacher ratios are lowest in Eastern Province and highest in North-Western Province. Within districts, the allocation of teachers is not efficient either: one particular school may be understaffed and in need of several teachers, whereas only a few kilometres away another school has no vacancies at all.

Figure 4.3 *Pupil teacher ratios by province for grades 1-4, 5-7 and 8-9 (2005)*



Source: ESB, 2005.

The large difference between grades 1-4 and the other grades is caused by the number of double shifts in the first grades (see section 4.2.3). Many schools choose for double shifts at grades 1-4, which significantly reduces the contact time between teachers and pupils. Moreover, in practice, many schools have considerably more than 50 or 60 pupils per classroom in the lower classes. The extreme size of classes in the lower grades is a phenomenon that is not unique to Zambia. It indicates that pupils who are closer to passing their examinations at grade 7 are prioritised (MoE, 2005). However, this prioritisation does not reflect the fact that small classes form a much more favourable environment for younger children. Pedagogically, it is a more effective strategy to reduce PTRs in lower grades. MoE might choose to gradually increase the PTRs in higher grades, as older children are better able to work independently.

The deployment of teachers is also characterised by a strong discrepancy between urban and rural conditions. Most teachers prefer to work in urban areas, which causes an enormous shortage of trained teachers in the more remote areas. Bonuses for teachers in remote rural areas are clearly not sufficient to compensate for the hardships and lack of appropriate housing they are facing. Lack of housing is a major obstacle to teacher recruitment and retention in the rural areas (World Bank, 2006, p. 29).

Table 4.1 *Pupil teacher ratios by province and location (2001 and 2005; basic schools)*

	2001		2005	
	Rural	Urban	Rural	Urban
Copperbelt	45	33	66	47
Central Province	60	25	70	36
Lusaka	46	37	53	42
Southern Province	55	32	65	37
Luapula	58	30	71	42
Northern Province	68	36	82	40
Eastern Province	56	30	71	37
North-Western Province	53	37	59	41
Western Province	50	24	60	40
Zambia	**56**	**33**	**68**	**43**

Source: EMIS / computation IOB.

The fact that most teachers prefer to work in urban areas contributes to high teacher turnover rates. Many teachers initially posted to remote schools later transfer to more desirable locations and this results in a large volume of inter-school movement. Moreover, large numbers of teachers migrate to upper basic and high schools after upgrading their qualifications. Attrition rates are high in community schools, where many teachers are not employed on formal a formal basis, or paid a regular salary. Hiv/aids is an important explanation for teacher attrition as well. In 2004, approximately 28% of all teacher attrition was caused by death. Almost 2% of the teachers died in that year. The hiv/aids pandemic, resulting in high morbidity and mortality rates among teachers, is one of the main causes.

4.3 Schools and classrooms

An important factor explaining the low enrolment rates in the 1990s was a lack of schools and classrooms. The lack of schools resulted in large average distances to schools, whereas a lack of classrooms forced many schools to reject new pupils. In 1999, there were approximately 4,300 primary and basic schools in Zambia, 25% of which were mostly pole-and-mud (BESSIP Completion Report 2004, p. 30/31). BESSIP acknowledged the necessity of building new schools and classrooms. One of the main strategies for increasing enrolment was to reduce maximum walking distances to a maximum of five kilometres. This could only be accomplished by

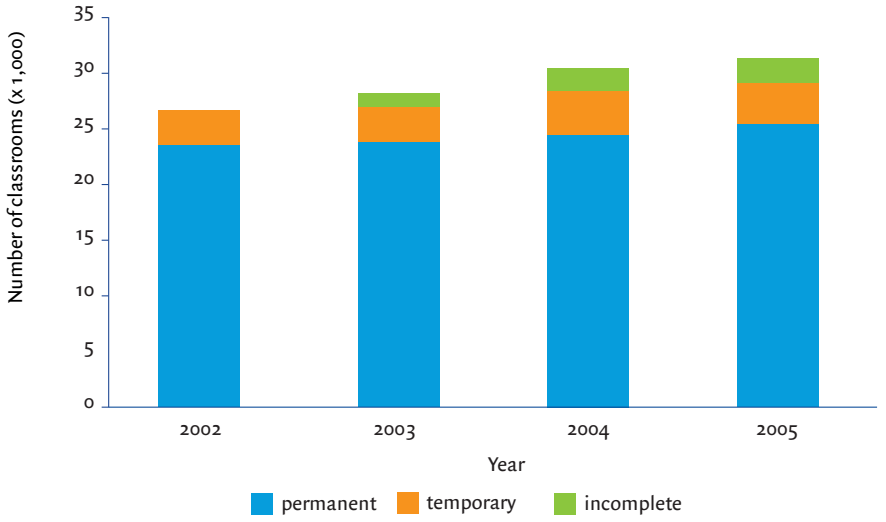
Construction of new classrooms, St. Johns upper basic school, Mungwi, Northern Province.

constructing new schools. BESSIP was targeted at the construction of 3,000 new classrooms and 2,000 new teacher houses. Moreover, 20,000 desks were to be distributed among schools. At the end of 2002, almost 3,400 new classrooms and 2,200 new teacher houses had been constructed. The total number of schools for basic education increased from 5,300 in 2000 (including 900 community schools) to more than 8,000 in 2006. The total number of government schools increased from 4,200 to 4,525. The largest increase is attributed to the development of community schools (from approximately 900 in 2000 to 2,560 in 2006).

Compared to the set targets, the programme was a clear success. However, because of the large number of temporary classrooms that needed to be replaced, the total number of classrooms actually increased only slightly – from 23,400 in 1999 to 23,800 in 2003.[21] Based on EMIS data, the total number of classrooms for basic education is estimated at 28,000 in 2003, 23,800 of which were permanent whereas 4,200 were either temporary or incomplete. These figures include private schools and grant-aided schools, but not community schools. In 2005, the total figure had increased to more than 31,000 classrooms. Between 2003 and 2005, over 4,000 classrooms were constructed and renovated (MoE 2007, p. 39).

21 See BESSIP Completion Report, 2004.

Figure 4.4 *Total number of classrooms (2002-2005; community schools not included)*



Source: EMIS.

Despite the building programme, there is still a dramatic backlog in classroom construction. Approximately 56,000 classrooms are actually needed. An important reason for this backlog is that large numbers of temporary structures need to be replaced by permanent ones (Copenhagen Development Consulting, 2007). As a result, pupil classroom ratios are still far too high. In 2002, this ratio was 71 pupils to one classroom; by 2005, this figure had increased to more than 80 pupils per classroom. It appears that (on average) pupil classroom ratios are higher in urban schools than in rural schools. This finding is in contrast to the findings for pupil teacher ratios, which are higher in rural areas than in urban areas.

Table 4.2 *Pupil classroom ratios by province and location (2002 and 2005; community schools not included)*

	2002		2005	
	Rural	**Urban**	**Rural**	**Urban**
Central	77	77	88	86
Copperbelt	88	79	99	95
Eastern	64	86	74	82
Luapula	74	98	87	103
Lusaka	79	80	85	83
N. Western	72	88	76	110
Northern	68	102	78	95
Southern	70	81	78	78
Western	54	82	61	85
Zambia	**69**	**81**	**78**	**89**

Source: EMIS / computation IOB.

Table 4.2 does not include community schools because data for these schools were not available for 2002. In 2005, there were 2,300 community schools serving 350,000 pupils in a total of approximately 4,900 classrooms. Their average pupil classroom ratio was 73:1. Just like for the other basic schools, differences between urban schools and rural schools are significant. Average pupil classroom ratios are lower in rural schools (1:70) than urban schools (1:82). These figures suggest that community schools have lower average pupil classroom ratios. However, only 28% of the classrooms in community schools are permanent. Most classrooms are temporary (61%) or incomplete (11%). Not counting the 3,000 incomplete classrooms, the total number of classrooms (including GRZ schools, private schools and community schools) in 2005 was approximately 33,000. In 2006 this figure had increased to almost 35,000 classrooms.

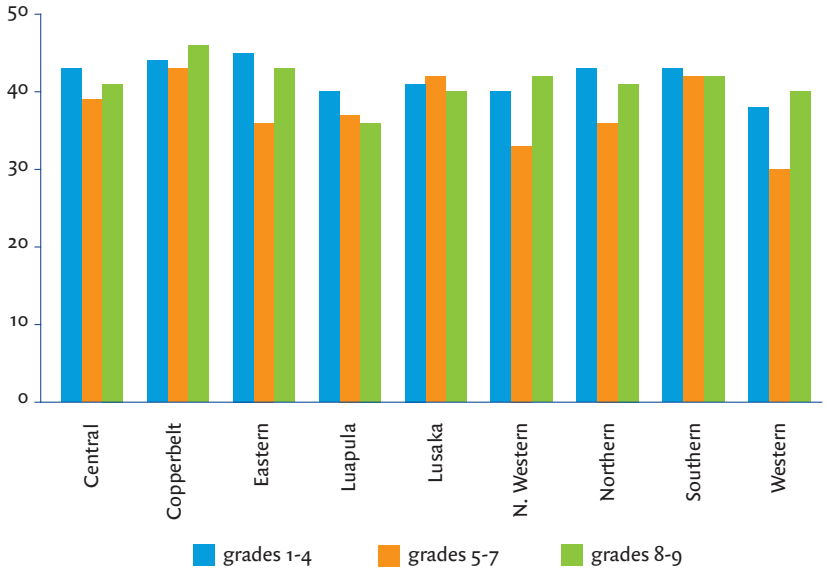
The pupil classroom ratio in rural areas is lower than in urban areas and the quality of these classrooms is also lower. In 2003, the walls and roofs of 22% of all classrooms in rural areas were of poor quality. In urban areas, this percentage was as low as 8%. The quality of the floor was poor in 26% of all rural classrooms and in 10% of all classrooms in urban areas. In rural areas, the number of temporary structures is substantially larger than in urban areas. In rural areas, 16% of the classrooms are temporary; against no more than 1.5% in urban areas. These figures

did not change significantly between 2002 and 2005. Community schools show more dramatic figures: more than 60% of their classrooms are temporary; 73% in rural areas and 25% in urban areas.

4.4 Pupil class ratios

Zambia puts great effort in reducing the shortage of both teachers and classrooms by operating a system of double and even triple shifts. The country introduced the system of double shifts in the 1980s, mostly in the lower grades (1-4). This means that children attend school for three hours and 20 minutes in either a morning or afternoon shift. In grades 5-7, pupils go to class for six hours per day.

Figure 4.5 *Pupil class ratios by province for grades 1-4, 5-7 and 8-9 (2005)*



Source: ESB, 2005.

As a result of the double shifts, pupil class ratios may be different from pupil teacher ratios and pupil classroom ratios. In 2005, the average pupil teacher ratio for all basic schools was 56:1, whereas the average pupil classroom ratio was 79:1. The pupil class ratios are much lower with an average of 42 pupils in the lower grades and 38 pupils at the middle basic level. Figure 4.5 incorporates the effects of double shifts for grades 1-4. In practice, many schools have much higher figures for the lower grades (with 60-90 pupils in one classroom at the same time).

4.5 Instructional materials

The sharp increase in enrolment necessitated the distribution of new instructional materials. Under BESSIP, the MoE distributed 1.4 million books. Nevertheless, the total number of textbooks merely increased from 3.2 million in 2000 to 3.6 million in 2003. The difference between the two figures is explained by the fact that many books were replaced (BESSIP Completion Report, 2004, p. 11). In its Strategic Plan, MoE expressed its intention to decentralise the responsibility for textbook procurement: basic schools were to be provided with budget ceilings and DEBS should purchase textbooks on the basis of orders from the schools (World Bank, 2006, p 31). A proportion of the sector pool grants (35%) was set aside for schools to purchase supplementary materials (mainly supplementary readers, teacher reference books, wall charts, chalk, blackboards, etc.).

The acquisition of textbooks is being decentralised. In the new system, publishers will produce, market and supply books to booksellers that will in turn obtain orders from schools and supply books as ordered. MoE has the task of ensuring an enabling environment and share relevant and timely information with publishers and booksellers on planned procurement and funding. Close cooperation between the MoE's Planning Directorate and the Curriculum Development Centre must ensure that schools will be able to select their books based on approved book lists published by the CDC. The districts monitor and facilitate the purchase of books by schools (PER, 2006).

Kalweo community school Luapula. Photo: Vincent Snijders.

Based on the EMIS database and MoE publications, the development of the number of textbooks for English and mathematics was estimated for the period 2000-2004. By 2005, the questions in the school census concerning instructional materials had been changed, which made it impossible to compare them to pre-2005 figures. The computation does not cover community schools, because these are not included in the EMIS data for 2000-2003.

The estimated figures suggest that until 2003 the number of books for English remained stable at a level of approximately 800,000 books. There was a slight increase in 2003 (approximately 2%) and a massive increase in 2004 (approximately 30%). In 2004, there were approximately 1.1 million books for English (community schools not included). Math books show an entirely different pattern. EMIS figures suggest an increase between 2000 and 2002, and a subsequent decrease in 2003 and 2004. During the 2000-2004 period, the total number of books for mathematics appears to have remained stable at a total of approximately 600,000 books. This number is significantly lower than the total number of books for English.

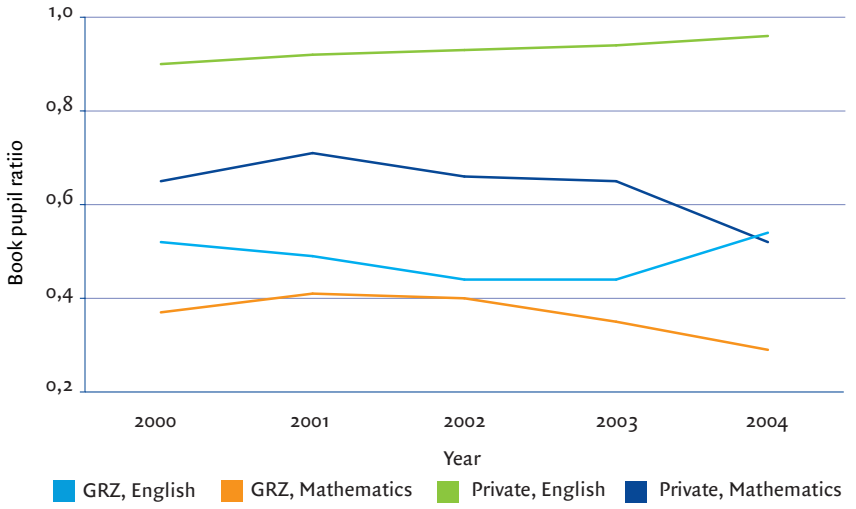
Book pupil ratios

In 1998, basic schools had a book pupil ratio of 1:5 in core subjects (PER, 2006, p. 31.). According to the ESB (2005), this ratio improved to 1:2 for English and 1:3 for mathematics. Nevertheless, the goal of realising a 1:2 book pupil ratio for mathematics has not yet been accomplished.

The increase in the number of books led to a slight improvement of book pupil ratios for the four main subjects. However, book pupil ratios remain far too low. On average, three pupils share one book for each subject.

Figure 4.6 suggests that the objective of accomplishing a book pupil ratio of one book for every two children has only been achieved for English. However, it must be taken into account that significant differences exist between schools and that this ratio has not yet been realised for large groups of pupils. The sharp increase in enrolment was not matched by a growth in the number of textbooks for mathematics. Moreover, the figure also shows that, on average, book pupil ratios are much better in private schools than in public schools. In 2004, private schools showed an average book pupil ratio of 1:0.9 for English and 1:1.7 for mathematics (for GRZ schools these figures were 1:1.7 and 1:3.2, respectively). This means that private schools have twice as many books as GRZ schools (and three times more than community schools).

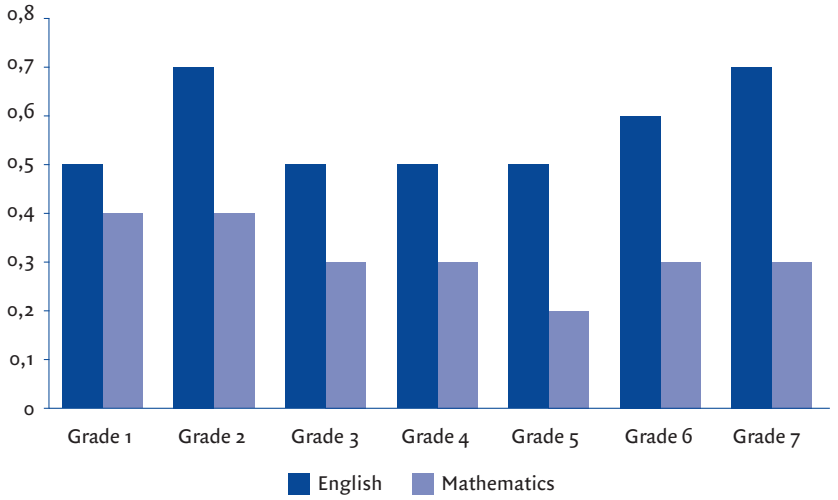
Figure 4.6 *Book Pupil Ratios (2000-2004)*



Source: MoE / EMIS.

Moreover, there are substantial disparities between schools and children. First of all, there are differences between grades. At primary 7, book pupil ratios are significantly better than at primary 1. Figure 4.7 illustrates the distribution of books for English and mathematics specified per grade. The figure shows that the book pupil ratio is lowest at primary 1 and 2 and highest at primary 7. From primary 3 to primary 6, it remains relatively constant at an average level of one book for two pupils.

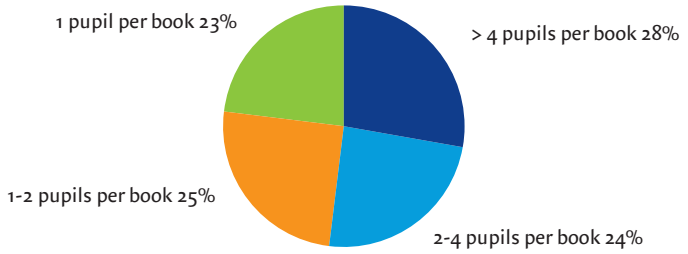
Figure 4.7 *Average book pupil ratios for grades 1-7 (public schools; 2004)*



Source: EMIS.

Books are also distributed very unevenly between schools. Figures 4.8 and 4.9 show the distribution of English and mathematics books for grade 7. Figure 4.8 indicates that more than 50% of all 7th graders share their English book with one (or even more than one) other pupil. 28% of all 7th graders share their English books with three or more other pupils. Only in 23% of all cases the number textbooks at least equals the number of pupils.

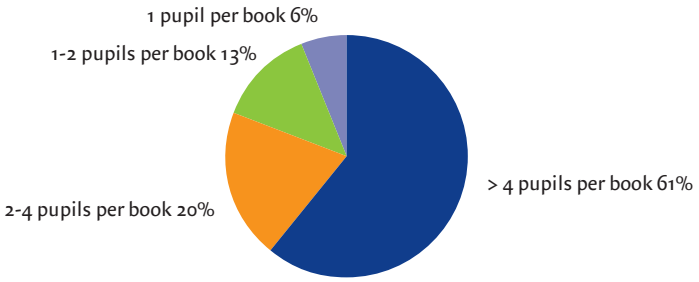
Figure 4.8 *Distribution of English textbooks in grade 7 (public schools, 2004)*



Source: EMIS, 2005.

Figure 4.9 shows the distribution of mathematics books, which is clearly different from that for English books. 61% of grade 7 pupils share their mathematics books with at least three other pupils.

Figure 4.9 *Distribution of mathematics textbooks (2005)*



Source: EMIS, 2005.

There are also regional differences. Book pupil ratios appear to be lower in urban than in rural areas. However, the assessment of regional distribution does not include community schools. An evaluation of community schools indicates that shortages are even more dramatic, particularly in rural areas. At community schools, book pupil ratios are generally much lower than at public schools (and private schools). In 2004, the book pupil ratio at community schools was 1:3.0 for English and 1:5.9 for math. There appears to be no correlation between book pupil ratio and poverty level (measured at the district level).

Table 4.3 *Book pupil ratios for English and mathematics by region (2004)*

	English		Mathematics	
	Urban	Rural	Urban	Rural
Central	0.43	0.55	0.20	0.32
Copperbelt	0.45	0.53	0.17	0.19
Eastern	0.42	0.66	0.27	0.37
Luapula	0.32	0.60	0.16	0.31
Lusaka	0.55	0.64	0.23	0.28
N. Western	0.54	0.55	0.23	0.35
Northern	0.50	0.55	0.17	0.33
Southern	0.43	0.47	0.17	0.34
Western	0.48	0.67	0.20	0.38
Zambia	**0.47**	**0.57**	**0.19**	**0.33**
Community schools	0.35	0.34	0.17	0.17

Source: EMIS, 2006 / computation IOB .

4.6 Summary and conclusions

Since 2000, Zambia has made massive investments to improve the access to and quality of basic education. This policy resulted in an enormous increase in enrolment after years of stagnation. Initially, the massive inflow had a negative effect on the quality of education: pupil teacher ratios and pupil classroom ratios skyrocketed. Pupils did go to school but they had to sit on the floor in overcrowded classrooms, lacked adequate learning materials and pupil teacher contact time was limited as a result of double shifts.

The government and cooperating partners responded to the tremendous challenges caused by the dramatic increase in enrolment by increasing their funding and developing two investment plans (the Basic Education Sub Sector Investment Plan and the Ministry of Education Strategic Plan). In six years, the GRZ founded more than 300 new (basic) schools. The main contributions, however, were made by private schools and especially community schools, though the MoE invested in grant-aided schools and community schools as well. In 2000, there were approximately 5,300 basic schools; in 2006 this figure had increased to more than 8,000. The total number of classrooms increased from 25,000 in 2000 to 35,000 in 2006. Under BESSIP, the MoE distributed 1.4 million books. Large numbers of new teachers were recruited and trained. The total number of teachers increased 54%, from 37,000 in 2000 to 57,000 in 2007 (44,000 of whom taught in GRZ schools and in grant-aided schools). The major part of this growth was achieved in community schools (over 8,500 teachers in 2007). A small number of them are paid by the GRZ. This growth is an impressive achievement considering the high attrition rates among teachers (approximately 10% each year) and budgetary restrictions. In 2005, total per pupil expenditures (excluding private schools) amounted to approximately USD 55-60, 60% of which was financed by the GRZ and approximately 26% by the sector pool fund.

However, investments could not keep pace with the exponential growth in enrolment. The mid-term review of the MoESP revealed that it did not meet its infrastructure development targets. Despite substantial investments in teachers, books and classrooms, there are still enormous shortages. Pupil classroom ratios are still far too high. In 2002, it was 71:1; in 2005 it had increased to 80:1. Despite the building programme there is still an enormous backlog in classroom construction. One of the major causes for this backlog is the fact that large numbers of temporary structures needed to be replaced by permanent ones. The total number of English books increased by more than 30% but the number of mathematics

books remained stable. Many more books are needed, especially for mathematics. Problems related to financial resource management and slow procurement processes hinder the effective elimination of book shortages. Despite the growing numbers of teachers, pupil teacher ratios actually grew until 2005: from 49:1 in 2000 to 57:1 in 2005. Since 2006, the pupil teacher ratio decreases slightly. In order to solve the shortage of classrooms and teachers, large numbers of schools have introduced double shifts in the lower grades, thereby effectively reducing vital contact time.

There are, moreover, considerable differences between schools and regions. The lower grades (1-4) have high pupil teacher ratios in comparison with the higher grades. The allocation of teachers is pedagogically unsound. Pupil teacher ratios are significantly higher in remote rural areas than in urban areas. Especially community schools, which contributed most to the overall increase in enrolment, face shortages. Book pupil ratios in those schools are also much lower than in GRZ schools or (especially) private schools.

Conclusions

BESSIP and MoESP drew large investments into the (basic) education sector. The substantial contributions made by cooperating partners have been essential. Between 2000 and 2005, approximately 32% of the budget for basic education was financed externally. Private and community schools contributed to the growth of the number of schools as well.

In a way, a successful investment policy undermines its own success: the purpose of more teachers and more classrooms is to reduce pupil teacher ratios and pupil classroom ratios, but at the same time these developments attract new entrants. Additional investments are still needed to cope with the severe shortages of teachers, classrooms and books. In addition, the allocation of the scarce resources must be improved. Unbalanced allocation of teachers, classrooms and books leads to dramatic differences in pupil teacher ratios, pupil classroom ratios and pupil book ratios. In rural areas, the infrastructure of many schools (particularly community schools) is poor, including a high percentage of temporary classrooms.

5 Outcomes: access

5.1 Introduction

The previous chapter focused on investments in teachers, classrooms and instructional materials between 2000 and 2005/2006. This and the following chapter evaluate the various results in terms of outcomes: the effects on access and learning achievement. This chapter focuses on enrolment and enrolment rates (5.2), dropout (5.3), repetition (5.4) and completion (5.5). The last section provides a summary and several conclusions.

5.2 Enrolment

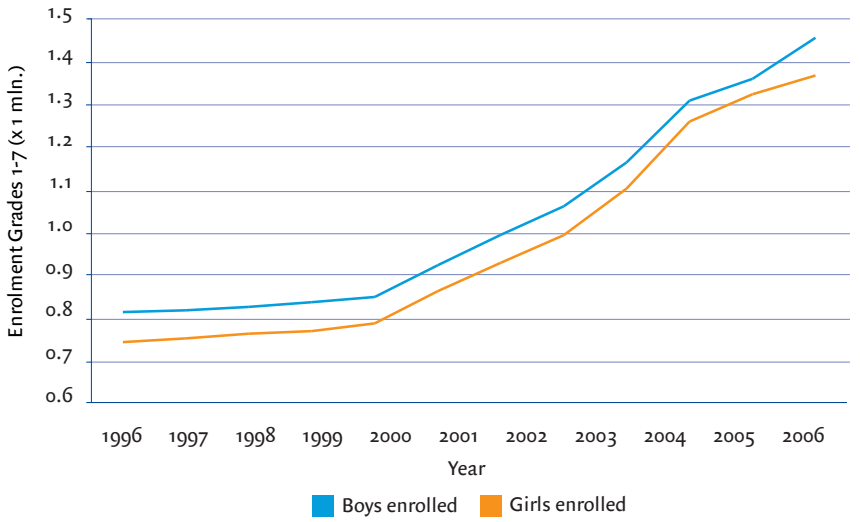
5.2.1 Development of enrolment

During the 1990s, the MoE was unable to expand the necessary educational infrastructure in line with the rapidly growing school-age population as a result of the economic situation and heavy debt burden. Due to a lack of government support, schools were forced to raise their fees. Many pupils left school because their parents were no longer able to afford these fees (Mwansa et al., 2004). Other factors negatively affecting school attendance were distance to the school, lack of facilities (especially in the higher grades), heavy workload at home and (for girls) pregnancies and early marriages as well as sexual harassment and discrimination at school. Low retention, caused by dropout (especially of girls), significantly reduced enrolment rates. In 1990, approximately 1.55 million children went to primary school. In 1999, this figure had increased only slightly, to a mere 1.60 million. Based on the population growth in the same period, much higher enrolment figures might have been expected.

From 2000 onwards, education policy contributed to an enormous growth of the enrolment rate. Between 2000 and 2006, the total number of pupils in grades 1-7 increased from 1.6 million to 2.7 million while the total enrolment in basic education (grades 1-9) grew from 1.8 million to 3.0 million. In the context of the

MoESP, the ministry and its cooperating partners had aimed for an enrolment of 2.3 million at the lower and middle basic levels in 2007. This figure had already been exceeded in 2005 (2.6 million). Figure 5.1 illustrates the development of enrolment between 1996 and 2006.

Figure 5.1 *Enrolment in grades 1-7 by gender (1996-2006)*



Source: MoE (several publications).

In February 2002, president Levy Patrick Mwanawasa of Zambia announced Free Basic Education at grades 1 to 7. This measure was implemented immediately. A large increase in enrolments in the years 2002 and 2003 was therefore to be expected. In other countries, including Malawi and Uganda, the introduction of Free Basic Education had had an enormous effect. In Uganda, enrolments increased from 2.6 million to 5.3 million pupils in 1997 (IOB, 2008). In Malawi, primary school enrolment jumped from 1.6 million in 1993 to over 3 million after the introduction of free primary education (Mwansa et al., 2004). Despite the impressive growth of enrolments, a comparable development did not occur in Zambia.

This can be explained by a number of factors. First of all, the implementation of BESSIP in 1999 had already caused a significant growth of enrolments between 2000 and 2002. In 2000, the government had already legislated a fixed cash grant to every school, thereby reducing the costs for the parents (Das et al 2004, p. 2). Among rural schools, these grants represented 66% of household education expenditures for the lowest wealth deciles and 19% for the top wealth decile. These

grants therefore created the possibility for the lowest wealth deciles to send their children to school. A more important explanation, however, is that after the introduction of FBE many school applicants were turned away because of a lack of sufficient school places (Mwansa et al., 2004). Schools did not have enough classrooms, teachers and desks to accommodate the increase in enrolments, which was enormous in many schools. According to a study conducted by Mwansa et al., 55% of rural schools and 47% of urban schools lacked adequate classroom accommodations. Approximately 83% of the schools reported a shortage of school desks. Other schools limited the number of pupils because of their misinterpretation of policy guidelines. For instance, the New Breakthrough to Literacy Programme, which was part of the Primary Reading Programme (see chapter 8), prescribed a maximum of forty pupils in one classroom.[22] As a result, many of the effects of Free Basic Education became visible only gradually; that is, only after investments in new school buildings, classrooms and teachers had enabled schools to admit more pupils.

Apart from BESSIP and the introduction of Free Basic Education, the growing number of community schools is also an important explanation for the growth of enrolments between 2000 and 2005 (though BESSIP and MoESP had also contributed to the development of community schools). Under BESSIP, 579 community schools received school grants and support in the form of teaching and learning materials. In several cases, districts seconded teachers. Under the MoESP, support for community schools was funded from the sector pool.

In 1996, there were approximately 55 community schools; by 2000, their number had grown to an estimated total of 900. In 2006, the annual school census counted 2,700 community schools. Community schools account for a large part of the increase in basic school enrolment (including grades 8 and 9) between 2000 and 2005. In 2000, approximately 7% of the pupils were enrolled in community schools; in 2006 this percentage had increased to almost 16%. In 2000, approximately 120,000 pupils were enrolled in community schools; by 2006 this number had grown to almost 470,000. Between 2000 and 2006, total enrolment in basic schools (grades 1-9) increased from 1.8 million to 3.0 million. Community schools accounted for 30% of this increase. Another 14% of the total growth is explained by the growth (and improved inclusion) of private schools, schools led by churches

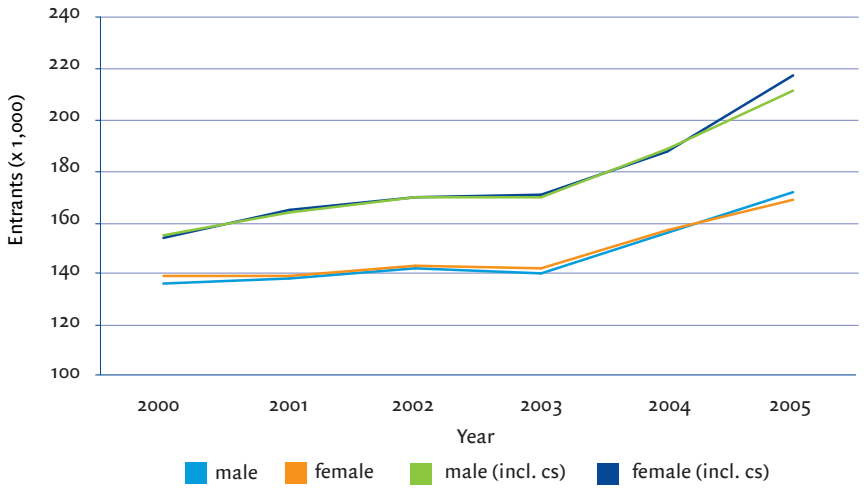
22 During a field visit in 2007, the inspector instructed the head teacher of a school that had more than 85 pupils per classroom to restrict access to the first 45 pupils.

and grant aided schools. Government schools accounted for 56% of the total growth.

5.2.2 Entrants

Figure 5.2 shows the development of the number of entrants to grade one. The two lower curves represent the development for male and female entrants (excluding community schools). The two higher curves represent estimates for community schools.[23] Between 2000 and 2003, the number of (grade 1) entrants in government schools, grant-aided schools and private schools slightly increased. Community schools showed the most substantial growth. In 2000, approximately one in 10 entrants went to a community school, against one in five in 2005. This indicates that the position of community schools has become much more important. In 2004 and 2005, there was a marked increase in the number of entrants to other school types as well. In 2005, the number of female entrants was almost 2% higher than the number of male entrants.

Figure 5.2 *Male and female entrants (2000-2005)*



Source: MoE (several publications) / computation IOB.

Large numbers of children do not enter basic education at the appropriate age (see table 5.1). Approximately 7% are too young, whereas 28% are nine years or

23 The EMIS database did not provide community school entry figures for 2000-2003, so these figures were estimated based on the development of total enrolments.

older. More than one in four children enters grade 1 at age eight. Moreover, the figures suggest that increasingly more children enter grade 1 at age eight or older.

Table 5.1 *Entrants to grade 1 by age (2000-2005)*

	2000	2001	2002	2003	2004	2005	2005 (community schools)
Male							
<7	8%	8%	8%	7%	7%	6%	13%
7	41%	41%	39%	37%	36%	37%	34%
8	27%	27%	28%	27%	27%	28%	25%
>8	24%	24%	25%	29%	30%	30%	28%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Female							
<7	10%	10%	10%	9%	8%	7%	15%
7	43%	44%	42%	39%	38%	39%	34%
8	26%	26%	27%	27%	27%	28%	24%
>8	21%	19%	21%	26%	27%	26%	26%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: EMIS, 2000-2005.

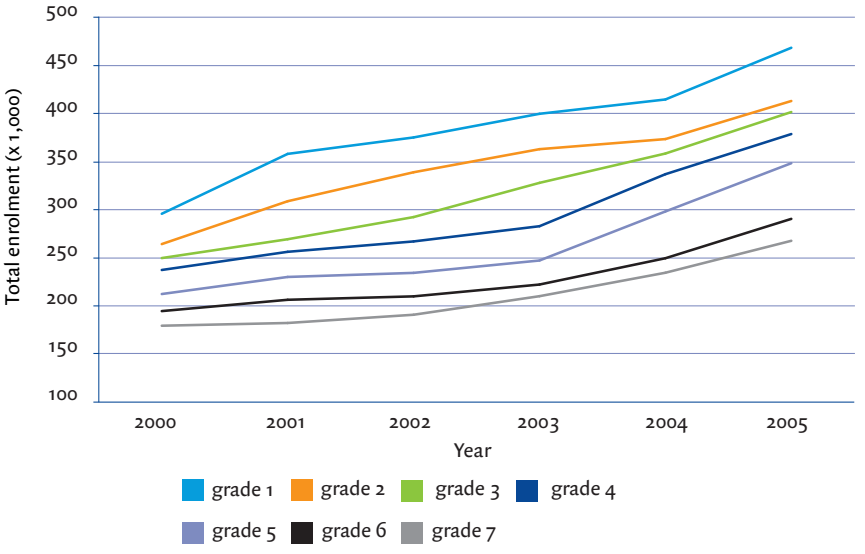
Figures for 2000-2005 do not include community schools because the required data were not available for the older years. A comparison between the intake rates of community schools and other schools in 2005 shows that, on average, there are no large age differences. The average age of entrants is 7.9 for boys and 8.0 for girls.

Though the new pupils entering grade 1 were the main contributors to the increase in total enrolment, there were other causes as well. Numerous pupils who had left school because their parents could no longer afford the school fees, retuned after the implementation of FBE. Most of these pupils (66%) lived in rural areas (Mwansa et al., 2004, p. 22). In rural areas, pupils returning to school accounted for almost 10% of the total enrolment; in urban areas this was 5%. Mwansa et al. conclude that cost barriers to education were most pronounced in rural areas.

Children going to school, Mantumbusa basic school, Mansa, Luapula. Photo Vincent Snijders.

Figure 5.3 represents an estimate of the development of the total enrolment by grade. The figure shows that starting in 2000, there has not only been a marked increase in the number of pupils at grade 1, but also at grades 2 and 3. Since 2003, the number of pupils in grades 4-7 has significantly increased as well.

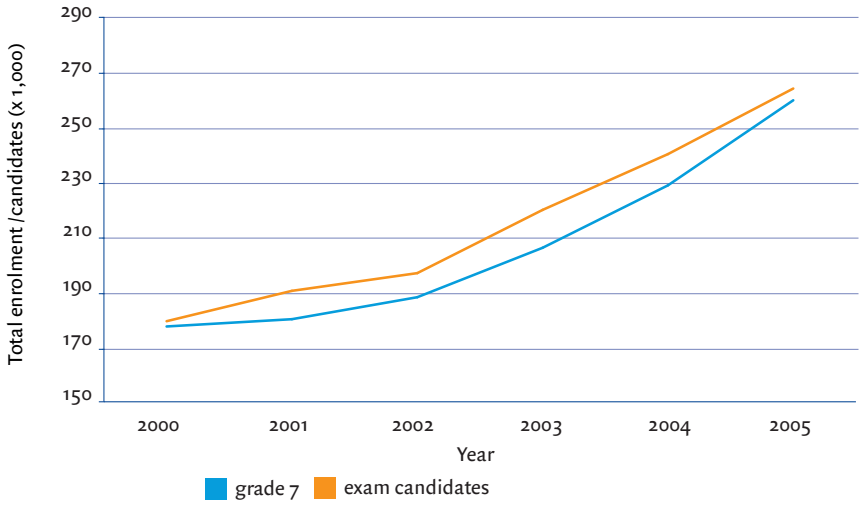
Figure 5.3 *Development of total enrolment by grade (2000-2005)*



Source: EMIS / computation IOB.

One might have expected that the increase in enrolment that started in 2000 would not have an immediate effect on the total enrolment at the higher grades. However, EMIS figures, confirmed by grade 7 examination figures, show that the period between 2000 and 2005 witnessed a marked increase in enrolment at all levels (see figure 5.4).

Figure 5.4 *Development of total grade 7 enrolment and examination candidates (2000-2005)*



Source: EMIS.

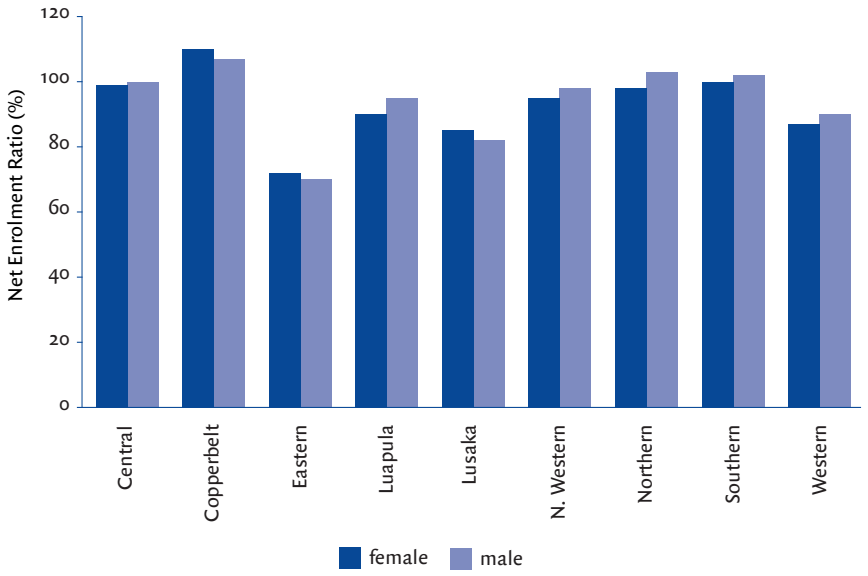
5.2.3 Net enrolment ratios

The large increase in enrolments resulted in a large improvement of enrolment ratios. According to figures of the Ministry of Education, based on the annual school census, the net enrolment ratio (NER) improved to more than 95% in 2005. Differences between provinces appear to be high, however. The figures from the annual school census suggest that male NERs in Central, Copperbelt, Northern, and Southern provinces have grown to over 100%. At the district level, figures are occasionally even higher. The low figures for Lusaka can be explained by the fact that the private schools in that province did not participate in the Annual School Census. Other countries (including Uganda) witness the same problem.

Net enrolment ratios for primary education (grades 1-7) are generally even higher and for several provinces they reach levels above 100%. These figures reflect several problems regarding the calculation of gross and (especially) net enrolment rates:

1) Enrolment ratios can only be based on reliable estimates of the population between 7 and 13 years of age. The population census in Zambia dates from 2000 and it is unlikely that its data on different age groups are still reliable due to migration.
2) School census data must be inclusive and accurate. In practice, disaggregated enrolment figures may be biased as a result of over- and underreporting. At the national level, these two opposite factors may neutralise each other, but not at the local level.
3) The computation of net enrolment ratios is based on the assumption that schools accurately report the age of their pupils. This assumption is not necessarily correct. Annex 4 describes the age distribution of pupils in the MoE database and ECZ examination data. A comparison between these two data sets shows that the age of pupils indicated by the EMIS database is slightly too young. According to the ECZ data, approximately 23% of the pupils sitting the exam are younger than 13; according to EMIS data this is 28%.

Figure 5.5 *Net Enrolment Ratios (grades 1-7) by province (2005)*



Source: ESB, 2005.

5.2.4 Equity

BESSIP sought to improve the enrolment of girls and vulnerable children with special needs. In addition to introducing Free Basic Education, the aim was to improve the enrolment of girls by sensitising their parents and introducing

measures to prevent the dropout of girls. As early as 1995, the MoE initiated the Programme for the Advancement of Girls' Education (PAGE) in two districts (Lusaka and Chipata). This programme has successfully promoted access of girls. By 2002, the programme had extended to all 72 districts and to 1,571 basic schools (BESSIP Completion Report, 2004, p. 40). Sensitisation campaigns emphasised the importance of girls' education. Moreover (and no less important) the lack of places in basic schools was one of the major causes for the gap between boys and girls. If there were not enough places, girls were discriminated against. In 1996, the enrolment of boys in primary education was 9% higher than the enrolment of girls; in 2002 this figure had been reduced to 7% and in 2005 it was 4%. The latest figures of (new) entrants confirm that girls are catching up with boys in primary education.

There are, however, considerable differences by grade and by province (see table 5.2). In most provinces, gender parity is close to 1 at the lower grades (1-4), but it drops at the higher grades. Especially in the Copperbelt, Eastern Province, Lusaka and North-Western Province, the enrolment of girls is relatively low above grade 4. Pregnancies and early marriages are major causes of dropout.

Table 5.2 *Gender Parity Index by grade and province (2005)*

	Grade 1-4	Grade 5-7	Grade 8-9	Grade 10-12
Central	1.06	0.98	1.00	0.97
Copperbelt	1.03	0.83	0.75	0.59
Eastern	0.98	0.80	0.73	0.72
Luapula	1.05	1.04	0.97	0.91
Lusaka	0.98	0.83	0.74	0.67
N. Western	0.96	0.77	0.74	0.66
Northern	0.99	0.91	0.86	0.76
Southern	0.97	0.88	0.85	0.80
Western	0.97	0.88	0.85	0.80
Zambia	**1.00**	**0.89**	**0.87**	**0.81**

Source: ESB, 2005.

Orphans received special attention as well. Before 2000, many orphans were not enrolled in primary education. Famine and lack of parental encouragement are major reasons for the high absenteeism and dropout rates among orphans. One of the successes achieved by Free Basic Education was that between 2002 and

2003, the number of orphans enrolled in basic education increased by 32% (from 214,000 in 2002 to 312,000 in 2003; see BESSIP Completion Report, p. 18).

5.2.5 Impact

This section provides an estimate of the effects policy changes have had on the development of total enrolment in basic education. The main factors appear to be:

1) the growth of the school-age population (7-15 year-olds);
2) the introduction of Free Basic Education and investments in the context of BESSIP and the MoESP;
3) the growing number of community schools and private schools.

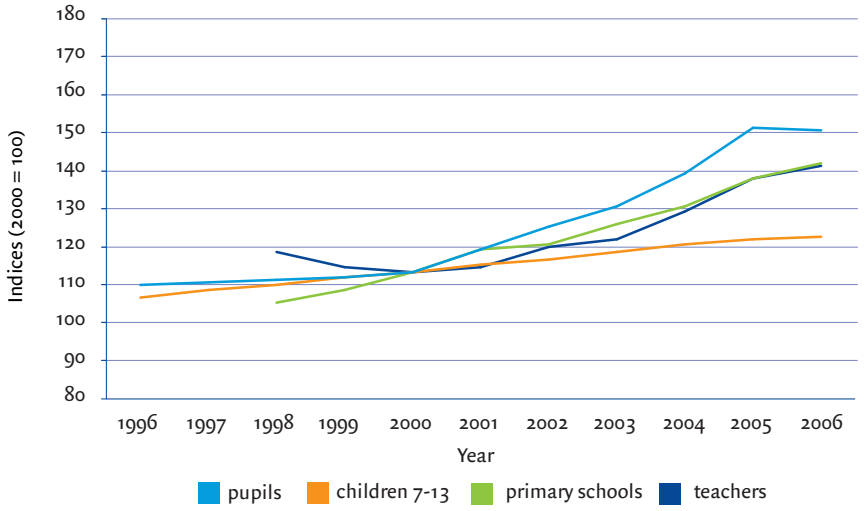
Unfortunately, no detailed information is available on the pre-2000 period to conduct an analysis of the effects of policy changes. The analysis therefore only includes changes between 2002 and 2005.

Part of the total growth may be explained by the growth of the school-age population. Figure 5.6 illustrates the development of enrolment between 1996 and 2006 and includes indices for several indicators that may explain this development: the total numbers of children (ages 7-13), schools and teachers. The reversal of the trend that took place in 2000 reflects the effectiveness of BESSIP and later MoESP. The figure shows that the growth of total enrolment between 2000 and 2005 cannot be exclusively explained by the population growth. The development of the number of schools and teachers seems to be a better explanation.

The main part of the total growth (56%) is explained by the growth of the number of pupils within existing schools. Between 2000 and 2005, the number of pupils within existing basic schools grew by 32%. Schools that were included in the EMIS database for the first time account for 44% to the total growth.[24] The highest growth was achieved by community schools and private schools, though the total number of GRZ schools increased as well.

24 A number of these schools were not really new. They were newly included in the school census, however. A major part of the total growth between 2004 and 2005 is explained by the fact that the school census covered more schools, particularly community schools.

Figure 5.6 *Development of enrolment (grades 1-7), children 7-13, schools and teachers (1996-2006)*



Source: MoE (several sources) / computation IOB.

The effectiveness of the investments in basic education has been analysed by two regression analyses, both conducted at the district level. Districts were chosen as the basic unit of analysis, because of the availability of reliable estimates of the numbers of children (aged 7-15) at that level. The first analysis includes all GRZ schools. This analysis offers an estimate of the effects achieved by building new schools. A potential problem is the relatively high correlation between changes in the number of schools, the number of classrooms and the number of teachers. Therefore, this section introduces a second analysis based on aggregates within (GRZ) schools.

The first analysis, regression (1), aggregates the number of pupils, schools, teachers and classrooms within a particular district and subsequently computes changes over time at the aggregate level. The second analysis computes changes over time directly at the school level and then aggregates the results at the district level. Consequently, schools that are included in the population census in year t, but not in year t-1, are included in the first analysis, but not in the second. This explains the difference between the two analyses: the first regression gives an indication of the effect of new schools, whereas the second analysis explains the growth within existing schools. In formula:

Regression (1): $\Delta P = P_t - P_{t-1} = \Sigma P_{t,i} - \Sigma P_{t-1,i}$
Regression (2): $\Delta P = P_t - P_{t-1} = \Sigma (P_{t,j} - P_{t-1,j})$

The difference between the two formulas is that the second does not include new schools and therefore reflects the effects of an increase in the numbers of classrooms and teachers.

According to the results of the regression analysis represented in table 5.3, the average effect of the construction of a new school is an enrolment increase of 225 pupils. In addition, a new classroom leads to an increase of 24 pupils and a new teacher means eight more pupils. Furthermore, there is a trend of an average growth of 19 pupils per school. The average estimated effect caused by the growth of the number of pupils is approximately 45%. The coefficient is not significant, which means that there are notable differences between districts (the standard error is high). This suggests that population estimates (at the district level) are not particularly accurate.

Table 5.3 *Variables explaining the increase in enrolment (2003-2005; GLS) (1)*

Variable	Coefficient	Standard error (robust standard errors)	z-score	
Population (ages 7-15) (t- (t-1))	0.45	0.28	1.58	
Schools (t- (t-1))	225	61	3.69	**
Classrooms (t- (t-1))	24	10.9	2.22	*
Teachers (t- (t-1))	7.8	2.4	3.24	**
Schools (t)	19	5.2	3.62	**
Constant	204	229	0.89	

N = 210
R^2 = 0.69
Wald Chi^2 = 555
* significant at p<0.05; ** significant at p<0.01.
Source: EMIS, 2000-2005.

Regression 2 (table 5.4) shows comparable results for the effect of additional teachers. The estimated effect of additional classrooms is smaller.

Table 5.5 presents an estimate of the contributions of the different factors to the total enrolment growth. Population growth is one of the most important factors. The growth of the number of 7-15 year-olds explains approximately 30% of the total enrolment growth. It must be stressed, however, that population growth alone cannot account for this enrolment growth. Between 1990 and 2000, total enrolment remained relatively stable in spite of the population growth. The conclusion must therefore be that the investments in education have also made a significant contribution to this growth.

Table 5.4 *Variables explaining the increase in enrolment (2003-2005; GLS) (2)*

Variable	Coefficient	Standard error (robust standard errors)	z-score	
Population (7-15) (t- (t-1))	0.28	0.14	1.92	
Classrooms (t- (t-1))	16.7	4.3	3.91	**
Teachers (t- (t-1))	8.4	1.7	4.84	**
Constant	634	123	5.15	**

N = 216
R^2 = 0,29
Wald Chi^2 = 415
* significant at p<0.05; ** significant at p<0.01.
Source: EMIS, 2000-2005.

Table 5.5 *Estimates of factors that have contributed to enrolment growth*

	Number of pupils	Percentage
Total number of pupils in 2005	2,850,000	
Total number of pupils in 2000	1,800,000	
Total growth	1,050,000	
Population growth	320,000	30
Community schools	220,000	21
Private schools / church schools	130,000	12
New schools (400)	90,000	9
New classrooms (4,000)	80,000	8
More teachers (7,000)	60,000	6
Free Basic Education	150,000	14
Total	**1,050,000**	**100**

Source: MoE / EMIS / computation IOB.

Had the total growth been restricted to 320,000, enrolment rates would have remained stable. But the additional enrolment of approximately 730,000 pupils contributed to a spectacular increase. The investments made by the GRZ, the communities and private organisations stimulated the entrance of large numbers of new pupils. Community schools contributed to approximately 21% of the total growth and private schools and schools managed by churches account for 12% of the total growth.[25] Free Basic Education and MoE investments account for the other

25 The figures for community schools and private/church schools differ from the figures mentioned in section 5.2.1 because they have been corrected for the effect of population growth.

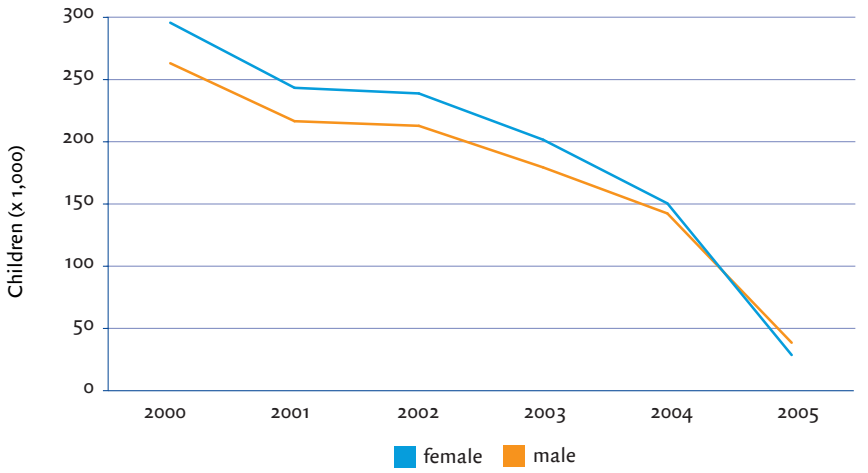
37%. This figure does not seem particularly high, but it should be noted that it concerns the additional effect of investments in the education sector, on top of the investments made to stabilise enrolment rates. For instance, after the introduction of Free Basic Education, nearly 12,000 pupils (in a sample of 352 schools) who had dropped out because their parents could no longer afford their fees returned to school. This group represents approximately 7.4% of the pupils or approximately 150,000 pupils.

5.3 Out-of-school children and dropout

5.3.1 Development

Between 2000 and 2005, the number of out-of-school children aged between 7 and 13 declined sharply. In 2005, the number of out-of-school girls was no longer higher than the number of out-of-school boys (see figure 5.7).

Figure 5.7 *Out-of-School children (2000-2005)*

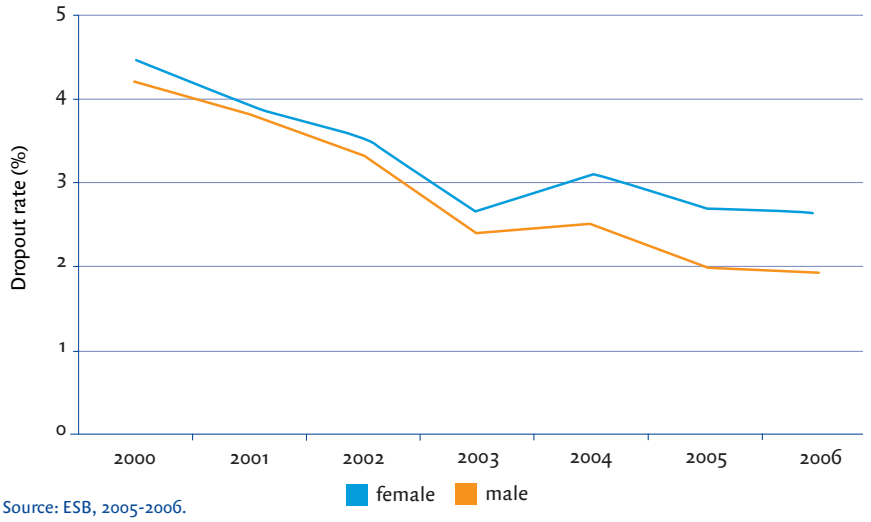


Source: ESB, 2005.

Not only increased access accounts for this result. The dropout rate also declined during the same period.[26] Female dropout rates went from 4.4% in 2000 to 2.3% in 2005 and male dropout rates from 4.2% to 1.9%. Compared to other countries, Zambia's dropout appears low. The steep reduction in 2003 is caused by the abolition of school fees.

26 'Dropout rate' is the proportion of pupils who leave the system without completing a given grade in a school.

Figure 5.8 *Dropout rates (2000-2006; grades 1-7)*



Source: ESB, 2005-2006.

Regional differences are found as well. Dropout is much higher in rural than in urban areas. Moreover, dropout is relatively high at the middle basic level.

Table 5.6 *Dropout by grade, gender and location (2005)*[27]

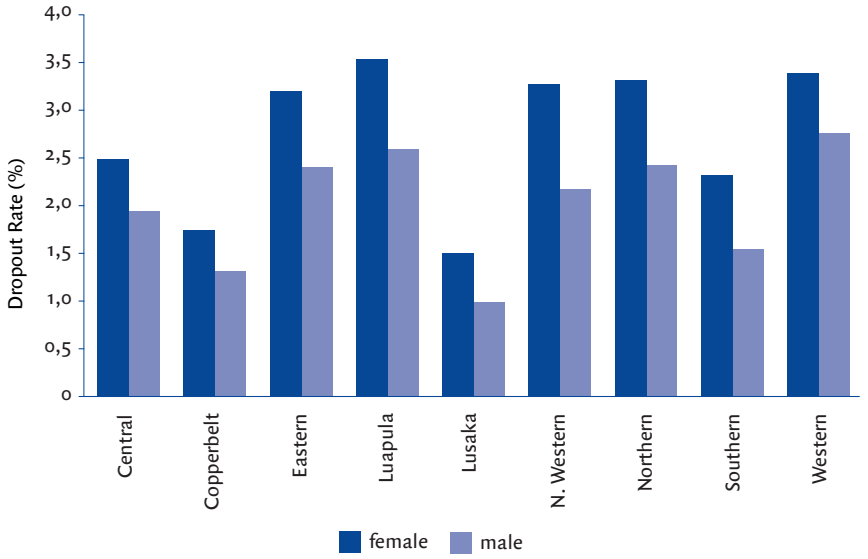
	Rural area		Urban area	
	Male	**Female**	**Male**	**Female**
Grade 1	1.8%	1.8%	0.6%	0.6%
Grade 2	2.1%	2.2%	0.9%	0.9%
Grade 3	2.0%	2.2%	0.8%	0.9%
Grade 4	2.2%	3.0%	1.1%	1.2%
Grade 5	2.7%	4.1%	1.2%	1.4%
Grade 6	2.9%	5.7%	1.2%	1.5%
grade 7	3.4%	9.0%	1.5%	2.3%
Average	**2.4%**	**3.4%**	**1.0%**	**1.2%**

Source: EMIS / computation IOB.

In Lusaka Province and the Copperbelt, dropout is markedly lower than in other provinces, most notably Eastern Province, North-Western Province, Luapula, Northern Province and Western Province.

27 The table is based on EMIS data for 2005. Dropout figures of the 2005 census have been linked to enrolment figures for 2004.

Figure 5.9 *Dropout Rates by province (2006; grades 1-7)*

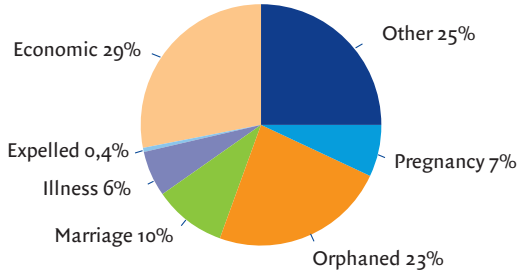


Source: ESB, 2006.

5.3.2 Impact

The annual school census provides information on the reasons for dropout, as seen from the schools' perspective (see figure 5.10).

Figure 5.10 *Reasons for dropout as a percentage of total dropout (grades 1-7)*



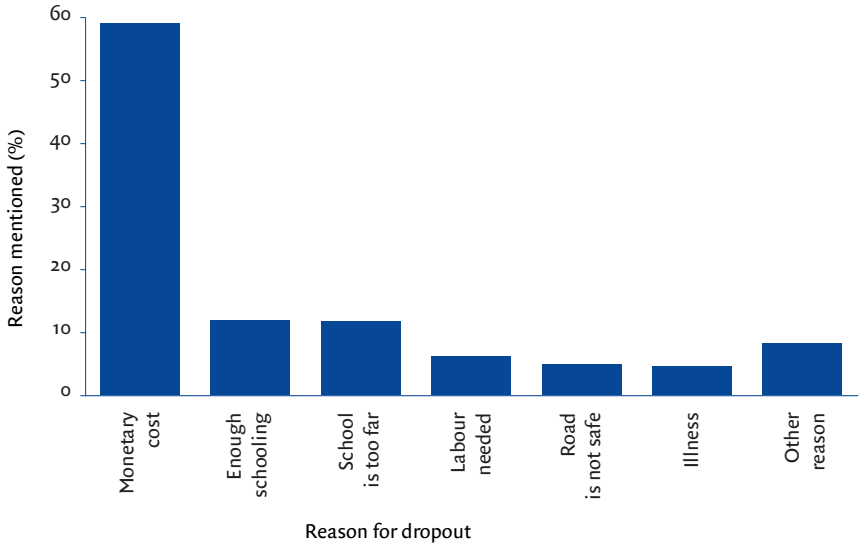
Source: MoE / EMIS.

According to this information, roughly 70% of the pupils leave school because of economic reasons, marriage (girls), loss of parents, and pregnancy. This information indicates that socio-economic characteristics (household and community characteristics) are highly relevant. Still, 25% of the pupils drop out of school for other reasons. Several of these reasons could be school specific. For instance, if a

school does not have a sufficient number of teachers, parents may stop sending their children to school because they do not feel they are learning much anyway.

It is possible that the reasons stated in the annual school census are biased, as they are given by the school, and not by the pupils or their parents. The DHS Ed survey of 2002 contains information on the reasons for dropout for several groups of children (see figure 5.11). In the DHS, the reasons for dropout are given by the children's *parents*. Reasons can be stated more than once, so the total figure may be higher than 100%. The principal reason is a lack of money. This reason was mentioned by an average of 59% of the parents. It appears to be more important in urban areas (76%) than in rural areas (42%). Other arguments are that the child has had enough education (12%) and long distance to the school (12%). In rural areas, the latter argument is more important (16%) than in urban areas (2%).

Figure 5.11 *Reasons for primary school dropout*



Source: CSO, Zambia.

Although head teachers do not mention school-related factors, the annual school census provides the opportunity to analyse these factors by including other variables. Table 5.7 presents the results of this analysis that relates dropout to school-specific and socio-economic variables. The analysis is conducted at the school level and based on data for 2005.

Grade 1 pupils, Kateshi basic school, Kasama, Northern Province.

The analysis includes dummy variables, or 'dummies', for the provinces. These variables have the value 1 if a particular school is in that province and 0 if it is not. Lusaka is not included. Consequently, the results show the (average) difference of the province compared to dropout rates in Lusaka, after correction for all other variables in the model. Similarly, the urban 'dummy' denotes the difference with rural schools. The squared poverty gap (at district level) is based on a poverty map of Zambia constructed by CSO Zambia in 2007 (see Annex 5). School and teacher characteristics include the school's size, teacher pupil ratio, percentage of trained teachers, the head teacher's professional qualifications and running agency. The percentage of orphans is included as a specific pupil characteristic.

Three other variables are the head teacher's qualification level, parents' education level (measured at ward level, see Annex 5) and the repetition rate. The repetition rate is included in order to test the hypothesis that there is a trade-off between repetition and dropout at the school level. Teachers may choose to allow repetition in order to prevent dropout. A fieldtrip to schools in the Northern Province confirmed this hypothesis: teachers defend repetition by claiming that there is no point in promoting a child if it lacks the knowledge to function effectively at the next grade. According to them, repetition helps to prevent dropout. They claim that repeaters receive extra attention (for instance after official school hours). According to other

studies, repeaters and their parents may become disappointed and discouraged, which increases the risk of dropout.

Table 5.7 *Effect of school and socio-economic variables on dropout rates*

Variable	Coefficient	Standard error	t-value	
Teacher pupil ratio	-0.65	0.18	-3.6	**
Teacher education	-0.004	0.005	-0.9	
Teacher training	0.001	0.006	0.2	
Head teacher qualification	0.001	0.001	1.5	
School size (log number of pupils)	-0.01	0.0	-4.4	**
Availability of toilets for girls	0.08	0.09	0.8	
Repetition rate	0.05	0.02	2.9	**
Proportion orphans	0.09	0.02	5.2	**
Private schools	0.01	0.01	0.7	
Community schools	0.006	0.008	0.7	
Grant-aided	0.02	0.01	2.4	*
Squared poverty gap	-0.03	0.03	-0.8	
Parents' education	-0.006	0.002	-2.5	*
Urban	0.004	0.004	0.9	
Copperbelt	0.007	0.005	1.5	
Central	0.003	0.005	0.7	
Southern	-0.004	0.005	-0.8	
Luapula	0.018	0.006	3.2	**
Northern	0.009	0.006	1.5	
Eastern	0.009	0.006	1.5	
North-Western	0.017	0.006	2.6	**
Western	0.003	0.006	0.4	
Constant	0.10	0.02	4.7	**

N = 2,000
R^2 adj = 0.10
F = 10.3
* significant at p<0.05; ** significant at p<0.01.
Source: MoE / EMIS.

First of all, the total explained variance is rather low (R^2 adj= 0.10). This confirms the relevance of other variables. Second, dropout rates are lower in larger schools. Third, the teacher pupil ratio has a significant negative effect on dropout rates: schools with high pupil teacher ratios show high dropout rates. A significant relation between the educational background of teachers, teacher training and dropout is not found. This does not mean that teacher training is not important. It simply shows that in 2005 teacher training was not directed at reducing dropout. Moreover, there is no significant relation between school type and dropout rate (taking each of the other factors included in the model into account).
Surprisingly, welfare level (as measured the squared poverty gap) does not have a significant effect on dropout rates, even though more than 25% of pupils dropping out of school indicate to leave for economic reasons. Furthermore, urban schools do not significantly outperform rural schools. After correction for differences between pupil teacher rates, welfare level, parents' educational background, urban rural differences turn out to be not significant. The educational background of parents appears to be an important factor explaining dropout rates: children whose parents are better educated drop out less frequently. Orphans run a relatively high risk of dropping out of school. Finally, there is a positive correlation between repetition and dropout: schools with higher repetition rates also produce higher dropout rates. This finding contradicts the hypothesis that repetition prevents dropout. This may be true in specific cases but not in general.

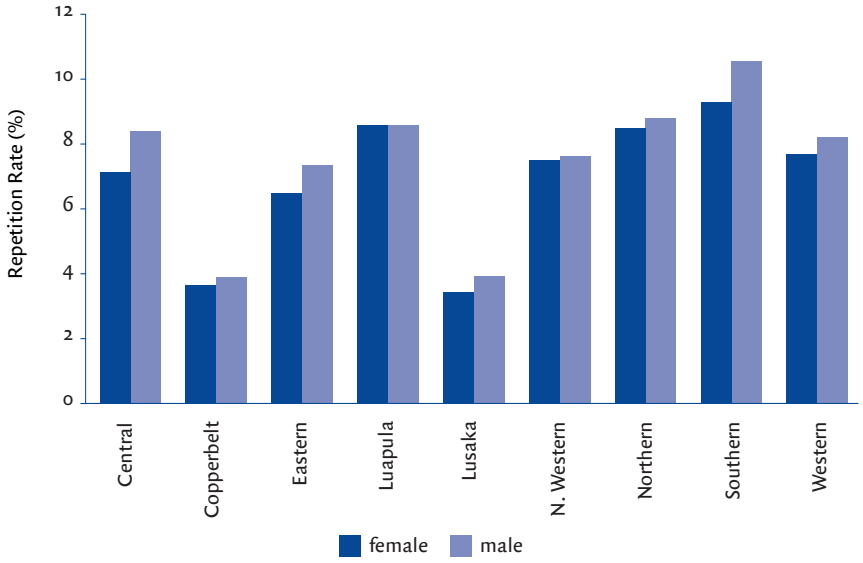
5.4 Repetition

5.4.1 Description

Each year, approximately 6-7% of the pupils in basic schools repeat their class. This percentage has been relatively stable over time, with slightly higher repetition rates for boys than for girls. Repetition rates are slightly higher in grades 8-9. In 2005, 7.4% of the Zambian boys in grades 1-9 repeated and 6.7% of the girls. In the context of BESSIP, the government formulated its target to reduce repetition rates to zero by 2005 (for the middle basic level). This objective was not achieved, partly because there was no explicit policy to realise this target. Nevertheless, repetition rates are relatively low in comparison to Uganda, which has a system of automatic promotion. Moreover, the ambitious targets set by BESSIP may not be realistic in view of its short time frame. A sharp increase in enrolment inevitably leads to higher pupil teacher and pupil classroom ratios, while at the same time children from the most backward regions gain access to the education system. Therefore, stabilisation of repetition rates in the context of expanding enrolment appears to be a considerable achievement.

Figure 5.12 provides an overview of the percentages of repeaters in different provinces. Repetition rates for Lusaka and Copperbelt are significantly lower than other provinces. Southern Province has the highest repetition rates. Overall, repetition rates appear to be slightly higher for boys than for girls. Evidence suggests that for girls negative results are more likely to lead to dropout (see the previous section).

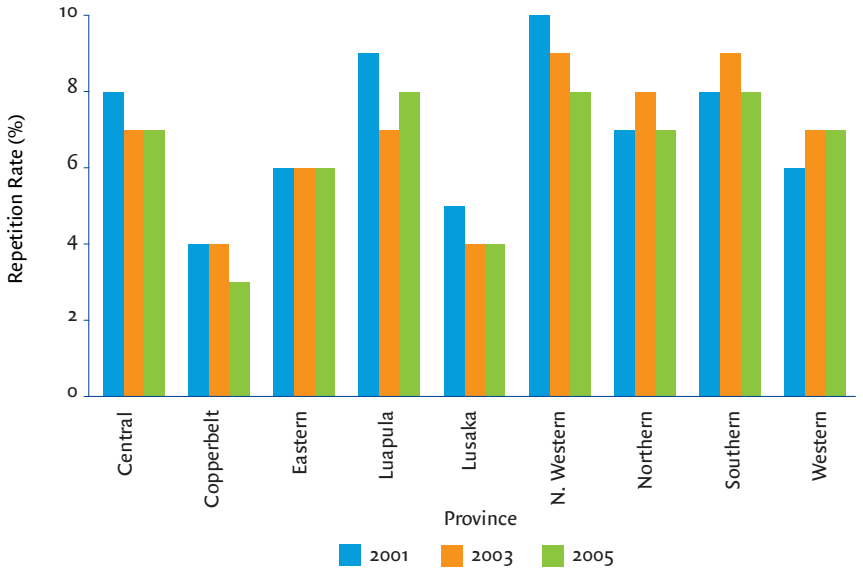
Figure 5.12 *Repetition Rates of grades 1-7 by gender and region (2005)*



Source: ESB, 2005.

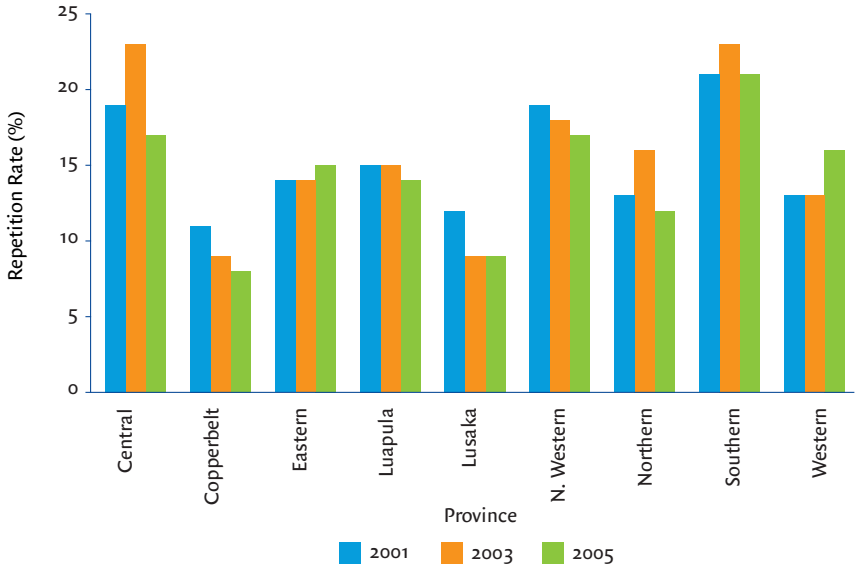
The number of repeaters is relatively low between grades 1 and 6, but suddenly rises in grade 7. It seems safe to assume that this rise in repetition is related to the entry requirements for secondary education. Children who want continue to the upper basic level must pass minimum thresholds, which are labelled the 'cut off point'. These thresholds change every year because they are determined by the number of places available (see chapter 6). As a score below the cut off point could imply the end of the school career, children aim to improve by repeating.

Figure 5.13 *Average percentage of repeaters in grades 1 to 6 per province for the years 2001, 2003 and 2005*



Source: MoE / EMIS database.

Figure 5.14 *Average percentage of repeaters in grade 7 per province for the years 2001, 2003 and 2005*



Source: MoE / EMIS database.

In 2001, repetition rates for grades 1-6 in Central and Northern Provinces were relatively high but they now show a decreasing trend. In Western Province, the increase in repetition rates is considerable. Furthermore, Copperbelt and Lusaka, the two provinces with the highest percentage of urban schools (both approximately 60% versus a maximum of 20% in the other provinces), show lower repetition rates than the other provinces. Repetition rates in grade 7 are particularly high in Central and Southern Provinces and, again, lowest in Copperbelt and Lusaka.

5.4.2 Impact

Repetition is costly and many scholars question its benefits. Moreover, high repetition rates may be an indicator of quality problems at the school level. A high pupil teacher ratio, for instance, may lead to a high repetition rate (thereby raising the pupil teacher ratio even further). Repetition may be determined by learning ability, but not exclusively. Differences between schools may play a role as well. Table 5.8 presents the results of a regression analysis that relates repetition in grade 7 to school-specific and socio-economic variables.

The main finding is that large schools and schools with more teachers have significantly lower repetition rates.[28] Smaller schools particularly produce higher repetition rates at grade 7. Second, orphans have a higher chance of repeating at grade 7 than children who still have both their parents. Third, the poorest districts have the highest repetition rates. All other factors taken into account, Southern Province has relatively high repetition rates (see chapter 5 as well). The other regional characteristics are not significant and private and grant-aided schools do not have lower repetition rates than public schools (at grade 7).

What are the consequences of repetition? According to the commonly held opinion repetition does not lead to improved school performance and is therefore a waste of valuable school resources. Several studies find that repeaters achieve lower test and examination results than pupils who did not repeat, which leads many authors to conclude that repetition does not help. However, this conclusion is based on the neglect of selection effects (see chapter 2).

28 Theoretically, a higher repetition rate at grade 7 leads to a higher pupil teacher ratio. However, the pupil teacher ratio is measured at the school level and includes all grades. Therefore, the impact of grade 7 repetition on the pupil teacher ratio is not relevant.

Table 5.8 *Variables explaining repetition rates at grade 7 (2005)*

Variable	Coefficient	Standard error	t-value	
Teacher pupil ratio	-1.46	0.03	-4.6	**
Teacher training	-0.01	0.01	-0.8	
Head teacher qualification	0.003	0.002	1.5	
School size (log number of pupils)	-0.06	0.01	-13.6	**
Proportion orphans	0.13	0.04	3.7	**
Private schools	-0.02	0.02	-1.0	
Community schools	-0.01	0.02	-0.4	
Grant-aided	0.002	0.02	0.1	
Squared poverty gap	0.17	0.06	2.7	**
Urban	-0.001	0.008	-0.2	
Copperbelt	- 0	0.01	-0.0	
Central	0.02	0.01	1.6	
Southern	0.05	0.01	5.0	**
Luapula	-0.02	0.01	-1.5	
Northern	0	0.01	0.0	
Eastern	-0.01	0.01	-0.8	
North-Western	-0.02	0.01	-1.8	
Western	-0.01	0.01	-0.4	
Constant	0.55	0.03	16.4	**

N = 2,353
R^2 adj = 0.22
F = 38
* significant at p<0.05; ** significant at p<0.01.
Source: EMIS, 2005.

A better method for analysing the effects of repetition is to compare the results of repeaters in a specific year (t) with their results in the previous year (t-1). It is possible to analyse the group of repeaters in grade 7 in this manner (see chapter 6 for a more extensive description and analysis of examination figures). Table 5.9 presents the examination figures of these pupils in the first year (2005) and in the second year (2006). The analysis is based on a random sample of 2,496 repeaters (1,471 boys and 1,025 girls). The average improvement is approximately 30% for boys and 35% for girls. The improvement is most significant for English, social studies and both special papers.

Table 5.9 *Average examination scores of repeaters (2005-2006)*

	Male		Female	
	2005	2006	2005	2006
English	22	29	20	28
Social Studies	22	30	20	28
Math	23	27	20	25
Science	16	19	14	17
Zambian Languages	24	29	21	26
Special Paper 1	19	26	17	24
Special Paper 2	28	37	23	33
Total Score	**139**	**180**	**123**	**166**

Source: ECZ.

Another way of establishing the effect of repetition is to compare the results of these pupils with the results of the other examination candidates in both 2005 and 2006. This excludes the (theoretical) possibility that the examination in 2006 was easier. Table 5.10 shows that this was not the case. In both years, the average score (excluding the group of repeaters) was approximately 174. In 2005, the group of repeaters had a considerably lower score (136) whereas the next year, average score of *the same group* was slightly higher than the average score of non-repeaters.

Table 5.10 *Average examination scores of repeaters and non-repeaters (2005-2006)*

	Examination 2005		Examination 2006	
	did not repeat in 2006	repeats in 2006	did not take the exam in 2005	took the exam in 2005
English	27	21	30	28
Social Studies	26	21	30	29
Math	26	22	26	27
Science	19	15	19	18
Zambian Languages	25	23	26	28
Special Paper 1	23	18	25	25
Special Paper 2	30	26	34	36
Total Score	**174**	**136**	**174**	**175**

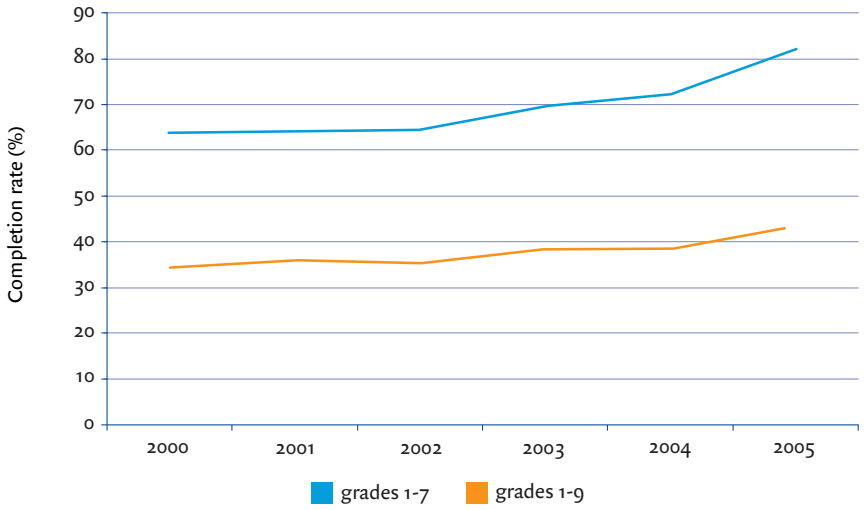
Source: ECZ (2005, 2006) computation IOB.

The conclusion is therefore that repetition is a potentially effective strategy, at least for grade 7. The analysis also shows that a comparison between the results of repeaters and non-repeaters ignores differences in learning ability and therefore leads to biased estimates.

5.5 Completion

As a result of decreasing dropout rates, completion rates increased between 2000 and 2006.[29] In 2000, no more than two out of three children completed their primary education. In 2005, this percentage had increased to 82.30 The completion rate at grade 9 is considerably lower, but increases as well: increasingly more children complete their nine years of basic education.

Figure 5.15 *Completion rates (2000-2005)*



Source: ESB, 2005.

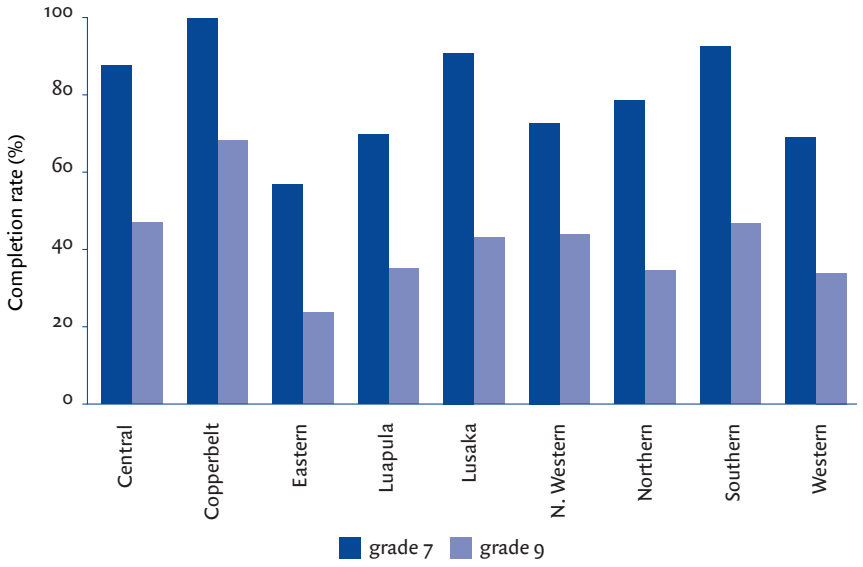
A comparison between provinces points out relatively large differences: completion rates are much higher in the Copperbelt, Central Province, Lusaka and Southern Province than in the other provinces. Especially in Eastern Province, completion rates are particularly low (below 60%). Still, overall completion rates are much higher than in Uganda, where dropout poses an enormous problem.

29 'Completion rate' is the number of students in a particular grade minus the repeaters in that grade, divided by the official school-age population for that grade. Note that reliable estimates depend on accurate figures of the school-age population for that grade.

30 According to the ESB 2006 and 2007, the completion rate has further increased to more than 90%.

Even though Zambia has a much lower population density than Uganda, its dropout rates are lower and (consequently) completion rates considerably higher.

Figure 5.16 *Completion rates by province (2005)*



Source: ESB, 2005.

5.6 Summary and conclusions

Between 1990 and 2000, total enrolment hardly grew and lagged behind the population growth. As a result, enrolment rates decreased. In 1999, 1.6 million children were enrolled in primary education (grades 1-7). By 2007, this figure had increased to 2.7 million (and from 1.8 million in 2000 to 3.0 million in 2007 for basic education or grades 1-9). This increase was not exclusively due to the effectiveness of the education policy, including the abolition of school fees in 2002, but was also caused by the growth of the number of community schools. Community schools account for approximately 30% of the increase in enrolment in basic schools (including grades 8 and 9) between 2000 and 2007. In 2000, approximately one in ten (new) entrants to grade one went to a community school against one in five in 2005. These figures illustrate the importance of community schools within the basic school system in Zambia. The analysis indicates that the main causes of the enrolment growth are the growth of the number of school-aged children, the growth of community and private schools and the investments in

schools, classrooms and teachers. The Free Basic Education policy initially did not seem to have a significant effect. However, many schools restricted admission because their classrooms were already overcrowded. As a result, the investments in schools, teachers and classrooms were a precondition for the effectiveness of Free Basic Education policy and its effects became visible only after the number of schools, classrooms and teachers had started to increase. Moreover, these investments not only contributed to improving pupil teacher ratios and pupils classroom ratios, but also induced new enrolments. The preceding chapter already concluded that successful investment policy undermines its own success because more teachers and more classrooms attract new entrants. This chapter confirms this conclusion.

In 1999, approximately one in three children did not go to school; in 2005, this figure had decreased to less than one in ten. Not only 100% enrolment, but also the closing of the gender gap in primary education is coming within reach. Girls caught up with boys. The gender parity index (female : male ratio) in primary education improved from 0.92 in 1999 to 0.96 in 2005. Parity in primary education is almost achieved. However, since 2005, the gender parity index is not improving anymore. There are, moreover, considerable differences by grade and by province. In almost every province, gender parity is close to 1 at the lower grades (1-4), but not at the higher grades. Especially in the Copperbelt, Eastern Province, Lusaka and North-Western Province, girls' enrolment rates are relatively low above grade 4.

The female dropout rate decreased from 4.4% in 2000 to 2.6% in 2006; male dropout reduced from 4.2% to 1.9% over the same period. As a result, completion rates at grade 7 increased from 67% to 82% (and, according to recent figures of the Ministry of Education, to more than 90% in 2007). The completion rate at grade 9 is markedly lower, but increasing as well. Dropout is mainly a problem in the higher grades and in rural areas. The main reasons are financial, whereas for girls pregnancy and early marriage are additional reasons for dropout. In rural areas, distance to school is an important factor. The statistical analysis shows that dropout is relatively high in small schools, schools with large numbers of orphans and in backward regions where parents are less educated. Dropout rates are relatively high in Luapula and North-Western Province. A high pupil teacher ratio leads to higher dropout. Schools with relatively high repetition rates produce relatively high dropout rates as well, which suggests that in the current situation repetition increases the risk of dropout.

An analysis of repetition rates (at grade 7) shows that repetition rates are higher in smaller schools, in relatively backward and poor regions and in Southern Province. Schools with high pupil teacher ratios also have higher repetition rates. Therefore, a lower pupil teacher ratio (i.e. more teachers) leads to a reduction of repetition. Orphans repeat relatively often and may therefore require more attention. Analysis of the achievements of repeaters in grade 7 shows that repetition may be effective: in their second year, repeaters achieved approximately 30-35% higher results. On the other hand, repetition (in grade 7) may be an effective strategy for gaining admission to grade 8.

Conclusions

Whereas the growth of enrolments in private schools and especially in community schools are important factors explaining the growth of enrolments in basic education, the government policy of Free Basic Education, in addition to the implementation of the BESSIP and MoESP investment plans, was enormously successful in raising total enrolment in basic education at the lower and middle basic levels (grades 1-7). Presently, total enrolment is higher than anticipated by the MoESP. FBE, BESSIP and MoESP not only resulted in improved access to basic education, but also contributed to a reduction of dropout. Repetition rates also decreased.

As a result of the large growth of enrolment, Zambia has taken a major step towards achieving the MDGs on education. At the middle and higher basic levels, girls' dropout rates are still too high, but the reduction of this rate is promising.

Between 2000 and 2005, cooperating partners financed approximately 32% of the MoE education expenditure, including approximately 35% of the total expenditure on basic education. Not counting the enrolment of private and community schools, they financed the enrolment of approximately 800,000 pupils.

For a further improvement of access, the GRZ needs to focus on the low enrolment rates in Eastern Province and the dropout rates in Northern en Western Province, especially regarding girls and orphans.

6 Outcomes: learning achievement

6.1 Introduction

The substantial and rapid increase in enrolment made it difficult to improve or even maintain the quality of education. Chapter 4 showed the effects on pupil teacher ratios and pupil classroom ratios, despite investments in teachers and classrooms. This chapter outlines the effects on pupils' learning achievement as measured by the national assessment tests (section 6.2) and primary leaving examinations (section 6.3). Section 6.4 gives a comparison of the development of assessment tests and examination figures. Section 6.5 analyses the impact of interventions on learning achievements. Based on this analysis, section 6.6 assesses the effectiveness of interventions.

6.2 National Assessment Tests

6.2.1 Overall picture

The main instrument to monitor progress in basic education is the National Assessment Survey (NAS) of the Zambian Examinations Council (ECZ). Every other year since 1999, the Examinations Council has organised a survey to monitor the progress of education in Zambia. These National Assessment Surveys were held in 1999, 2001, 2003 and 2006. They test the learning achievements of 20 grade 5 pupils per school in English, math and Zambian languages. The surveys cover 350-400 schools. The tests consist of 35 questions for English and 45 for math (30 and 40 questions, respectively, in 1999). After the release of the initial results, a selected group of teachers, curriculum and examination specialists and other experts define the minimum and desirable performance levels. These standards are used for the assessment of pupil performance. Table 6.1 presents the standards for English and math for each of the four surveys.[31]

31 The tests consist of multiple choice questions with four alternatives. A 40% minimum is therefore rather low, considering that a randomised test would results in a 25% score.

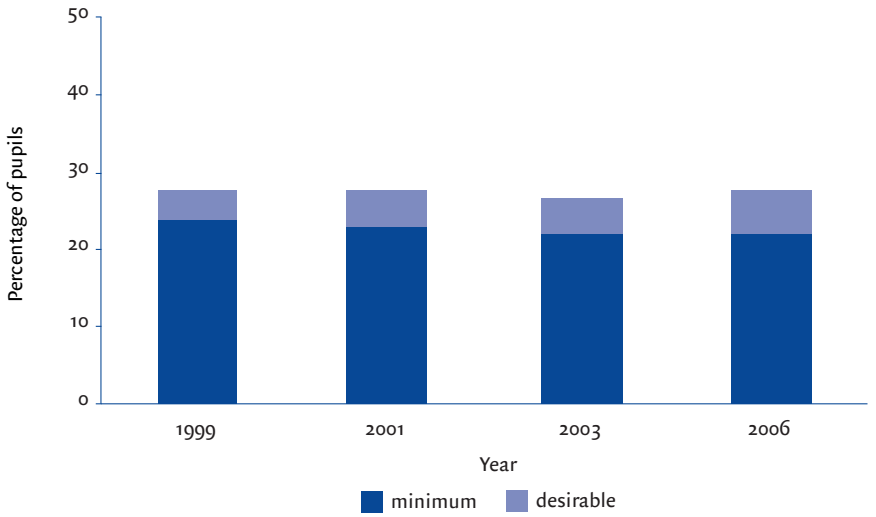
Table 6.1 *Performance thresholds for English and math (1999-2006)*

	1999	2001	2003	2006
Minimum				
English	40%	36%	40%	40%
Math	40%	40%	40%	40%
Desirable				
English	73.3%	71%	71%	70%
Math	62.5%	60%	60%	60%

Source ECZ, 2005.

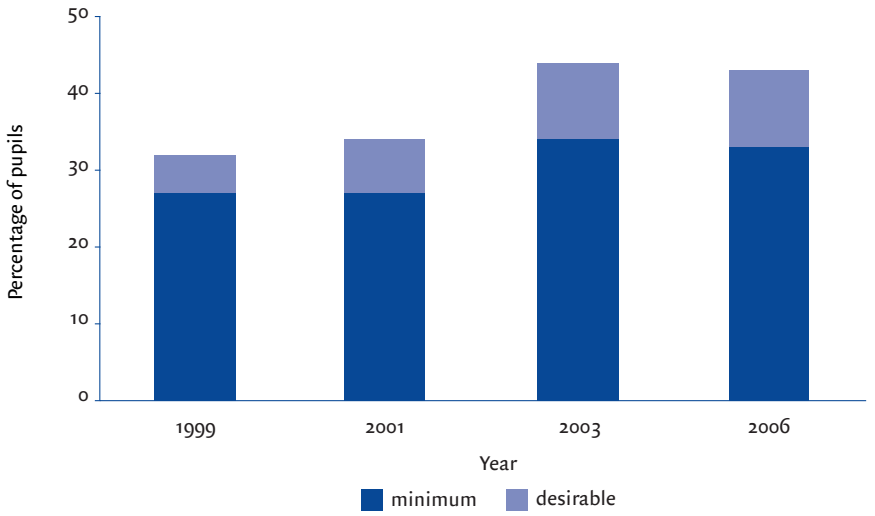
Based on these thresholds, figures 6.1 and 6.2 present the percentage of pupils who attained the minimum or desirable levels in the four tests. For graphic reasons, the percentage of pupils who attained the minimum level does not include those who attained the desirable level.

Figure 6.1 *Minimum and desirable levels for English (2001-2006)*



Source: ECZ / NAS 1999-2006.

Figure 6.2 *Minimum and desirable levels for math (1999-2006)*

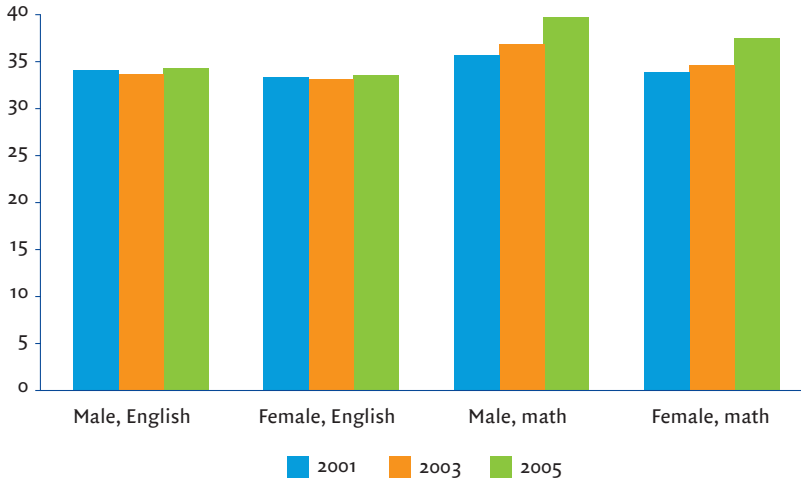


Source: ECZ / NAS 1999-2006.

According to these figures, approximately 70% of the grade 5 pupils do not attain the minimum performance level for English. This percentage has remained constant over the years. For math, this percentage gradually decreases: in 2003 and 2006 math results were much better than in 2001, while the minimum performance level remained the same. A comparison of the average test figures confirms that performance in English had slightly improved in 2006, while the improvement of math results was much more considerable.

Differences between boys and girls are limited. For English, they are negligible. For math, average figures for boys are approximately 6% higher than for girls.

Figure 6.3 *Average test results for English and math by gender (grade 5; 1999-2003)*



Source: ECZ.

6.2.2 Provincial differences

National averages conceal regional developments. Lusaka performs best, as might be expected. In 2006, Western Province comes second for English. In that province, results for English improved after a decline in 2001 whereas the results for math improved markedly compared to 2005. Central Province has produced relatively good results for math since 2003. In North-Western Province, results for English fluctuate from year to year. In Luapula average figures for English decreased between 2001 and 2006; for math, however, there was a marked improvement. In Western Province ordinary schools (excluding PRP and community schools) achieved relatively good average results for English, except for 2001.[32] However, in 2003, the figures for math appeared to be exceptionally low and considerably lower than the average figures of the other provinces. If PRP and community schools are also taken into account, Western Province shows the best results of all provinces in both subjects.[33]

32 See chapter 8 for a more detailed analysis.

33 Pupils in PRP schools in Western Province produced extremely good results. These results, notably by grade 4 pupils, were realised in one predominantly rural district (Mongu). Six of the nine PRP schools in the Western Province, and five of the seven well-performing schools, were WEPEP schools.

Table 6.2 *Average test results for English and math (1999-2006)*

	1999	2001	2003 (ordinary schools)	2003 (all schools)*	2006
English					
Central	32	32	36	35	35
Copperbelt	34	34	32	33	36
Eastern	31	33	32	32	33
Luapula	33	35	31	31	32
Lusaka	39	37	38	37	40
Northern	32	31	33	33	33
North-Western	32	29	37	37	31
Southern	30	35	33	34	33
Western	35	32	34	43	36
Zambia	**33**	**33**	**33**	**35**	**34**
Math					
Central	35	37	41	41	40
Copperbelt	35	36	38	40	39
Eastern	33	35	38	38	39
Luapula	32	35	37	37	37
Lusaka	39	38	40	41	42
Northern	32	33	37	38	37
North-Western	35	34	41	41	37
Southern	31	37	38	39	36
Western	34	35	34	42	39
Zambia	**34**	**36**	**39**	**39**	**38**

* The 2003 survey for the first time systematically included community schools. In addition, it also included schools that participated in the Primary Reading Programme (PRP). See chapter 7 for a more detailed analysis of the differences.
Source: ECZ.

Fluctuating results reflect a weakness in the development of primary education in Zambia: school results fluctuate sharply from year to year. Rather than good and bad schools, there are schools that achieve well in some years and poorly in others. Among the schools in the Western Province included in the NAS in 2003, for example, there were six that achieved particularly poorly. However, their overall examination results prove that they are not bad schools. Their examination figures

Pupils in Kapongolo upper basic school, Kasama, Northern Province.

simply fluctuate widely. Consequently, these particular schools scored above average in 2001 and 2005 but below the country and province averages in 2003 and 2006. In 2003, figures were particularly low. One might expect that poor results in 2003 would lead to poor results in 2005 as well, as most grade 5 pupils in 2003 are expected to take their exam in 2005. But this does not seem to be the case: 2005 was a 'good year' for these schools. Only one year later, however, results were poor again.

Differences between provinces may be explained by differences in the degree of urbanisation or differences in school type. Table 6.2 above showed that the results for the Western Province in 2003 were determined by the inclusion of PRP schools in the analysis. Table 6.3 presents the results of an analysis for 2003 including the effects of province, location, school type, gender and age. Because age is a continuous rather than a nominal variable, its effects are not visible in the table. However, average figures are corrected for age differences as well. The number of pupils in the table refers to the number of pupils who took the math exam. The total number of pupils who took the English test is slightly higher (6,464 vs. 6,431).

Table 6.3 *Average test results for math, unadjusted and adjusted for province, school type, gender and age (2003)*

		Number of pupils (math)	English (adjusted mean)	Beta	Math (adjusted mean	Beta
Province	Northern	1,362	34	0.14	39	0.13
	Luapula	597	31		37	
	Southern	674	34		39	
	Eastern	662	33		38	
	Copperbelt	691	30		38	
	North-Western	537	38		41	
	Central	711	35		42	
	Western	479	36		36	
	Lusaka	718	38		42	
Location	Rural	4,474	33	0.08	39	0.07
	Urban	1,957	36		41	
School type	PRP (grade 4)	325	30	0.09	35	0.12
	PRP (grade 5)	442	35		42	
	Community	1,529	36		42	
	Ordinary	4,135	34		39	
Gender	Male	3,407	35	0.04	40	0.09
	Female	3,024	34		38	
R^2			0.04			0.04

Source NAS / ECZ (2003).

The results first of all show that the variables included in the model only explain approximately 4% of the total differences between pupils. This is neither surprising nor problematic, as there is no policy to create differences between provinces and locations or between boys and girls. Boys perform slightly better, especially in math. Community schools produce better average figures than other school types.

For provinces, average English and math results are correlated: provinces with higher average English figures also produce higher math figures. There are two exceptions: Central Province and Western Province. In Central Province, the results for English are in line with the average results for Zambia as a whole,

whereas math results are considerably higher. In Western Province, the results for English are very good, but math results are low.

6.3 Examinations

6.3.1 Overall picture

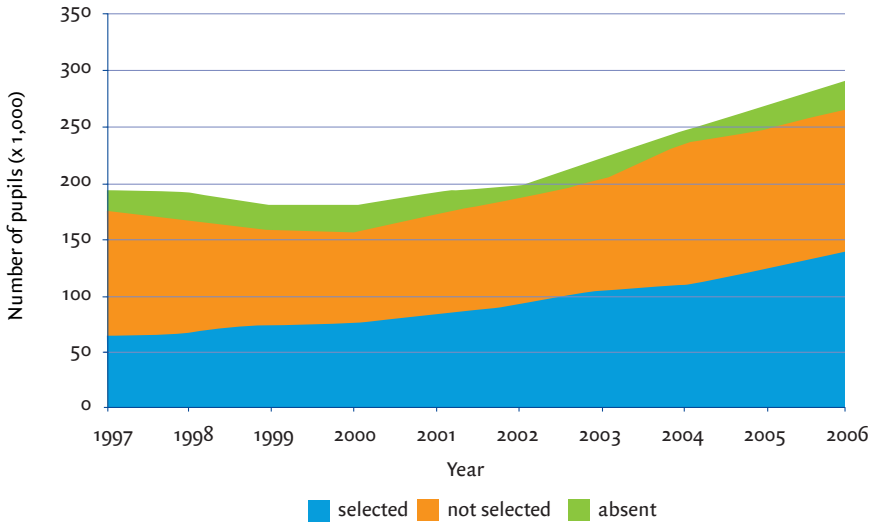
In Zambia, pupils complete their primary education (middle basic education) by taking a Primary School Leaving Certificate Examination (PSLCE) at grade 7. Pupils at grade 7 take exams in five different subjects: English, social studies, mathematics, environmental studies/science and Zambian languages. Apart from that, they must write two papers. Each pupil's average examination score is based on a complex computation of these five subjects and two papers:

1) A total score is computed on the basis of the four best exam scores. For English, social studies and mathematics the maximum score is 60; for the other subjects it is 50. Therefore, the first three subjects would be most likely to be included in the total score. In practice, however, the average score for Zambian languages was higher than the average score for mathematics in both 2005 and 2006.
2) The total score for each pupil is the sum of the four highest exam scores and the scores for the two special papers. In theory, the maximum score is 60+60+60+50+50+50=330. In 2005 and 2006, the average score was 174 (=53%).

Between 1997 and 2000, the total number of pupils taking the grade 7 examination decreased by 7%. However, during the same period, the total number of pupils who passed the exam and were admitted to grade 8 increased by 21%. As a result, pass rates increased from 37% in 1997 to 50% in 2000.

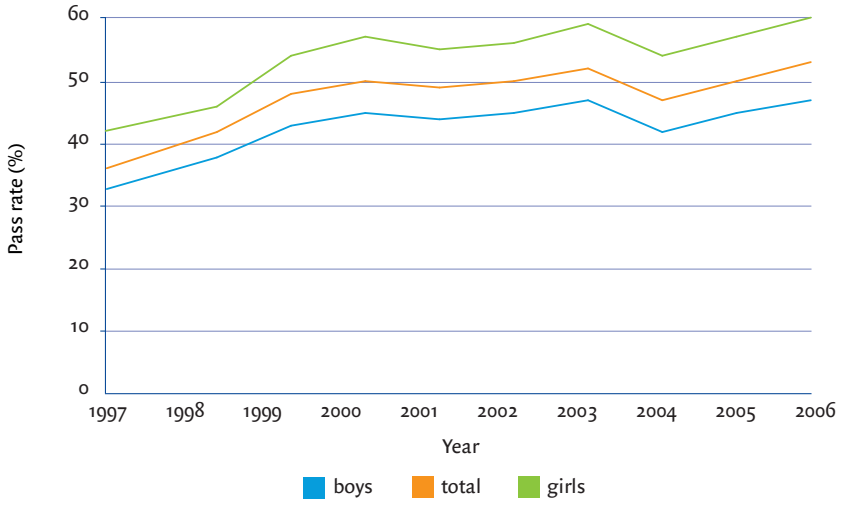
After 2000, the effect of the increase in enrolments also resulted in a growing number of pupils taking the grade 7 exam. Between 2000 and 2006, this number increased by 62%. In view of the large increase in enrolment and the number of pupils in grade 7, this is a remarkable achievement.

Figure 6.4 *Examination results at grade 7 (1997-2006)*



Source: ECZ.

Figure 6.5 *Pass rate examinations at grade 7 (1997-2006)*



Source: ECZ.

Pass rates remained stable until 2005 (with some fluctuations over the years). This is due to the fact that these are determined by the capacity at the upper basic level. The 'selection' (admission) of pupils is based on the available number of places and not on pupils' scores. Still, only the pupils with the best scores are admitted to the upper basic level. The cut-off points of the selection vary between provinces and even within a particular province; schools or school types may have different cut-off points. In 2006, the percentage of pupils admitted to grade 8 increased to 53% (47% for boys and 60% for girls). It was the first year that more girls than boys were admitted to grade 8.

There are marked regional differences in pass rates. Table 6.4 shows the development of average pass rates by province between 2001 and 2006. Especially in Lusaka, pass rates are low. The lack of opportunities to move up to grade 8 explains why many city children enrol in rural schools.

Table 6.4 *Pass rates to grade 8 by province (2001-2006)*

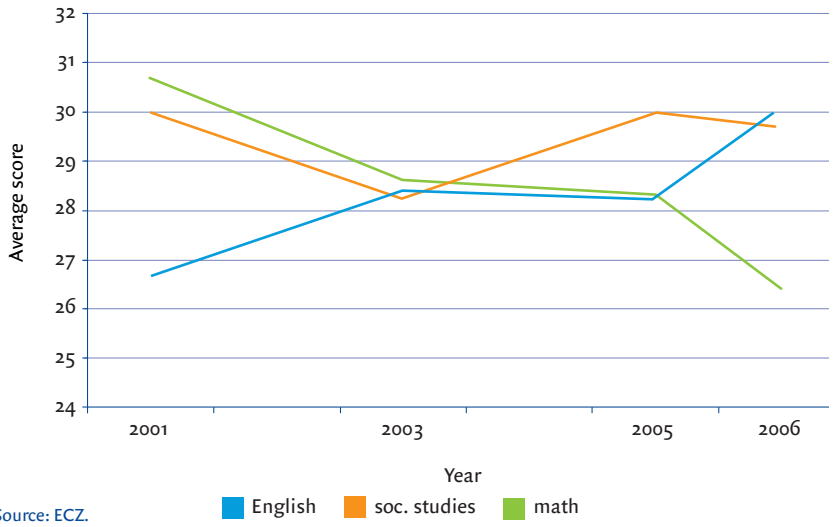
Province	2001	2002	2003	2004	2005	2006
Northern	57	54	53	47	52	56
Luapula	56	66	59	63	77	76
Southern	40	48	66	42	50	58
Eastern	54	54	46	41	41	45
Copperbelt	58	60	62	58	57	58
North-Western	82	76	75	79	85	77
Central	38	34	36	47	55	50
Western	60	57	55	50	49	66
Lusaka	29	31	34	30	26	26
Zambia	**49**	**50**	**52**	**47**	**50**	**53**

Source: ECZ.

As a result of a lack of capacity at the upper basic level, Zambia is forced to restrict the number of pupils admitted to grade 8. In 1996, the government created 'Academic Production Units' as an alternative for pupils who had passed the grade 7 examination but were not admitted to grade 8, enabling them to continue their education. APU classes meet in the afternoon and pupils must pay tuition fees. These tuitions may exceed those paid by regular pupils (Public Expenditure Review, 2006). The APU fees provide an additional income to the school and the teachers.

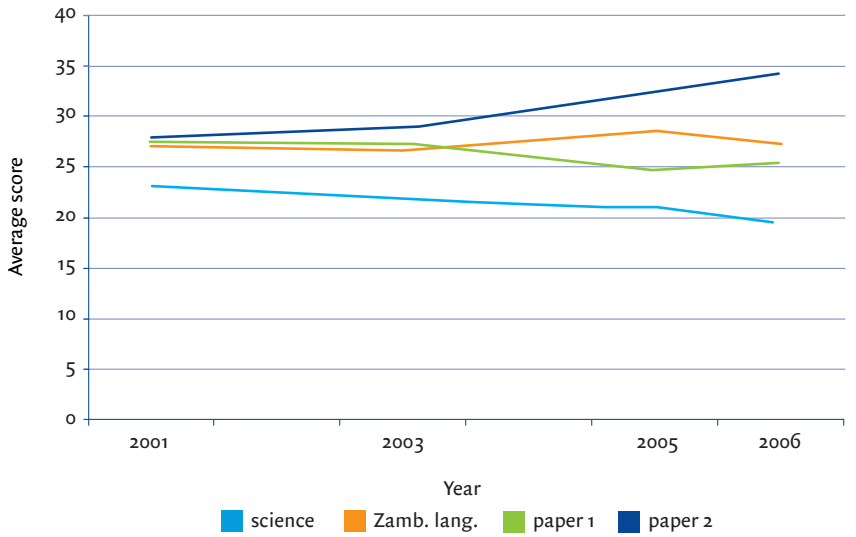
Because pass rates are mainly determined by capacity at the upper basic level, progression rates are reliable indicators for the development of capacity at that level, rather than of the progress in learning achievement. Consequently, the development of average examination figures is a better progress indicator. Figure 6.6 shows the development of the average scores for English, social studies and math (subjects with a maximum score of 60). Figure 6.7 is a graphic representation of the scores for the other subjects and the special papers (with maximum score of 50). The three different subjects show three different patterns: scores for social studies are improving, for English they are recovering and mathematics shows a decreasing trend. This latter trend, which (unfortunately) is in line with developments in other countries, is a cause for concern for policy makers at the ministry, who face the challenge of countering this trend. The deteriorating results for math are compensated – and therefore masked – by improving results for English, social studies and Zambian languages and, most notably, the second special paper (see figure 6.7).

Figure 6.6 *Development of average scores for English, social studies and math (2001-2006)*



Source: ECZ.

Figure 6.7 *Development of average scores for Science, Zambian Languages and two special papers (2001-2006)*



Source: ECZ.

One of the results of the developments described could be that increasingly less total examination scores include the results for mathematics (as the total examination result is only based on the four best subjects). However, table 6.5 shows that this effect is modest. English, social studies and math are almost always among the top four scores. This was to be expected, as the maximum score for these subjects is 60 instead of 50. The relevance of Zambian languages increases at the expense of environmental studies and science.

Table 6.5 *Inclusion of subjects in the final examination result (percentages; 2001-2006)*

	English	Social Studies	Math	Science	Zambian languages
2001	90	83	93	60	74
2003	86	92	92	55	75
2005	92	93	92	43	79
2006	94	96	91	36	82

Source: ECZ.

6.3.2 Provincial differences

The average total examination scores are constant, except for the slightly lower results in 2003. There are, however, differences between provinces. In Luapula and Northern Province, average results are decreasing, whereas the Copperbelt and Lusaka (the richest and most urban provinces) show a relatively strong improvement in average results. In the Western and Eastern provinces, there has been a relatively high increase since 2003.

Table 6.6 *Average examination results by province and year (2001-2006)*

Province	2001	2003	2005	2006
Luapula	197	181	187	177
Northern	171	170	165	161
North-Western	184	183	177	180
Central	173	171	169	170
Western	178	174	178	179
Southern	169	164	168	171
Eastern	169	165	169	173
Copperbelt	171	170	176	176
Lusaka	172	174	183	185
Zambia	**173**	**171**	**174**	**174**

Source: ECZ.

6.3.3 Location

Table 6.7 shows the average examination scores by location. The interpretation of the table is not straightforward. In 2001, there were hardly any differences between urban and rural areas: pupils in urban areas did not perform better than pupils in rural areas. Since 2003, however, the trend has changed: pupils in urban areas are now performing better than pupils in rural areas. This development is more distinct for English than for math.

Table 6.7 *Trends in exam results for English and math and total score (weighted school averages)*

		Total	Rural	Urban
English	2001	29.9	29.2	31.0
	2003	28.1	27.0	30.0
	2005	29.9	28.1	33.1
	2006	29.6	27.8	32.7
Math	2001	30.6	31.0	30.1
	2003	28.6	28.8	28.2
	2005	28.3	28.0	28.6
	2006	26.3	26.0	26.8
Total score	2001	173	173	173
	2003	171	170	173
	2005	174	170	181
	2006	174	169	182

Source: ECZ / EMIS.

Differences in urbanisation may also explain differences between provinces. The table below summarises differences in English test scores. It shows that, first of all, differences between provinces may partly be explained by the level of urbanisation. The relatively high average figure for Lusaka is realised by schools in the capital. Lusaka has a large number of private schools. The rural schools in the Lusaka province rather have the same characteristics as rural schools in the other provinces. In three provinces (Western Province, Northern Province and Luapula) differences between rural and urban schools are relatively small. In Northern Province, results for urban schools are relatively low compared to other urban schools. In North-Western Province, children in rural areas seem to achieve better results for English than children in urban areas. However, this finding is based on a small number (17) of urban schools and the differences are not statistically significant. Moreover, the effect was not caused by an improvement of the average results in the rural areas, but by deterioration results in urban areas. This is explained by a considerable growth of the number of enrolments and examination candidates. The total number of examination candidates in the urban regions in North-Western Province tripled between 2001 and 2005. The number of pupils in grades 1-7 even quadrupled.

Table 6.8 *Exam results for English (2005; weighted averages)*

Province	Average	Rural	Urban	Urban-rural difference
Copperbelt	31.3	28.3	32.3	4.0
Central	29.1	27.9	32.5	4.6
Lusaka	34.3	29.5	35.3	5.8
Southern	27.8	26.5	33.0	6.5
Luapula	31.3	31.0	32.5	1.5
Northern	26.8	26.7	27.5	0.8
Eastern	26.7	26.2	32.3	6.1
North-Western	31.4	31.6	29.2	-2.6
Western	30.8	30.4	31.7	1.3
Zambia	**29.9**	**28.1**	**33.1**	**5.0**

Source: ECZ.

Table 6.9 *Exam results for mathematics, (2005; weighted averages)*

Province	Average	Rural	Urban	Urban-rural difference
Copperbelt	28.1	27.1	28.4	1.3
Central	28.0	27.8	28.6	0.8
Lusaka	29.0	27.5	29.5	2.0
Southern	26.8	26.5	28.3	1.8
Luapula	31.3	31.5	30.0	-1.5
Northern	27.3	27.6	25.4	-2.2
Eastern	27.6	27.4	28.8	1.4
North-Western	29.2	29.2	25.9	-3.3
Western	29.9	30.0	29.0	-1.0
Zambia	**28.3**	**28.0**	**28.6**	**0.6**

Source: ECZ.

For math, urban schools do not consistently perform better than rural schools. In four provinces (Luapula, Northern Province, North-Western Province and Western Province) the average results of pupils in rural schools were better than the results of pupils in urban schools in 2005.

6.3.4 School type (ownership)

Differences between urban and rural areas may (partly) be explained by differences in ownership (running agency). For instance, urban schools in Lusaka perform best, but this could be explained by the fact that most private schools are in Lusaka. Table 6.10 lists the 2005 average examination figures for the exam centres located in schools run by different agencies.[34]

Table 6.10 *Average results of exam centres by agency (2005)*

	Total number of exam centres	English	Math	Total score
GRZ	3,538	29	28	171
Private / Church	143	42	36	219
Grant-aided	65	32	30	184
Community	108	32	29	180

Source: EMIS / ECZ.

It might be concluded from table 6.10 that all agencies perform better than GRZ schools, but this conclusion is not necessarily valid. Chapter 3 already mentioned the large differences between community schools. Only 108 of the 2,129 community schools function as an examination centre. Children from other schools take their examination at the examination centre in another school (generally a GRZ school). This may have a negative effect on the average results of GRZ schools while at the same time only the best schools run by the other agencies qualify to function as an examination centre.

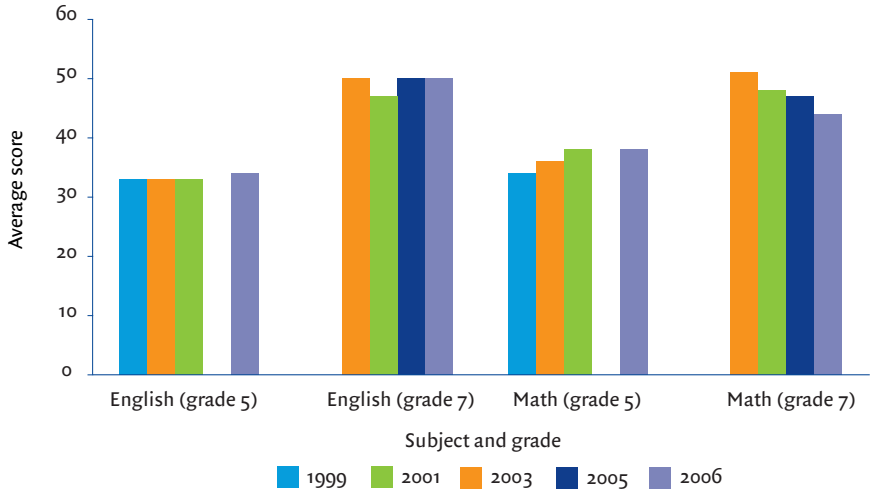
Even if the aforementioned problems are taken into account, the difference between GRZ schools and private schools is striking. Private schools perform considerably better than GRZ schools. Urban rural differences may partly be explained by the fact that most private schools are located in urban areas (especially in Lusaka). In addition, schools located in urban areas may have a 'comparative advantage' as well: for most urban pupils, distance to school is much shorter and, on average, their parents are better educated. Therefore, better performance of private schools may partly be explained by the fact that they are mostly located in urban areas.

34 It is important to understand the difference between a school and an examination centre. See chapter 2 for an explanation.

6.4 A comparison of assessment tests and examinations

Figure 6.8 combines the results assessment test data and examination results. Test and examination scores have been recalculated to bring them on the same scale (with a minimum of 0 and a maximum of 100).

Figure 6.8 *Test and examination results for English and math (grades 5 and 7; 1999-2006)*



Source ECZ / computation IOB.

The graph first of all shows that, on average, examination scores are much higher than assessment test scores. Second, the average scores for English tests and examinations remain relatively stable. Thirdly, grade 5 test results for math gradually improve, while the examination figures for math deteriorate. The NAS does not reveal this negative development in math examinations at grade 7.

6.5 Impact

6.5.1 Introduction

One of the main purposes of this study is to establish the effects of particular interventions at the school level: to what extent can the differences in achievement noted above be explained by different circumstances and differences in policy-

related variables? The analysis focuses on differences between schools with regard to average examination scores for English and mathematics in an attempt to explain the effects of certain variables, including the availability of books, (quality and presence of) teachers and several indicators of school infrastructure. The analyses are based on assessment tests and examination results.

6.5.2 Analysis of the National Assessment Surveys

Tables 6.11 and 6.12 show the results of a multivariate analysis based on English and math tests, respectively, for the three different years.[35] Unfortunately, the sample does not cover enough schools that were assessed for a number of consecutive years to allow for *fixed effects regression*.[36] In cases when a particular school was included in the sample for more than one year, a random effects regression was used instead, to account for the correlation of its results over time. Explanatory variables are divided into school characteristics (including teacher characteristics), pupil characteristics and regional characteristics.

Where relevant, variables were rescaled according to the number of pupils in grades 1 to 7. In addition, the number of pupils is included as a size measure to determine whether school size affects educational outcomes. The remaining school variables measure school characteristics such as school type (GRZ, private, grant-aided, or community schools), the availability of toilets and books, head teacher education and teacher training.

The preceding sections already showed significant differences in learning achievements between schools from different locations (e.g. different provinces and rural vs. urban). Such differences may be interesting, but they do not necessarily provide information on the effects of various policies: it is much more relevant to know whether achievements in a particular province are related to the level of training of teachers or the availability of teaching materials. Ideally, it would be possible to fully explain differences between provinces by differences in such policy-related variables. Nevertheless, other factors, including cultural and geographical differences may be relevant as well. Differences between provinces that are explained by the other variables in the model are included through provincial dummies. These dummies take the value 1 if a school is located in that particular province and 0 if it is not. Urban rural differences are included in the same way. The regression includes one additional location variable: the average

35 The unit of observation in the regression is the school: all variables are school averages for a particular year.
36 The technique of fixed effect regressions allows for the exclusion of many of the unobserved differences between schools and is therefore practical if the sample is particularly heterogeneous.

time needed to travel to school (roughly measured in 15-minute intervals). The effect parents' educational achievements have on their children's test results is included in the analysis through the father's educational background.
In the two regressions shown below, provincial dummies are insignificant with a few exceptions: Copperbelt (English and math), Luapula (math), Southern Province (math) and Western Province (math). For both subjects, Copperbelt scores approximately 1.2-1.3 points (or 10%) below the average score for Lusaka. The dummy for urban schools is positive and significant: children in urban areas score approximately 7% higher than their rural counterparts as a result of factors not included in the regressions. The difference in results between urban and rural children is approximately 1.5 points (approximately 10%), but a third of this difference is explained by the other variables in the regressions.

Two variables were retained for pupil characteristics: parents' education (as proxied by the fathers' education) and time spent travelling to school. The latter variable has the expected (negative) sign but is not significant. Apparently, the rural urban distinction picks up the effect of distance. The father's education turns out to be significant. The education variable is measured on a scale from 1 to 8. For example, completion of junior secondary school is coded as 4, senior secondary school as 5. One step on the scale adds approximately 0.4 points to the learning achievement variable. Considering the fact that parents in urban areas are better educated, this variable helps to explain part of the difference between urban and rural learning achievements referred to above.

The head teacher's qualifications (measured on a four-point scale) turn out to be important. One extra level adds about 0.4 points to the score of *each* of the school's grade 5 test takers. This suggests that improving the training of head teachers should be an important policy target. Another variable is the number of trained teachers (scaled by the number of grade 5 pupils). This variable also proves significant in the regression, at least for math (and at the 10% level for English). However, the effect of additional trained teachers seems limited: pupils in a school that has one more trained teacher than average produce approximately 0.02 points higher scores. It would be incorrect, however, to conclude that additional trained teachers have little or no impact on learning achievement. The largest differences in the number of trained teachers per pupil are found between schools from different responsible agencies, which are captured by school type dummies in the regression.

The availability of school books is included by a dummy variable indicating the *lack* of school books: the value 1 indicates that less than 50% of the pupils have a

book. A negative coefficient indicates that improved availability of school books has the expected positive effect on test outcomes. The regression shows the expected sign, but coefficients are not significant and small.

Table 6.11 *Effect of policy interventions on English test scores (1999-2003)*

	Coefficient	Standard error	z-score	
School characteristics				
Lack of books (English)	-0.03	0.19	-0.02	
Private schools	7.47	0.83	9.05	**
Grant-aided schools	2.86	0.80	3.56	**
Community schools	1.82	0.40	4.58	**
Toilets	2.45	1.75	1.40	
Economies of scale[1]	0.0006	0.0015	0.42	
Teacher characteristics				
Teacher training	1.03	0.89	1.68	
Education head teacher	0.39	0.14	2.84	**
Pupil characteristics				
Parents' education (father)	0.44	0.13	3.53	**
Distance to school	-0.04	0.19	-0.21	
Regional characteristics				
Urban	0.97	0.30	3.18	**
Northern	-0.61	0.42	-1.46	
Luapula	-0.74	0.45	-1.65	
Southern	-0.65	0.42	-1.57	
Eastern	-0.45	0.43	-1.04	
Copperbelt	-1.33	0.39	-3.39	**
North-Western	-0.71	0.46	-1.53	
Central	-0.75	0.41	-1.82	
Western	-0.38	0.49	-0.77	
1999	-0.16	0.25	-0.63	
2001	-0.82	0.27	-3.03	**
Constant	8.51	0.88	9.66	**

N = 940
R^2 = 0.27
[1]Number of grade 5 pupils
* significant at p<0.05%; ** significant at p<0.01.

Table 6.12 *Effect of policy interventions on math test scores (1999-2003)*

	Coefficient	Standard error	z-score	
School characteristics				
Lack of books (math)	-0.29	0.23	-1.26	
Private schools	7.08	0.92	7.67	**
Grant-aided schools	2.45	0.90	2.72	**
Community schools	2.32	0.44	5.23	**
Toilets	1.31	1.96	0.67	
Economies of scale[1]	-0.00004	0.0017	-0.03	
Teacher characteristics				
Teacher training	2.37	1.00	2.38	*
Education head teacher	0.44	0.15	2.91	**
Pupil characteristics				
Parents' education (father)	0.33	0.14	2.37	*
Distance to school	-0.23	0.21	-1.06	
Regional characteristics				
Urban	0.89	0.34	2.60	**
Northern	-0.69	0.47	-1.47	
Luapula	-1.48	0.50	-2.97	**
Southern	-0.91	0.46	-1.95	*
Eastern	-0.59	0.49	-1.22	
Copperbelt	-1.16	0.44	-2.66	**
North-Western	-0.72	0.52	-1.39	
Central	-0.11	0.46	-0.24	
Western	-1.61	0.55	-2.92	**
1999	-1.90	0.29	-6.51	**
2001	0.08	0.30	0.27	
Constant	14.89	0.98	15.20	**

N = 939
R^2 = 0.27
[1]Number of grade 5 pupils
* significant at p<0.05%; ** significant at p<0.01.

School type turns out to be a significant variable; it is represented in the regression by three dummies: private schools, grant-aided schools and other/community schools.[37] The coefficients of these dummies denote the average difference compared to public (GRZ) schools. The difference in scores is considerable, especially for private schools. Note that these differences come on top of the better endowment of these schools in terms of variables already included in the regressions.[38] Even community schools perform better than GRZ schools.

Finally, after controlling for school and teacher characteristics, the average results for English were better in 2003 than in the two other years. Only the mathematics results were (slightly) better in 2001.

6.5.3 Examination scores

Introduction

Thus far, the analysis was based on the results of the national assessment surveys. These surveys are rich in variables, but they have two disadvantages in impact analysis:

1. samples are relatively small. For the purpose of the NAS – the measurement of education quality improvement – this is not a direct problem, however, because the unit of analysis is the individual pupil, rather than the school;
2. because it focuses on the individual pupil, the NAS (unfortunately) has *not* been set up as a panel or a rotating panel, including the same schools in consecutive assessments. A panel would make the National Assessments more informative, because it would make it possible to measure the improvement of schools over time. In the current lay-out, differences in results (at the province level) between two separate years may be partly due to the makeup of the sample.

The grade 7 examination data have some major advantages: they are not based on samples, but cover (technically) all pupils at the end of grade 7. Second, they have been available since 2001. One of the disadvantages is the absence of school-related variables that may explain differences between schools. This problem was solved by linking exam data to the EMIS database.

37 The omitted category (GRZ schools) is by far the largest.
38 This could reflect non-linearities and threshold effects but we have not found evidence of such effects.

Grade 8 students, Kateshi basic school, Kasama, Northern Province.

2005 examination data

The analysis of examination data starts with English and math figures for 2005. For a good comparison, table 6.13 includes the results of the two separate analyses for both English and math.

A brief note on the *specification* of the quantitative relationships is in order. The relationship between pupil teacher ratio and educational achievement has long been debated.[39] An analysis of the relation between pupil teacher ratio and examination results suggests that the inverse relation (or the teacher pupil ratio) offers the best specification.[40] Moreover, this specification is consistent with the scaling of the quantitative school variables by dividing them by the number of pupils. Due to the high correlation between teacher pupil ratio and classroom pupil ratio, both variables could not be included in the model. The classroom teacher ratio was included in the model in order to estimate the effect of (additional) classrooms. This is also quite logical: it is to be expected that teachers function better if they are able to teach in their own classroom. The availability of teaching materials is measured by the number of books per pupil required for the

39 See for example Katharina Michaelowa: *Determinants of Primary Education Quality: What can we learn from PASEC for francophone Sub-Saharan Africa?*, ADEA, 2003.

40 We also found these results in a similar study of Uganda.

subject considered. The (natural) logarithm of the number of pupils is included to determine scale effects.

The analysis includes several other teacher characteristics: professional qualifications (with a distinction between teachers with a diploma or degree and those without), the percentage of teachers with additional training, the age of teachers and teacher attrition. In addition, the analysis includes the percentage of teachers with double classes. The qualification of the head teacher is included as a management variable (with the same distinction as for teachers), as is school type (GRZ, private, grant-aided or community).[41]

Unfortunately there is no information on teacher attendance, which is likely to be an important determinant of educational quality. A comparable study for Uganda indicated a relatively large correlation (r=0.41) at the district level between the *perception* of teacher absenteeism as a problem and examination results (at grade 7).

The analysis also includes several pupil characteristics: the average age of examination candidates, the percentage of female candidates and the percentage of orphans in grade 7. Regional variables are related to these pupil characteristics: the socio-economic position of the ward in relation to other wards (see Annex 5), the urban rural distinction and the province.

The analysis once again shows that private schools perform better than public schools, grant-aided schools and community schools. Privately-funded schools outperform other schools by more than 20% (for English, results are 6.3 points higher than the 29 average of government schools, even after all other variables in the model have been taken into account). No significant differences were found between the other school types. For community schools, this is an enormous achievement. Still, one must take into account the fact that the pupils of only one in twenty community schools can take their examination at their own school. The other pupils must take their examination at another school (mostly GRZ schools).

41 Technically, the analysis does not include a dummy for GRZ schools. Therefore, the dummies for the other school types indicate the effect in relation to GRZ schools, taking all other variables into account.

Table 6.13 *Effect of policy interventions on English and math examination results (2005)*

	English			Mathematics		
	Coefficient	t-value		Coefficient	t-value	
Private	6.3	6.2	**	5.7	6.2	**
Grant-aided	0.2	0.2		-0.2	-0.1	
Community	-2.7	-0.7		-5.9	-1.8	
Teacher pupil ratio	122.9	4.3	**	41.6	1.6	
Classroom teacher ratio	3.0	3.6	**	1.7	2.3	*
Double class teachers (%)	0.7	0.9		0.8	1.2	
Teacher training	0.03	0.03		-0.5	-0.8	
% teachers with diploma	4.2	3.5	**	2.1	2.0	*
Teacher age	-0.1	-2.5	*	-0.1	-1.7	
Teacher attrition rate	2.5	2.4	*	1.4	1.5	
Qualifications head teacher	-1.1	-2.7	**	-0.9	-2.5	*
Book pupil ratio	-0.1	-0.3		1.4	2.9	**
School size	-0.4	-0.9		-1.0	-2.7	**
Candidates/grade 7 pupils	-3.1	-2.0	*	-3.0	-2.2	*
Mean age candidates	-1.0	-4.8	**	-0.6	-3.2	**
Percentage female candidates	-0.4	-0.3		-1.9	-1.3	
Percentage orphans	-3.1	-2.0	*	-1.6	-1.1	
Socio-economic status	0.7	2.9	**	0.3	1.3	
Urban	2.4	4.4	**	1.1	2.2	*
Copperbelt	-2.3	-3.5	**	-0.9	-1.5	
Central	-1.7	-2.7	**	-0.9	-1.5	
Southern	-4.0	-6.3	**	-2.8	-4.9	**
Luapula	0.5	0.7		2.6	3.9	**
Northern	-3.4	-5.1	**	-1.8	-3.0	**
Eastern	-2.8	-3.9	**	-1.2	-1.9	*
North-Western	0.2	0.3		-0.1	-.1	
Western	0.7	0.8		1.3	1.7	
Constant	37.3	9.0	**	40.4	10.6	**
R^2 adjusted		0.31			0.17	
F		25			12	

N = 1,424
* significant at p<0.05%; ** significant at p<0.01.

The analysis shows a negative effect for those schools functioning as examination centres for other schools. If 20% of the examination candidates come from other schools, this lowers the results for English by 3.1 x 0.2= 0.62 (or approximately 2%). This appears to be a minor effect, but it actually implies that the average results of pupils from other schools are more than 10% lower than the other candidates.
As expected, the teacher pupil ratio is significant for English, but it is not for mathematics. Moreover, the total explained variance is much higher for English (31%) than for mathematics (17%). This finding is consistent with previous research (Das et al., 2003). Improving teacher pupil ratios seems more effective for English than for mathematics. Moreover, formal teacher qualification appears to be more effective for English than for mathematics. This does not mean, however, that additional (better-qualified) teachers have no effect on the results for mathematics. On the contrary, it reflects an enormous challenge for the basic education system in Zambia. Teachers need more training to teach mathematics effectively. At the moment, many schools with teachers with the required qualifications do not achieve the desired results. Reviews of teacher education conducted in 2005 and 2007 concluded that:

- Qualifications of teachers and teacher educators are inadequate.
- Access to teacher education and training is insufficient.
- The application of ODL to teacher education does not work effectively.
- The system's incentives for teachers are insufficient.
- Curriculum development in teacher education is inadequate. There is no uniform core curriculum and each college prepares its own curriculum.
- The two-year programme (of which only one year is college based) is not effective in the way it is set up and the way students are supported during their year in the field. Large numbers of incoming students need substantial content upgrading.
- College curricula fail to adapt to changes in the school curricula and consequently, teachers are not prepared to teach particular subjects.
- Teacher education is not planned systematically.

An even more puzzling finding is that there is no significant effect of the qualification of the head teacher (even a negative effect for math). This is in striking contrast to the findings of analyses based on the assessment tests. Moreover, there does not seem to be an effect of (in service) teacher training.

There is a small effect of the average teacher age: schools employing relatively young teachers perform slightly better than schools with older teachers. A remarkable finding is the significant positive effect of teacher attrition for English. This effect in no longer significant if the analysis includes teacher attrition over a period of multiple years. However, the findings contradict the hypothesis that poor results may be explained by high teacher turnover. Similarly, there is no significant negative relation between the growth of a school and its average examination results.

There is a negative effect of school size: large schools have lower average results, especially for mathematics. As expected, the effect of classroom teacher ratio is positive and significant, which confirms that teachers are more effective when they do not have to share a classroom and have to maintain the shift system. This effect is larger for English than for mathematics, which is consistent with the remarks on teacher qualifications. Book pupil ratios are not significant for English, but they are for mathematics. In the past years, the acquisition of English books has received more attention than the acquisition of books for other subjects (see chapter 4). This analysis shows, however, that additional books for other subjects may be more effective. This conclusion is consistent with the results of studies for Ghana (World Bank) and Uganda (IOB/MoES). These studies found higher coefficients for mathematics than for English.

With regard to pupil characteristics, the analyses confirm that pupils who take their examination at the appropriate age perform better. Older pupils produce lower average results. This strengthens the argument for enrolling pupils at the right age. Nevertheless, one has to be aware that the fact that particular pupils are older can be a result of repetition, which would mean that the results are not an effect of age per se, but that older age is an effect of repetition (see also section 5.4). There are no significant differences between male and female candidates, but schools with a higher percentage of orphans do, on average, show slightly lower results for English. Urban rural differences and socio-economic conditions are important as well; they seem to be more important for English than for mathematics. Once again, this conclusion is consistent with the findings of other studies (for Ghana and Uganda). Urban pupils outperform rural pupils by an estimated 2.4 points for English and 1.1 points for mathematics. Taking all other variables in the model into account, the result for Northern, Eastern and Southern Province are low compared to Lusaka.

6.5.4 Total examination scores 2001-2005

Thus far, the analysis was based on individual scores for English and for math. This section analyses the determinants of the total examination score.[42] This total score is based on four of the five subjects plus two special papers (see chapter 6). The analysis is based on data for 2001, 2003 and 2005. The method of generalized least squares (GLS) has been applied (with random coefficients) because it covers several different years. The analysis was conducted at the school level (based on the average school-level figures and not on individual scores). Table 6.14 summarises the results.[43]

Most results are in accordance with the analysis for 2005, though standard errors are considerably higher and the total explained variance is much lower. The data for 2005 are probably more accurate than the data for other years. Taking the other factors in the model into account, Luapula, Northern Province and North-Western Province achieved relatively high scores (compared to Lusaka). Other provincial differences are not significant, but urban schools generally show better results than rural schools. Once again, private schools perform better than other school types. Taking the other factors into account, grant-aided schools and community schools do not produce better results than GRZ schools.

There is a significant effect of the pupil teacher ratio: taking the other factors into account, high pupil teacher ratios have a negative effect on learning achievement. An important factor that tends to increase the pupil teacher ratio is the teacher attrition rate, which poses a major problem in Zambia (see chapter 4). A high teacher attrition rate has a negative impact on the school's continuity and is therefore expected to have a negative effect on learning achievement. The results do not confirm this hypothesis, however. Teacher qualifications prove to be significant: schools with more teachers with a diploma or a degree produce better results. Schools with double shifts (as measured by the proportion of double class teachers) do not produce significantly better results than schools with lower double shift ratios (taking into account the effect of all other variables, including the pupil teacher ratio). The effect of a smaller class size does not outweigh the negative effects of the reduction of the contact time. The (squared) poverty rate (measured at district level) is not significant. The analysis only explains 12% of the differences between schools, which is a rather low percentage.

42 See section 6.3.1 for the computation of this score.
43 Annex II provides separate results for English and for math.

Table 6.14 *Variables explaining examination results (2001-2005; GLS)*

Variable	Coefficient	Standard error	z-score	
Copperbelt	-1.1	2.9	-0.4	
Central	2.4	2.8	0.9	
Southern	-1.0	2.7	-0.4	
Luapula	22.3	2.8	7.9	**
Northern	5.4	2.8	2.0	*
Eastern	1.1	2.7	0.4	
North-Western	16.6	2.9	5.7	**
Western	4.1	3.0	1.4	
Private/church school	35.1	4.4	8.0	**
Grant-aided school	-1.5	4.5	-0.3	
Community school	-23.7	14.4	-1.7	
Urban	10.0	2.2	4.6	**
2001	4.1	1.1	3.8	**
2003	1.1	1.1	0.3	
Proportion orphans (in grade 7)	-0.8	0.2	0.9	
Teacher Pupil Ratio	169	76	2.2	*
Proportion females	-18.2	3.9	-4.6	**
Classroom Teacher Ratio	4.7	2.5	1.9	
Average age candidates	-1.2	0.5	-2.3	**
Book Pupil Ratio	0.2	0.3	0.7	
Teacher age	-0.2	0.1	-2.3	*
Teacher Attrition Rate	5.1	3.4	1.5	
Double class rate	-1.4	1.7	0.4	
Exam centre ratio[44]	-9.2	4.4	-2.1	*
Proportion teachers with degree	9.0	4.3	2.1	*
School head qualifications	-4.3	1.6	-2.7	**
Poverty Gap (squared)	-20.8	13.9	-1.5	
School size (log of number of pupils)	-4.9	1.3	-3.6	**
Constant	174.80	3.77	46.3	**

N = 4,349,
R^2 = 0.12
Wald Chi^2 = 480
* significant at p<0.05; ** significant at p<0.01.
Source: EMIS, CSO.

44 "Exam centre ratio" is the number of examination candidates divided by the number of pupils in grade 7. Extreme cases have been excluded from the analysis.

Difference regression

The robustness of results is checked by linking changes in results to changes in regressors. Such a 'fixed effects' or 'difference regression' may provide more reliable results than the 'level' regressions above, although its dependent and independent variables are more subject to measurement error. Results are presented in table 6.15. The difference regression confirms the significantly positive effect of the professional qualities of the head teacher as well as the significantly negative impact of an increase in the total number of pupils. Whereas tables 6.13 and 6.14 did not show a significant positive effect of head teacher qualifications, table 6.15 does. The difference between table 6.15 and the two previous tables is that it is the outcome of an analysis of a *change* in head teacher qualification, rather than a comparison between schools. I.e., schools that recruited a head teacher who was better qualified produce better results. The findings support a policy of increasing the number of classrooms and teachers, perhaps also increasing the number of schools rather than expanding existing schools. Note that the total explained variance is very low.

Table 6.15 *Effect of school and pupil variables on English exam scores (2000-2006)*

	Coefficient	Standard error	z-value
Log of classes	-0.64	0.79	-0.80
Log of teachers	-0.14	0.40	-0.36
Log of books	0.04	0.17	0.23
Log of pupils	-2.48	0.73	-3.37
Qualifications head teacher	0.41	0.14	2.82
Indicator for toilets	0.31	0.96	0.32
Constant	-3.58	0.58	-6.17

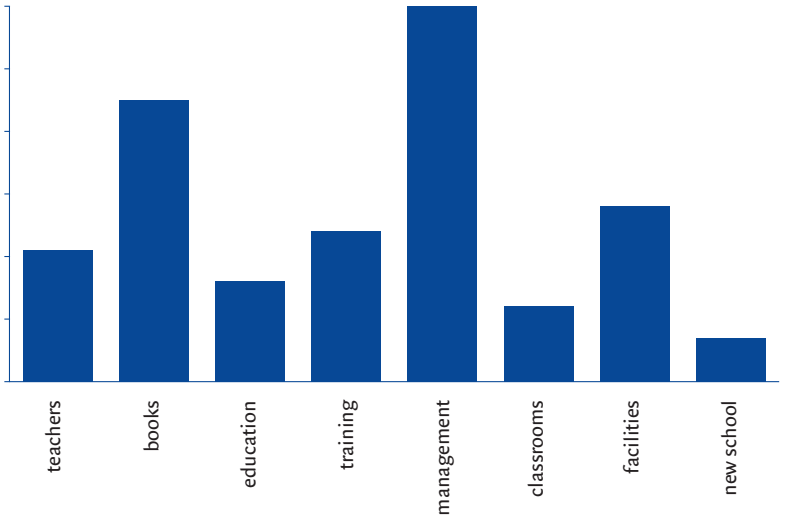
Note: Dependent and independent variables measure changes over the period 2000-2006. The number of observations is 2,174; adjusted R-squared is 0.01.

6.6 Effectiveness of interventions

Based on the regression analyses, this section presents an assessment of the effectiveness of the main interventions in the education sector. In theory, it is possible to give an estimate of the *cost-effectiveness* of different interventions by using the coefficients of the regression analyses. The analyses showed the relation between (for instance) pupil teacher ratio and learning achievement. If the costs of interventions are known, it is possible to calculate their cost-effectiveness. It is not possible to give very accurate estimates, as these depend on the underlying assumptions. Moreover, actual effects will always depend on the exact combination of instruments at the school level. If a school has no teachers, building new classrooms or buying books will have no effect.

Instead of trying to give rough estimates of the cost-effectiveness of investments in teachers, classrooms and books, this section instead presents a more qualitative approach in combination with a description of the results of a comparable study of primary education in Uganda (IOB, 2008). Figure 6.9 presents the results of the Uganda study.

Figure 6.9 *Estimated average cost-effectiveness of interventions**



* Based on a study of primary education in Uganda.

Teachers

An effective strategy that combines the objectives of reducing repetition and dropout and improving learning achievement is the recruitment of teachers in order to improve pupil teacher ratios, especially in schools where these are particularly high. A high *pupil teacher ratio* (and hence a high pupil classroom ratio) has a negative impact on learning achievement. Teacher recruitment can be made more effective by improving teacher education and in-service training. The analyses show a significant, though not very large, effect of better-educated and more qualified teachers. The Zambia study did not indicate that providing *additional* (in-service) teacher training is an effective measure. This means that the current training practice is not effective and should be improved.

Classrooms

At the same time, it is necessary to *invest in classrooms*. The recruitment of teachers is not cost-effective when they must share classrooms. Teacher recruitment without accompanying classroom construction will lead to higher costs, but not necessarily to more time for children in school. Schools with *double shifts* do not perform better than schools without; i.e., the effect of the improved pupil teacher ratio does not outweigh the effect of the reduction in contact time. Lack of (permanent) classrooms is one of the main bottlenecks, especially in rural areas. Investments in the construction of *new schools* are more expensive, but smaller schools produce better results than (very) large schools. Moreover, a reduction of the distance to the school will improve attendance, reduce dropout and lead to better results. Supporting community schools may be a cost-effective strategy to realise this objective.

Textbooks

Other studies (for Ghana and Uganda) found significant effects and concluded that improving the availability of books is one of the most cost-effective methods for improving learning achievement. The estimated coefficients are not particularly high, but the cost of books is low compared to other instruments. For the Zambia study, the effect of more books is only weak, though the number of mathematics books has a significant effect on math results. This leads to the conclusion that in Zambia books are generally used ineffectively. Simply raising the number of books will not automatically improve learning outcomes. Teacher training must be improved in order to ensure effective teaching and the effective use of books.

School facilities

The Ghana study conducted by the World Bank (2004) showed that investing in school facilities is likely to be very cost-effective. A good learning environment has a significant impact on school attendance and learning outcomes. Unfortunately, it was not possible to test the validity of this hypothesis for Zambia. However, other studies show that the absence of adequate school facilities (including desks, blackboards, electricity and water and sanitation) has a negative impact on pupil attendance and therefore on learning achievement. Pupils who eat regularly and receive enough meals perform better than pupils who do not (see Annex 6). This conclusion encourages the provision of school meals. Other studies confirm that school lunches have a positive effect on pupil attendance (MoE, 2005).

School management

In the IIEP Newsletter (of July September 2007), the secretary of ADEA concludes that policies to improve quality should above all focus on competent teachers, infrastructure and equipment, books and materials and school management: 'it is the impact of the particular school or class that makes the difference... the impact depends largely on management' (Ndoye, 2007, p. 3). Analyses for Uganda indicate that investing in school management is one of the most cost-effective methods to improve the quality of education. Schools participating in a project aimed at improving the quality of school management produced 50% better results than comparable schools. Investments in books, classrooms, teachers and teacher training are more effective if the school is well-managed and investing in the quality of management means training, establishing an effective support structure at the district level and an effective inspection apparatus. The findings for Zambia suggest that improving school management will be the key to improving the quality of education. Several findings point to a significant impact of good management at the school level, including the effectiveness of well-qualified head teachers and the better performance of private schools. The school outcomes of privately funded and government-funded schools are considerably different and this difference cannot be explained by the obvious difference in the number of pupils per teacher or per classroom or the availability of books. Private schools have a number of other characteristics that are not visible in the data, which appear to have a positive effect on school outcomes. The improvement of school management starts with investing in head teachers. A head teacher with well-developed management skills creates a stimulating learning environment, holds the teachers accountable and reduces teacher and pupil absenteeism. Several of the regressions reported above found that the quality of the head teacher has a significant, and sizeable, effect on learning achievement. Schools

where the head teacher was replaced by a better-qualified head teacher produce better results. In the Uganda study, the found effect was considerably larger than in the Zambia study, where several analyses failed to show the effect of better-qualified head teachers. This suggests that many formally qualified head teachers are currently not managing their schools effectively. Strengthening management does not only mean investing in the management of the school, but also investing in the district management and the inspectorate.

6.7 Summary and conclusions

This chapter focused on the development of *learning achievement* in Zambia between 1999 and 2006. The analyses are based on annual school census data, the national assessment tests and grade 7 examination scores

The main conclusion of this chapter is that, in spite of the dramatic increase in enrolments, grade 5 test scores and grade 7 examination scores have not deteriorated. Test results for English remained stable and test results for mathematics even improved. Differences between boys and girls are minor. There are, however, considerable differences between provinces. Moreover, whereas national-level results are stable, provincial results show marked fluctuations.

Examination results more or less confirm this pattern. Between 2000 and 2006, the total number of pupils who entered the grade 7 exam increased by 62%. Overall examination results remained stable, but summary scores conceal underlying patterns for individual subjects. Overall, the figures for social studies and English tend to improve, but average examination results for mathematics deteriorate. The deteriorating results for math are compensated (and therefore masked) by improvements in the results for English, social studies and Zambian languages and the special papers. Like the national assessment figures, provincial figures show much wider fluctuations.

The fact that, on the whole, test and examination results did not deteriorate is a remarkable achievement considering the deteriorating pupil teacher, pupil classroom and pupil book ratios. One of the factors explaining this result is the observed convex relation between pupil teacher ratio and learning achievement. In the literature, it has been suggested that pupil teacher ratio and learning achievement follow a concave relation (with sharply deteriorating results if the pupil teacher or pupil classroom ratio is higher than approximately 60:1). The analysis suggests that this relation is rather convex, with slightly deteriorating

results. This means at the same time that a considerable reduction of pupil teacher ratios is required in order to significantly improve results.

Yet, in spite of these positive developments, Zambia faces enormous challenges. The quality of education remains low. Approximately 70% of the grade 5 pupils do not attain the minimum performance level for English and no more than 6% achieve the desirable levels. Math test results are improving, but examination results show an opposite trend. National Assessment results suggest that pupils perform better for math than for English, but the examinations indicate the opposite: average examination results for math are deteriorating. The NAS does not register this development. Finally, though results are stable at the national level, they are not at the provincial level. Even at the provincial level, annual fluctuations are relatively wide, which suggests a more fundamental problem: at lower aggregate levels, learning achievement does not appear to be stable at all. The effects of interventions are not necessarily sustainable.

Conclusions

Several quantitative analyses of the factors that have an impact on learning achievements led to the following conclusions:

- First of all, the analyses confirm the relation between pupils' socio-economic background and their examination results, which leads to the conclusion that without improved access, average achievement would have been better. This is a classic example of 'vanishing benefits' (see also chapter 7).
- Urban rural differences point to the effect of socio-economic differences as well. Schools in urban areas produce better results than schools in rural areas, even after correction for differences in school type (including private schools in urban areas and community schools in rural areas) and differences in the number of teachers, classrooms, books, etc.
- There is no evidence of a negative effect of teacher attrition. There appears to be a positive effect: when older teachers are replaced by younger teachers, this leads to better results. Younger teachers perform better and this is an encouraging result.
- A significant negative scale effect emerges from the analysis of grade 7 exam results: an increase in the number of a school's 7th graders leads to a drop in average scores. This would suggest that it is not advisable to establish very large schools without proper understanding of the potential problems involved in terms of school organisation.

The results of the quantitative analyses show that investments in teachers, classrooms and books were effective, though the effectiveness of these instruments can be improved. Investments in the quality of teacher education, the quality of school management and the inspectorate are necessary to improve the effectiveness of the recruitment of teachers and the procurement and dissemination of textbooks. Moreover, the recruitment of new teachers must be accompanied by the building of classrooms in order to be cost-effective.

The overall conclusion of this chapter is that, over the last decade, Zambia has achieved major results in expanding primary education in quantitative terms. There is no doubt that further increase in the number of teachers, schools and learning materials is necessary to keep up with the growing number of pupils. However, a relative shift of focus towards increasing the quality of education seems warranted. The results show that investments in teachers, classrooms and books are more effective when the management structure at the school and district level is stable.

7 Reaching the poor

7.1 Introduction

It is important to determine whether the education policy succeeded in reaching the poorest regions and children. This chapter analyses the effectiveness of Free Basic Education Policy, BESSIP and the MoESP in improving the access of the poor to basic education (7.2) and their learning achievements (7.3) as well as the distributional effects of the investments (7.4).

7.2 Enrolment

7.2.1 Enrolment by wealth

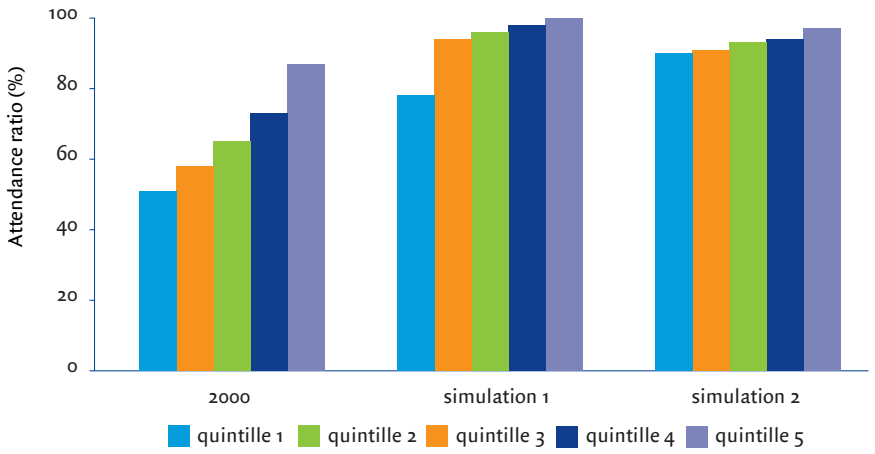
The introduction of cash grants in 2000 and the Free Basic Education policy resulted in an enormous education cost reduction for parents. In 1993, parents' private expenditure on education accounted for 44% of the total expenditure (50% being paid by the government and 6% by donors). The cash grants that were introduced in 2000 represented 66% of household education expenditures for the lowest wealth deciles and 19% for the top wealth decile. Das et al (2004, p. 3) did find high substitution effects of these cash grants, with an estimated coefficient of elasticity between -0.35 and -0.52. FBE policy further removed the burden of lower and middle basic education costs from parents' shoulders. Thus, it contributed to poverty alleviation. Several parents revealed that the removal of school fees enabled them to use the money for food, clothing and health care (Mwansa et al. 2004, p. 41). Nearly 12,000 pupils (in a sample of 352 schools) who had dropped out because their parents could no longer afford the fees returned to school. This is approximately 7.4% or 150,000 pupils (see chapter 5).

Figure 7.1 shows the relation between wealth and school attendance. In 2000/2001, school attendance was highly related to wealth: the wealthiest

households had much higher attendance rates than the poorest households.[45] In 2000/2001, the school attendance of the lowest wealth quintile was 51% (compared 87% of the highest wealth quintile). A new DHS survey will make it possible to determine the precise effects of the increase in enrolments on attendance by wealth quintile by 2006. But the results of this new survey are not yet available. Two simulations, however, provide more insight in the *probable* effects of the increase in enrolment on the school attendance of the poorest wealth quintiles.

The first simulation assumes that the *increase* in enrolment is distributed relatively equally over all wealth quintiles: for every quintile, non-attendance is reduced by 79%. This figure is computed on the basis of the total enrolment in 2005. The second simulation is based on the assumption that the highest wealth quintiles profited more from the increase in enrolments than the lower quintiles. It is assumed that enrolment in the highest quintile increased to 100%, in the fourth quintile to 98%, in the middle quintile to 96% and in the second quintile to 94%. In that situation, attendance in the lowest quintile must have increased from 51% to 78%. Figure 7.1 is a graphic presentation of the two simulations. The graph shows that the large increase in enrolment especially benefited the poor.

Figure 7.1 *Primary net attendance ratio by wealth index (simulations for 2005)*



45 The figures for 2000/2001 are copied from the DHS report (CSO, 2003, p. 58). In 2002, the first DHS Education survey was conducted in Zambia. Information on school attendance for both 2000 and 2001 was collected in the 2001 DHS survey.

Sinakodobbo community school, Southern Province. Photo: Vincent Snijders.

7.2.2 Enrolment and socio-economic position

Another way of looking at the distributional effects of government interventions is by using poverty maps (see Annex 5). Table 7.1 presents the results of such a comparison at the district level. Poverty estimates (at district level) are derived from CSO. Po denotes the percentage of persons (within a district) with an income below the poverty line. P1 is an indicator for the poverty gap and is similar to the distance between the average income and the poverty line. P2 is the squared poverty gap. The effect of squaring the poverty gap figures is that the poorest people gain more statistical weight. This makes P2 an indicator for extreme poverty.

In table 7.1, the three poverty indicators (Po, P1 and P2) are weighted by the total number of pupils in a district. So, if more pupils from poorer districts are enrolled, the value of the poverty indicators goes up. It appears, however, that effects are barely measurable at the district level. It would be expected that Po, P1 and P2 go up when more children from poorer districts enrol. A possible explanation for the fact that this effect is only slightly visible is that the district level is too rough to measure the effects of pro-poor education policy. The analysis therefore introduces three new indicators, which are measured at the ward level. The first indicator denotes the average *educational attainment* at the ward level. The second gives an indication of the *job status* at the ward level. The third indicator combines the two

variables.[46] People in wards with a score below 0 on average are less educated and are less likely to have a paid job. The three variables, constructed on the basis of census data, confirm that relatively more children from poor areas entered school between 2001 and 2005.

Table 7.1 *Average socio-economic scores based on pupils' background*

	Poverty head count (P0)	Poverty gap (P1)	Squared poverty gap (P2)	Factor score education	Factor score job status	Socio-economic score
2001	0.65	0.27	0.14	0.31	0.28	0.31
2003	0.65	0.27	0.15	0.29	0.27	0.29
2005	0.66	0.28	0.15	0.25	0.23	0.25

Source: CSO.

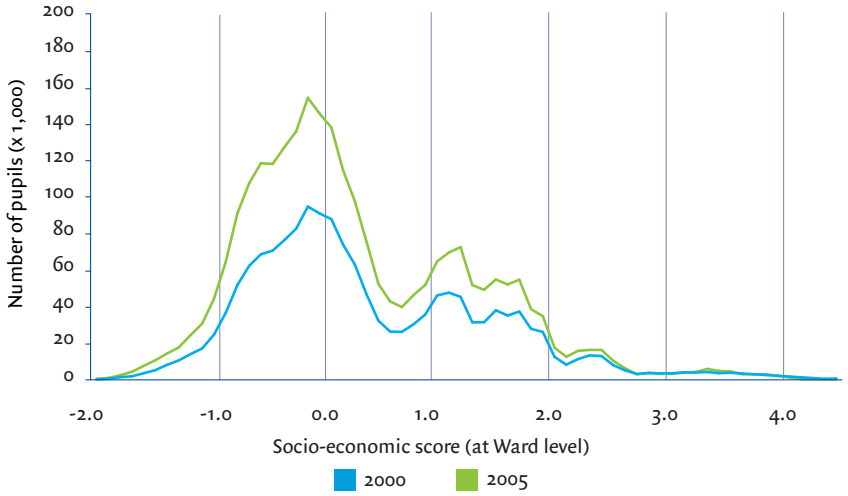
For 2005, the three constructed factor scores for educational background, job status and the combined socio-economic score are lower than for 2001. This means that relatively more children from regions with relatively low education levels and relatively fewer paid jobs went to school. The effect seems to be small, but it is statistically significant. Moreover, the pro-poor effects presented in this analysis are actually underestimated, as the enrolment rates are only compared between, and not within, wards.

Figure 7.2 presents the total enrolment in primary education in 2000 and 2005 by socio-economic position (at the ward level). Although the analysis is conducted at the ward level and not at the individual household level, the figure has a lognormal distribution, just like most income distributions. The poorer regions show a relatively large increase in enrolment. In 2000, 49% of the pupils lived in regions with a (constructed) socio-economic score below 0; by 2005 this figure had increased to 53%.

Almost 60% of the growth of enrolments occurred in the poorest regions. In the wards at the upper end (at the right of the figure), the number of pupils in primary schools hardly increased. This is precisely what was to be expected, because enrolment rates are generally highest in the most prosperous areas.

46 See Annex 4 for an explanation.

Figure 7.2 *Total primary enrolment by socio-economic position (at ward level)*



Source: EMIS, 2000-2005 / CSO / Population and Housing Census 2000.

The overall conclusion is therefore that the increase in enrolment had a significant pro-poor effect, with an increase in school attendance at the lowest quintile from 51% in 2000 to between 80%-90% in 2005.

7.3 Effects on learning achievement

The large increase in enrolment (almost by definition) had a negative impact on the quality of education, as measured by grade 7 examination results. First of all, it resulted in higher pupil teacher ratios, pupil classroom ratios, pupil book ratios, etc. Second, it meant that (relatively) poor pupils with less-educated parents gained access to education. It is known from the literature that these developments have a negative impact on average achievement. There is a positive correlation between parents' educational background and income level and test pupils' and examination results (see White 2004). In general, children from wealthier and better-educated parents perform better. Precisely this effect explains why, in many developing countries the effects of increased investment in education may initially seem disappointing. This situation is an example of 'vanishing benefits': the results are there, but they are initially invisible (see Ravallion, 2001).[47]

47 Das et al. 2004 have shown that households lower their expenditures on schooling in reaction to the introduction of cash grants. As a result, these reactions obscure the real effects of government investments in education. This is another example of vanishing benefits.

It can be shown that this effect played a part in the development of learning achievements in Zambia. Between 2000 and 2005 total enrolment in grades 1-7 increased by 57%. Approximately 70% of the total enrolment growth and of the growth in the number of examination candidates cannot be attributed to population growth and is the result of increased school attendance.

In 2000, the distribution of grade 7 pupils was more skewed towards the relatively prosperous wards than the distribution of all primary pupils. That year, 49% of all pupils lived in wards with a socio-economic score of less than 0, but for grade 7 pupils this was no more than 41%. In 2005, the figure for 7th graders had increased to 45%. Other studies also show that many children who had left school because their parents could no longer afford the school fees, returned to school after the implementation of FBE (Mwansa et al., 2004, p. 22). Table 7.2 combines information of the DHS with the analysis at the ward level. In 2000, 15% of the pupils in primary education came from the poorest wealth quintile. Information at the ward level suggests, however, that only 10% of the grade 7 pupils came from the poorest wealth quintile. According to the estimates, these percentages were significantly higher in 2005.

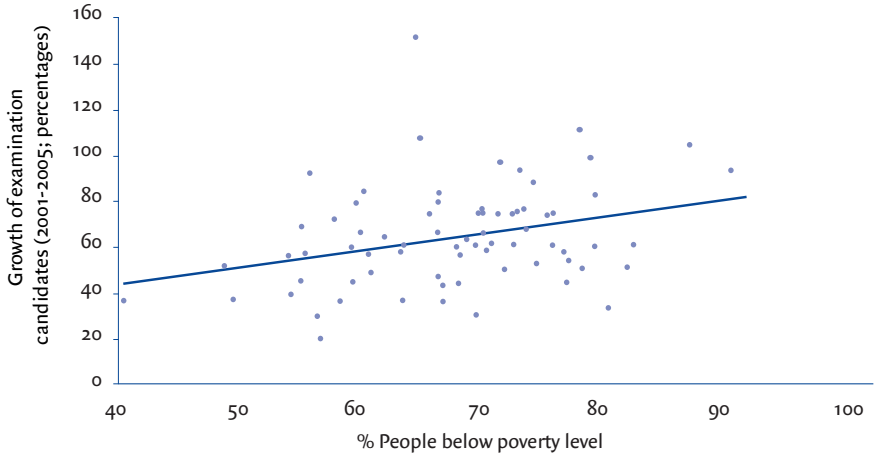
Table 7.2 *Estimated enrolment shares by wealth quintile (2000 and 2005)*

	Net enrolment rate (2000)	Share in total enrolment (2000)	Estimated share in grade 7 enrolment (2000)	Estimated share in total enrolment (2005)	Estimated share in grade 7 enrolment (2005)
Quintile I	51%	15%	10%	18%	15%
Quintile II	58%	17%	14%	20%	17%
Quintile III	65%	20%	19%	20%	20%
Quintile IV	73%	22%	25%	21%	22%
Quintile V	87%	26%	32%	21%	26%
Total	**67%**	**100%**	**100%**	**100%**	**100%**

Source: CSO, DHS Zambia EdData (2002) / CSO, Population and Housing Census 2000 / MoE / EMIS.

A district-level analysis confirms the figures in table 7.2: between 2001 and 2005, the growth of the number of examination candidates was much higher in the poorer districts than in the relatively wealthy districts (see figure 7.3).[48]

Figure 7.3 *Growth of the number of grade 7 examination candidates between 2001 and 2005 by district poverty level*



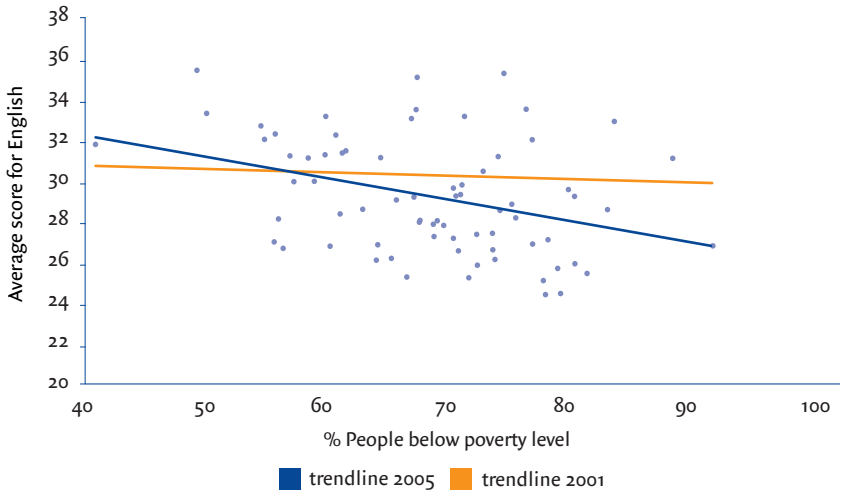
Source: ECZ / CSO / computation IOB.

This growth of the number of examination candidates in the poorer regions had an effect on average examination results. In 2005, the average examination results for English achieved by the pupils from the highest quintile (as measured by the socio-economic score) were 20% higher than those of the two lowest quintiles. The total effect of the enrolment of children from the poorest parents and regions on average learning achievements is estimated at approximately 4-6%. In 2005, the average examination result for Zambia was approximately 175. Leaving the group of new entrants aside, this score amounts to approximately 185, with an average of 140 for the poorest children. The average score of the poorest regions is also approximately 140.

48 The outlier is a small district in Eastern Province.

Figure 7.4 represents the relation between the percentage of poor people in a district and the average examination results for English (figures 2005). The figure shows that the poorest districts produced lower average examination results for English than the districts with lower percentages of households below the poverty line. It is of course possible that there is no direct relation between poverty and examination results, but that instead the lower results for the poorer districts are due to lower investment levels. However, in 2001, when both enrolment rates and the number of examination candidates were considerably lower, no relation was established between poverty rate and average examination results at the district level (see the orange line in figure 7.4). Moreover, evidence suggests that investments in education became less regressive (see section 7.4).

Figure 7.4 *Incidence of poverty and average examination scores for English (2005)*



Source: ECZ / CSO / computation IOB.

7.4 Allocation of resources

The school grant allocation scheme that was introduced with the implementation of Free Basic Education, initially favoured smaller (rural) schools as every school received the same amount in 2002. On average, rural schools are smaller than urban schools. In 2004, a World Bank study based on a 2002 survey of 184 basic schools concluded that the fixed school grants were pro-poor (Das et al., 2004). This conclusion was confirmed by a study conducted by Mwansa et al. (2004). School grants were sufficient according to 32% of the rural schools but less than 5% of the urban schools.

However, the World Bank study concluded that teacher deployment was regressive. Schools with pupils from high-income parents had the most experienced teachers and significantly lower pupil teacher ratios. Average teacher compensation was approximately 25% lower in the 'poor' schools'. An important reason for this difference is the relatively large presence of trainee teachers in rural areas. The study concluded that school funding was generally regressive, with 30% higher allocations to richer schools.

Teacher deployment also has a strong urban rural dimension. Most teachers prefer to work in urban areas, resulting in an enormous shortage of trained teachers in more remote areas. Bonuses for teachers in remote rural areas are clearly not enough to compensate for the hardships and lack of housing these teachers have to face. The lack of housing in rural areas is an obstacle to teacher recruitment and retention in rural areas (World Bank 2006, p. 29). A comparison between data for 2001 and 2005 shows that differences remain similar, though the pupil teacher ratio has deteriorated more in urban areas than in rural areas.

Nevertheless, enrolment growth has been much higher in rural areas than in urban areas. This implies that in rural areas the number of teachers has grown faster than in urban areas.

Lack of desks: children on the floor, Henry Kapata basic school, Kasama, Northern Province.

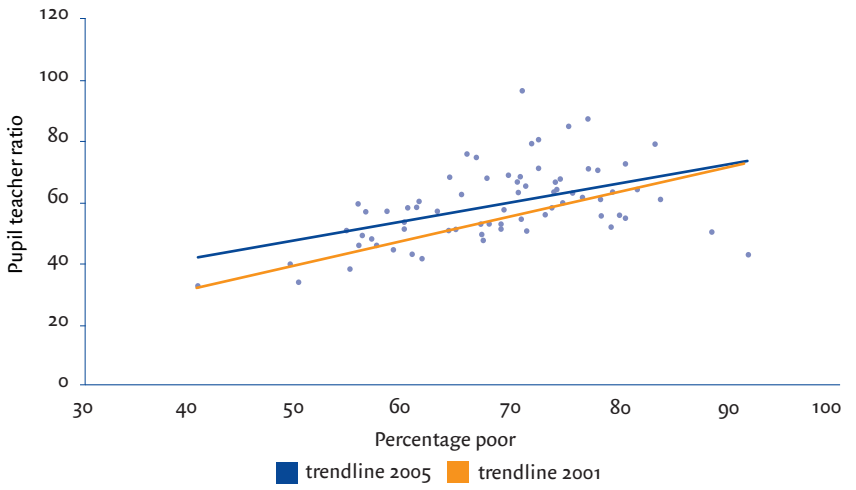
Table 7.3 *Pupil teacher ratios by responsible agency and location (2005)*

	Rural	Urban
GRZ	68	44
Grant-aided	69	35
Community schools	74	65
Private / church schools	49	23
Total	**68**	**43**

Source: MoE/ EMIS / computation IOB.

A separate analysis of GRZ schools confirms that, on average, the distribution of teachers over the districts has become less skewed and more equal. Figure 7.5 shows the relation between poverty at district level and the (average) pupil teacher ratio of GRZ schools (for 2005). The figure shows that pupil teacher ratios are generally higher in poorer districts. Nevertheless, the relation between the percentage of poor in a district and the pupil teacher ratio was more skewed in 2001 (see the orange line in the figure). This leads to the conclusion that poorer districts have benefited more from the increased number of teachers than wealthier districts.

Figure 7.5 *Pupil teacher ratio in GRZ schools by poverty level (districts; 2005)*

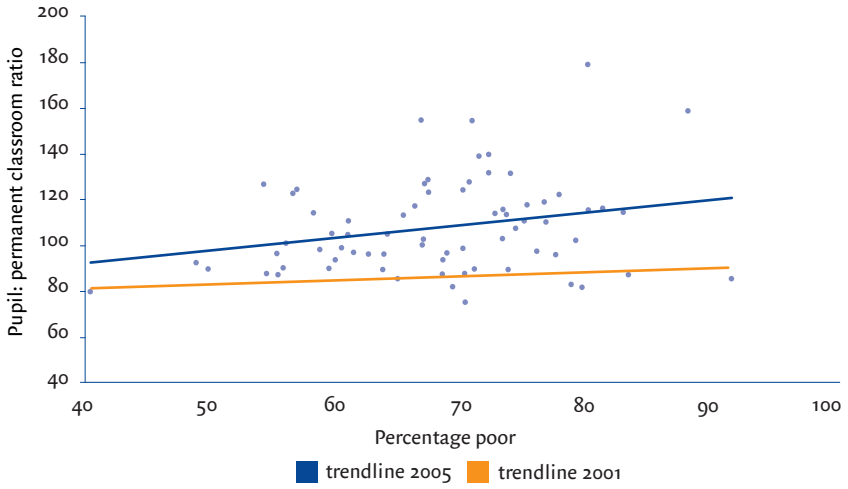


Source: MoE / computation IOB.

The infrastructural situation is more complicated. Chapter 4 already concluded that pupil classroom ratios are lower in rural areas than in urban areas, but solely attributed this to the large number of temporary classrooms in rural areas. The pupil permanent classroom ratio is considerably lower in urban areas than in rural areas.

In 2002, analyses of government schools did not indicate a relation between the poverty level of a particular province and its pupil permanent classroom ratio. However, as a result of the large growth of enrolment in the poorer districts, the pupil permanent classroom ratios have deteriorated more in poorer districts than in relatively wealthy districts (see figure 7.6).

Figure 7.6 *Pupil permanent classroom ratio in GRZ schools by poverty level (districts; 2005)*



Source: MoE / computation IOB.

7.5 Summary and conclusions

This chapter has analysed the question to what extent education policy has benefited the poor. The chapter analysed the effects on access and learning achievement and provided insight into the distributional effects of investments in education.

Static analysis shows that the education system is still regressive. Enrolment rates are higher in the highest wealth quintiles and the wealthiest wards. Moreover, this effect is more pronounced at grade 7, which suggests that dropout is highest among poor children. This finding is consistent with the conclusions of chapter 5.

In addition, there are large differences between schools and regions. Pupil teacher ratios are much higher in remote and poor rural areas than in urban and wealthier areas. The allocation of teachers is regressive, which means that the highest pupil teacher ratios are found in the poorest districts. Especially community schools, which contributed significantly to the overall increase in enrolment, are understaffed. In those schools, book pupil ratios are also much lower than in GRZ schools and (particularly) private schools.

Dynamic analysis tells a different story. As a result of FBE and accompanying investments in education, more children from poorer socio-economic backgrounds gained access to education. The analysis shows that it would have been impossible to achieve such a high increase in enrolments without also greatly benefiting the poor. In 2000, 51% of the children of the poorest quintile went to school. Simulations show that, given the growth of enrolments, this figure must have increased to somewhere between 80% and 90%.

Apart from improved access, dropout also diminished. Many of the children who had left school because their parents were no longer able to pay for the school fees returned to school after the implementation of FBE (Mwansa et al., 2004, p. 22). The effects are already discernable at grade 7. In 2005, the percentage examination candidates from the poorer districts was higher than in 2001. As an increase in the number of candidates from poorer, less educated, areas lowers the average examination results, it was precisely this fact that had a negative effect on the average examination figures. It is an example of 'vanishing benefits': the results are there, but they are initially invisible. Taking this effect into account, learning outcomes have improved. Other research (Das et al. 2004) has pointed to another example of 'vanishing benefits'. The introduction of cash grants and FBE induced a lowering of the household expenditures on schooling. So, partly government expenditures were a substitute for household expenditures. As such, this contributed to poverty alleviation as well. The removal of school fees enabled the poorer households to use the money that was saved for food, clothing and health care.

Conclusions

The overall conclusion of this chapter is that the education policy was generally pro-poor, even though the distribution of investments and access is still regressive. This could suggest that a project approach would have been more effective in directing investments to the poorest people. It should be noted, however, that 68% of all Zambians are classified as poor. Second, a project approach may focus on a small region, a number of communities or schools and consequently produce

excellent results (due to considerably higher investments per pupil), but it would exclude many other communities and households that are poor as well.[49] Moreover, the project approach is not necessarily sustainable.

49 The Western Province Education Project of the Netherlands, for instance, focused on 65 basic schools out of more than 500 in Western Province.

8 Sustainability of results

8.1 Introduction

Chapters 5 and 6 presented a quantitative analysis of the effectiveness of interventions in basic education in Zambia. The chapters described several significant effects of investing in teachers, classrooms and books. Nevertheless, the results of the quantitative analyses seem relatively low. There may be several explanations for this result. First of all, the quality of the data may be a problem, although findings suggest that the recent EMIS data (2004-2005) are more reliable than data available for the preceding years (2000-2003). UNESCO has suggested that the Zambian (EMIS) database is one of the best in the region. Moreover, implausible figures have been deleted from the analyses.

A second explanation may be more serious. Thousands of children go to another school (exam centre) to take their examination. As a result, the examination results of large numbers of schools (especially GRZ schools) include the examination figures of pupils from other, neighbouring, schools. These pupils are likely to lower the average figures, as particularly the weaker schools do not manage their own examination centre. This point explains the fact that community schools demonstrate (slightly) better examination results than GRZ schools: only a limited number of community schools manage their own examination centre and most community school pupils sit their exams in GRZ schools. Although this factor complicated the study, statistical models did not significantly improve after schools with (much) more examination candidates than pupils were excluded from the sample. Moreover, this problem did not occur in the analysis based on the assessment surveys.

Therefore, there must be a third explanation for the somehow disappointing results (from a statistical point of view). Until the end of the 1990s, underinvestment in education in Zambia had been dramatic. The 2000 international SACMEQ test shows that pupils in Zambia produced low results in 2000 compared to other countries

(see chapter 3). Even though the Zambian government and its cooperating partners had launched ambitious investment programmes at the end of the 1990s, total investment has remained low. As a result, pupil teacher ratios and pupil classroom ratios have remained high and teaching in double or even triple shifts is often still necessary. As a consequence, contact time is extremely short (no more than 2-3 hours a day). Moreover, school management remains a serious problem that undermines the effectiveness of the investments in classrooms, books and teacher training. High teacher attrition and turnover has a negative impact on continuity at the school level. Reducing the length of the teacher training course from three years to two had a negative impact on the quality of teachers. As a result, the average test and examination figures at primary schools tend to fluctuate significantly from year to year.

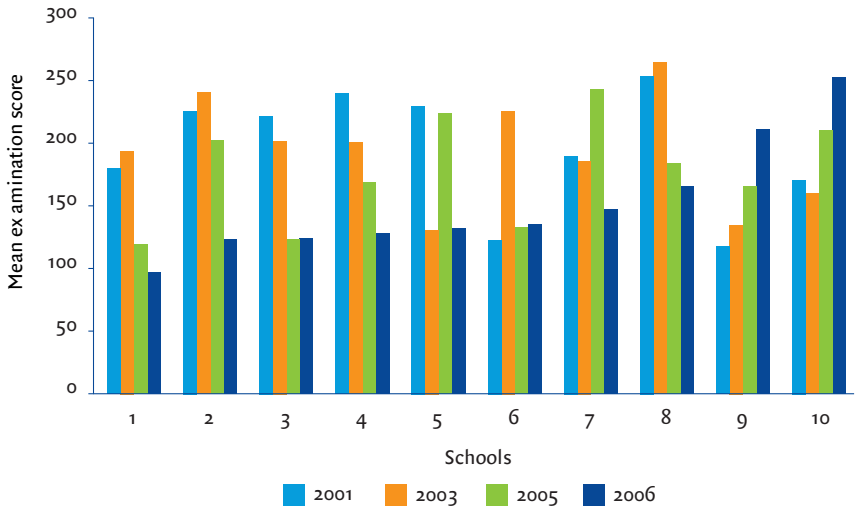
This chapter analyses these fluctuations. Section 8.2 provides several examples and presents a statistical overview of the sometimes wide fluctuations that lead to relatively low correlations between test and examination results in time. Section 8.3 offers additional insight into the sustainability of two successful programmes: the Primary Reading Programme (PRP) and the Western Province Education Programme (WEPEP). Section 8.4 discusses the results and section 8.5 contains a summary and draws a number of conclusions.

Students at the Kasama College of Education, Northern Province.

8.2 Fluctuations

Figure 8.1 gives an impression of the sometimes enormous fluctuations in examination results. The figure represents the 10 (public) schools with the largest (relative) difference between the highest and the lowest scores.

Figure 8.1 *Mean examination scores for 10 schools (2001-2006)*



Source: EMIS / CSO.

The first school, a school in Western Province that participated in the Western Province Education Programme (WEPEP), produced relatively good results in 2001 and 2003, which, however, dropped markedly in 2005 and 2006. In 2003, the school's average score was 194; in 2006 it was only half that (97). The second school, a school in Eastern Province, produced good results in 2001, 2003 and 2005, but poor results in 2006 (123). School number 8, a school in Luapula, produced extremely good results in 2001 and 2003, but these dropped dramatically in 2005 and 2006. The last two schools show important and encouraging improvements over time. School number 9 is in Northern Province and number 10 is in Western Province. Schools number 5, 6 and 7 do not show a trend. School number 5, also in Luapula, performed well in 2001 and 2005, but not in 2003 and 2006. School number 6, in Eastern Province, produced very good results in 2003, but not in the other years.

Though the figure presents the most extreme results, these schools are no exceptions. Table 8.1 gives an impression of provincial differences. The table is based on schools:

1) that are in the database for all of the four years (both examination and EMIS data for 2001, 2003, 2005 and 2006);
2) with at least 30 examination candidates every year;
3) and with a number of 7th graders that constitutes at least 80% of the total number of the school's exam candidates (in order to limit the effect of exam centres).

For these schools, the difference between the lowest and the highest mean examination score has been calculated for each year. The table relates this difference to the average figure over the four-year period. So, if a school produced mean scores of 150, 170, 190, and 210, its average score is 180 and the *relative* difference between the highest and the lowest score is (210-150)/180= 33%.

Table 8.1 *Changes in average examination results of schools by province (2001-2006)*

	Number of schools	Average difference between highest and lowest score	<10%	10-20%	20-30%	>30%
Central	114	23	8	36	32	25
Copperbelt	100	18	28	43	13	16
Eastern	79	21	15	39	28	18
Luapula	55	27	4	22	40	35
Lusaka	69	19	22	43	22	13
North-Western	36	25	6	39	17	39
Northern	110	25	11	31	22	36
Southern	239	21	12	42	27	19
Western	43	28	9	23	21	47
Zambia	**845**	**22**	**13**	**37**	**25**	**24**

Source: EMIS / CSO.

Schools in the Copperbelt and Lusaka produced the most stable results. Schools in Luapula and Western Province show the most significant changes. For no less than 47% of the schools in Western Province, the difference between the highest and lowest results was more than 30% of the four-year average.

The correlation between consecutive results and between test and examination results is low. One would, for instance, expect a high correlation between the test results in 2003 and subsequent examination results in 2005. This correlation is low, however: schools with good (grade 5) test results in 2003 did not necessarily perform well in the 2005 examination. There is no significant relation between the test results for mathematics in 2003 and the examination results in 2005.

Table 8.2 *Correlation between test results in 2003 (grade 5) and examination results in 2005*

Assessment 2003	Examination 2005				
	English		Mathematics	Zambian languages	
English	0.23	**	0.12	0.11	
Mathematics	0.24	**	0.12	0.10	
Zambian Languages	-0.01		0.18	0.51	**

* significant at p<0.05; ** significant at p<0.01.

Correlations between examination results in time are higher, but they drop if the interval is increased. This means that the quality of schools, as measured by pupils' results, is not stable over time.

Table 8.3 *Correlation between examination results in time (2001-2006)**

	2001	2003	2005
2003	0.46		
2005	0.32	0.43	
2006	0.21	0.33	0.59

* Private schools not included.

In 1999, only 28% of the differences in pupils' test results for English could be explained by the fact that they attended different schools (27% for math). But there is good news as well: between 1999 and 2003, these percentages increased, which suggests that the effectiveness of schools is growing.

Table 8.4 *Percentage explained variation in test and examination results (1999-2003)*

	English	Mathematics
Assessment tests		
1999	0.28	0.27
2001	0.30	0.28
2003	0.39	0.35
Examinations		
2001	0.24	0.25
2003	0.24	0.25
2005	0.26	0.22
2006	0.25	0.22

Source: ECZ.

There are two obvious explanations for the high volatility of average examination results at the school level: the growth in the number of pupils in schools and a high teacher turnover. A 'difference regression' (see table 6.15) showed a negative relation between a change in the number of pupils and examination results. However, this effect is no longer significant when the change in the pupil teacher ratio is included in the analysis. Moreover, the effects of a strong growth have been analysed by repeating the analyses in chapter 6 after adding a variable indicating the growth in the number of pupils. The estimated coefficient of this variable was not significant. This means that, apart from the effects on the pupil teacher ratio, pupil classroom ratio and pupil book ratio, there was no significant (negative) effect of enrolment growth.

A second explanation could be high teacher turnover. It appears, however, that high teacher turnover can only partly explain the large differences between years. Table 8.5 relates changes in examination scores to teacher turnover in 2003 and 2005. The differences between schools with high turnover rates and schools with low turnover rates appear to be small. Moreover, the analyses in chapter 6 did not indicate a significant negative relation between teacher attrition and examination results.

Table 8.5 *Teacher turnover and changes in examination scores for English and mathematics (percentages; 2003-2005)*

	No teacher turnover	<20% teacher turnover	>20% teacher turnover	Total
>15% decline in English exam score	25	15	27	23
0-15% decline in English exam score	20	16	18	19
0-15% increase in English exam score	27	39	26	29
>15% increase in English exam score	28	30	29	28
	100	100	100	100
>15% decline in math exam score	30	20	32	28
0-15% decline in math exam score	25	28	21	25
0-15% increase in math exam score	26	36	26	28
>15% increase in math exam score	18	16	21	18
	100	100	100	100

Source: ECZ / EMIS / computation IOB.

8.3 An analysis of two programmes

8.3.1 Introduction

Thus far, the effects of specific programmes were not taken into account. Successful programmes may explain the low correlation between the most recent examination results and the test and examination results in previous years. This section analyses the sustainability of specific two programmes: the Primary Reading Programme (PRP) and the Western Province Education Programme (WEPEP). The analysis is based on statistical information obtained from the school census as well as test and examination data.

8.3.2 Primary Reading Programme (PRP)

By 1995, there was a growing awareness within the MoE that it would be more effective to teach children to read and write in their mother tongue. That year, a National Reading Committee (NRC) was set up with the mandate to improve reading levels in primary schools (Linehan, 2004). This committee brought all stakeholders together in the Zambia National Reading Forum, also including foreign experts. In the statement *Educating Our Future* (1996) the GRZ endorsed the recommendations of the Reading Forum, stating that initial literacy and numeracy were to be developed through a familiar language. Two years later, an Ireland

Aid-financed pilot was launched in Kasama district in Northern Province. The next year (1999) BESSIP was launched and the programme was implemented in other districts with the support of DFID.

The *Primary Reading Programme* (PRP) aimed at enhancing the reading and writing skills at the lower (grades 1-4) and middle (grades 5-7) basic education levels. The programme's main purpose was to improve literacy rates by teaching in local languages. The programme had a target of 80% of the children achieving nationally agreed reading standards in specific grades. To facilitate this target, children in the first classes were to learn to read and write in one of the seven main Zambian languages before continuing to learn English. Based on a 2002 evaluation and the very positive evaluation of the Kasama pilot, it was decided to scale up the programme and to implement it in more than 4,000 government primary schools and 74 community schools.[50]

PRP involves interventions at each of the seven primary grade levels (the lower and middle basic levels) (Linehan, 2004):

1) The New Breakthrough to Literacy Course in grade 1, taught for one hour per day in one of the seven official Zambian languages. In addition, PRP developed an oral English course.
2) At grade 2, teachers must ensure the transfer of skills from the Zambian language to English by means of the *Step into English* programme.
3) At grades 3-7, pupils take a course called *Read On*, which provides for bilingual literacy development and consolidation.

PRP has been evaluated several times and each of these evaluations was extremely positive (Linehan, 2004, p. 12). The main results include better all-round teaching, successful learning, motivated teachers, supportive parents and communities and a pupil-centred approach that promotes children's confidence and higher attendance rates. Teachers reported higher attendance rates as a result of the free atmosphere, well-resourced environment and improved participation that motivate children to come to school (BESSIP Completion Report, p. 20).

For the Ministry of Education, however, the 2003 NAS results were rather disappointing after the highly successful 2002 evaluation. The 2003 National Assessment Survey included a large number of schools that participated in PRP.

50 The evaluation of the Kasama pilot reported that 1st graders were reading and writing at levels equivalent to grades 4 and 5 of the traditional course.

For most provinces, this meant the inclusion of grade 4 pupils. Because PRP had started in 1999, most pupils who had started with PRP were in grade 4 instead of grade 5. The only exception was Kasama in Northern Province, where pupils had started with PRP one year earlier and had therefore entered grade 5. The grade 4 pupils took the same tests as the grade 5 pupils. Table 8.6 presents a comparison between the test results of PRP schools, community schools and ordinary schools.

Table 8.6 *Average test results in English and math by school type and gender (2003)*

	English		Math	
	Male	**Female**	**Male**	**Female**
PRP , grade 4	29	30	35	34
PRP, grade 5	35	35	40	43
Community	37	35	44	39
Ordinary	34	34	40	38
Total	**35**	**34**	**40**	**38**

Source: ECZ, 2005 / computation IOB.

Children in PRP schools did not perform better than children in ordinary schools.[51] There was a remarkable exception: girls in PRP schools at grade 5, on average, produced very good figures for math. Three schools with very high scores were responsible for this result.

8.3.3 WEPEP

There was another remarkable result. Pupils in PRP schools in Western Province performed very well, even though they were in a lower grade (grade 4) and took the same test. This success points to the effectiveness of the Western Province Education Programme (WEPEP).

Between 1998 and 2002, the Netherlands, in close cooperation with the Government of Zambia and UNICEF, supported and implemented the Western Province Education Programme within the context of BESSIP (see section 3.4.4). WEPEP was set up to improve quality and equity of education in Western Province. The strategies developed to realise this objective were:

51 The 2003 assessment covers PRP schools in Northern Province, Lusaka, Eastern Province and Western Province.

- to support education initiatives that focus on teaching and learning processes;
- to build capacity for local planning and management;
- to enhance the participation of girls and women in education (PAGE).

The programme comprised four main components:

1) *quality in education*: high quality and relevant education for all children aged 7-14;
2) *decentralisation*: more efficient and effective education services;
3) *gender and equity*: equity in all the activities carried out;
4) *technical assistance*: capacity building in the areas of planning, implementation and monitoring.

WEPEP was implemented in 10 schools that were (randomly) selected in each district. In two districts (Mongu and Lukulu) 11 schools were selected for political reasons, bringing the total to 72 schools (including 7 secondary schools).

Table 8.7 presents the differences in average test results between WEPEP and non-WEPEP schools in the province.[52]

Table 8.7 *Average test results in WEPEP and non- WEPEP schools in Western Province (2003)*

	WEPEP	Non-WEPEP	Total
English			
Ordinary (grade 5)	30	35	34
Community (grade 5)	29	40	39
PRP (grade 4)	64	58	62
Total	56	39	43
Math			
Ordinary (grade 5)	38	34	34
Community (grade 5)	38	40	40
PRP (grade 4)	59	55	58
Total	54	38	42

Source: ECZ / NAS, 2003 / computation IOB.

52 Eight of the nine PRP schools were situated in the Mongu district in Western Province. Six of the nine PRP schools participated in the WEPEP project and five of the seven excellent PRP schools participated in the WEPEP project.

Table 8.8 compares PRP schools with non-PRP schools and Western Province schools with non-Western Province schools.[53] The analysis is restricted to the provinces with PRP schools (Northern Province, Eastern Province, Western Province and Lusaka) and to PRP grade 4 (PRP only covered grade 5 in Northern Province).

The effect of school type is not significant (F=2.5). This is an enormous achievement in itself: 4th graders in PRP schools perform as well as 5th graders in other schools. This result points to the success of PRP. The effect of the difference between provinces (Western Province compared to the three other provinces) is much larger and significant (F=156). But the most important effect is the interaction effect of province and school type (F=341, not included in the table). This means that the combination of WEPEP and PRP was highly successful.

Table 8.8 *Average test results by province, location and school type (2003)*

		Number of pupils	English	Beta	Math	Beta
Province	Western	689	43	0.20	42	0.11
	Northern/ Eastern/ Lusaka	2,727	34		38	
School type	PRP	791	36	0.03	38	0.02
	Ordinary / community	2,626	35		39	
Location	Rural	2,241	34	0.14	38	0.12
	Urban	1,175	39		41	
R^2				0.06		0.02

Source: ECZ / NAS, 2003.

WEPEP was evaluated in 2003. The overall conclusion of the evaluation report was that 'although the WEPEP target schools have relatively improved their performance over the four years compared to non-target schools, the problem of under-achievement

53 Due to contamination (spill-over) effects, the non-WEPEP schools in Western Province are combined with the WEPEP schools. An analysis without these schools gives the same results.

in rural Western Province is still evident' (p. vi). One of the main challenges was inadequate monitoring of teaching quality in both target and non-target schools. School managers did not supervise teachers and did not check their work plans. Teachers continued to use traditional teacher-oriented teaching methods such as rote learning instead of more learner-centred approaches.

8.3.4 Comparison with a control group

In order to assess the effectiveness of WEPEP, the examination results of WEPEP schools were compared with other schools in the province and with schools outside Western Province that have similar characteristics. For this comparison, the technique of propensity score matching was used. An ideal comparison of the effectiveness of different schools is based on schools with identical characteristics: there is no point in comparing schools with children from totally different backgrounds, urban and rural schools, schools with large differences in size, etc. To allow for a proper comparison, schools need to be found that have similar characteristics as the project schools. Forming pairs of schools seems enormously difficult, but statistical theory is helpful in this regard. The method of propensity score matching forms pairs by matching on the probability that schools have participated in the project. The method uses all available information in order to construct a control group (for an explanation, see Wooldridge, 2002, chapter 18). In 1983, Rosenbaum and Rubin showed that this method made it possible to create a control group ex post with characteristics that are similar to the kind of intervention and control groups that would have been created through random selection before the beginning of the project.

Schools in the control group were selected in Northern, Luapula, Eastern and North-Western Province based on the incidence of poverty. Central Province was excluded because the main focus is on remote areas. Private schools were excluded from the analysis as well. Schools were matched based on specific characteristics in 2001:

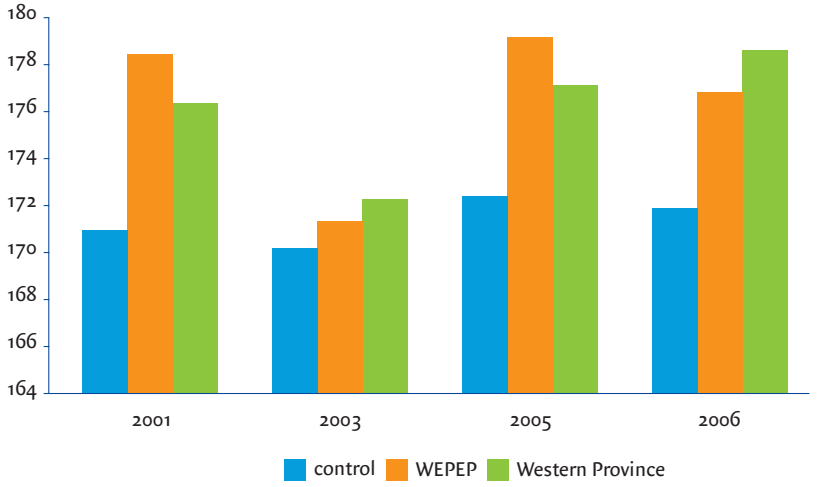
- total number of pupils (grades 1-7);
- school type (community school or GRZ school);
- location (urban/rural);
- distance to the DEO;
- pupil teacher ratio;
- special education;
- percentage girls;
- percentage orphans;

- socio-economic characteristics (at ward level)
- poverty level (squared poverty gap, at district level).

The analysis is based on 428 schools and covers four years.[54] Figure 8.2 shows the results.

It appears that WEPEP schools and non-WEPEP schools in Western Province produced better results than the control group, although differences are minor. This conclusion is based on a weighted analysis: the results for the different schools are weighted by the number of 7th graders.55 The results for 2003 are unexpected. A possible explanation is that in 2003, overall results were lower than in other years, which affects the schools with better results more than the schools with (already) lower results. In 2003, the average score for Zambia as a whole was 171. Compared to the 2003 assessment results, the effect of WEPEP on examination results seems to be low in that particular year. In 2005 and 2006, results of schools in the Western Province were better than the results of schools in the control group. Still, the effect is no more than 3-4%.

Figure 8.2 *Examination results for WEPEP schools, other schools in Western Province and a control group (2001-2006)*



Source: ECZ / EMIS / computation IOB.

54 There are several reasons why the number of schools is not constant over the years and why not all 72 WEPEP schools are included in the analysis. Not all WEPEP schools were basic education schools, they included seven secondary schools. Moreover, schools that are not examination centres or did not participate in the school census are not included in the analysis.

55 In an unweighted analysis, WEPEP schools in Western Province produced approximately 10% better results than non-WEPEP schools in 2001 and 5% better results than the control group. Weighted differences between WEPEP schools and non-WEPEP schools are considerably smaller. This means that the selection of WEPEP schools was not entirely aselect: the smaller schools were not included in the programme.

8.3.5 Sustainability

Figure 8.3 is a graphic presentation of the development of examination scores for several groups of schools. The breakdown is based on the schools included in the national assessment of 2003, because that year, the results produced by WEPEP/PRP schools were particularly good. The figure distinguishes between the following groups:

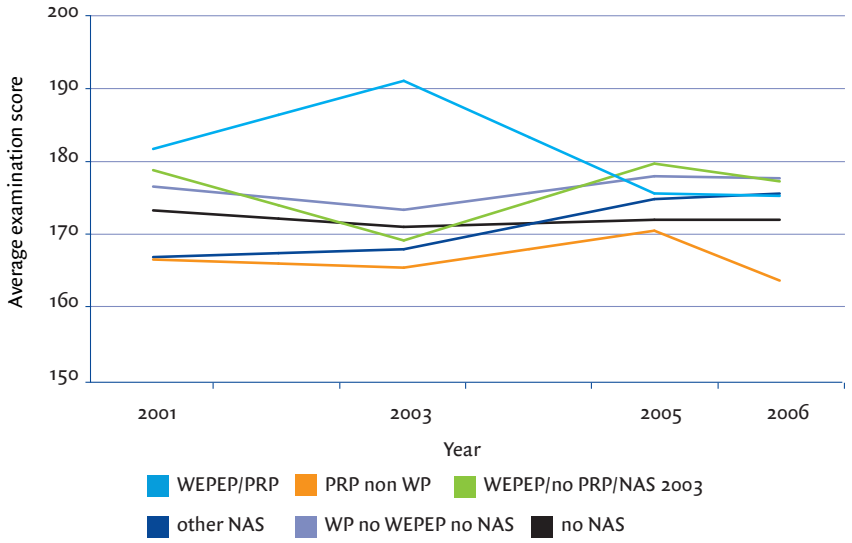
1) WEPEP/PRP schools (that is, the six schools from the 2003 NAS);[56]
2) the other WEPEP schools;
3) non-WEPEP schools in Western Province;
4) PRP schools (in the 2003 NAS) outside Western Province;
5) other schools included in the 2003 NAS;
6) schools that were not included in the 2003 NAS and are not in Western Province.

The figure suggests that interventions are not sustainable in the long run. Schools that were part of a specific project return to average levels after several years:

1) PRP schools (included in the 2003 NAS) that participated in the WEPEP programme performed very well, except in 2005 and 2006. This seems difficult to explain, because pupils who participated in the NAS in 2003 were in grade 4 then and therefore took the exam in 2006. Moreover, the schools produced good examination results in 2003, when the PRP pupils were in grade 4.
2) The other WEPEP schools produced relatively poor results in 2003, but did much better in 2005 (and together with the other schools in Western Province they produced the highest average score in 2006).
3) Since 2005, there is no longer a difference between the other schools in Western Province and WEPEP schools.
4) The other PRP schools performed well in 2005, when the pupils of the schools in the Northern Province took their examination, but not in 2006, when large numbers of pupils from other PRP schools took their examination.

56 Actually, no more than five schools could be matched.

Figure 8.3 *Development of average examination scores for different groups of schools*



Source: ECZ.

A possible explanation for the differences is the difference in growth rate. It appears, however, that the schools in Western Province (except for the five PRP schools) showed the highest growth in enrolment (approximately 75%-80%) between 2001 and 2005. Taking this factor into account, the developments in Western Province have been highly successful: even with these high growth rates, the schools in Western Province produced the best results in 2005 and 2006. Another interesting finding is that schools that participated in the 2003 NAS performed relatively well in 2005.

Several factors may explain the disappointing results of the PRP schools:

- as a result of mainstreaming, they are no longer pilot schools and therefore receive less attention from the districts, inspectorate, ministry and/or development agencies;
- the majority of the staff eventually were transferred, promoted or retired and their replacements were inadequately oriented towards PRP;
- there is a lack of language tutors in the colleges of education;
- failure to replace essential PRP materials on time.

A MoE monitoring report in the Northern Province warns that PRP activities are currently almost collapsing in several districts.

Head teacher of the Mantumbusa basic school, Mansa, Luapula. Photo: Vincent Snijders.

8.4 Discussion of the results

Large fluctuations in average examination results at the school level and the development of examination results of schools with the Primary Reading Programme point to several *weaknesses* in the Zambian basic education system:

1) Various weaknesses are related to shortages of classrooms, furniture and learning materials. Shortage of furniture is particularly evident in the lower grades (Higgins, 2007). Schools lack other basic facilities such as water, sanitation and electricity. Many schools lack reliable access to safe drinking water.
2) Another weakness is the occasionally high pupil teacher ratios. Lack of teachers prevents the effective use of other resources. The policy of double shifts is not effective. Teacher pupil contact time is inadequate, particularly for grades 1-4.
3) Staff deployment is not effective in many schools. Teacher pupil ratios at the lower grades are considerably higher than at the higher grades. Moreover, much of the already limited contact time is lost on teacher absence due to leave, training, internal staff meetings, picking up salaries or solving administrative problems.

4) Teacher motivation is a concern, due to low salaries, lack of suitable accommodation and services and the low status of the profession, resulting in teacher absenteeism and a lack of interacting with pupils. Hardship and retention allowances are insufficient to prevent teachers from moving to the cities. In urban areas, teachers tend to supplement their meagre income by conducting private tuition, which tends to compromise the quality of their teaching at school (Transparency International, 2005).
5) School environments are not always stimulating due to a lack of furniture and maintenance. Broken desks are piled up at the back of the classroom. Pupils have difficulties concentrating as a result of hunger and/or long (walking) distances to school.

These weaknesses are related and prevent the effective use of resources for basic education. For instance, a lack of classrooms prevents the effective utilisation of teachers, more books are not effective if teachers do not use them correctly, etc. Even though many of these points are related to the *underfunding* of the whole sector, the effective utilisation of resources is also hindered by a lack of effective management. The fact that private schools perform much better is a case in point, but this is true for community schools as well. GRZ schools do not perform significantly better than community schools, even though the latter are mainly run by volunteers, many of whom are hardly qualified. The quality of education will not improve as long as teacher, school and system management is not strengthened (Higgins, 2007). The support structure at the districts does not function effectively and efficiently (Van Donge, 2007). Turnover rates are high and the salaries of civil servants are relatively low. The accountability function is not well developed. Moreover, the inspectorate at the province and district levels lacks the means required for regular school inspections. Inspections are based on a simple standardised format that does not provide any real insights. Although reports are standardised in a format that is easily computerised, this does not seem to be common practice. District reports are based on annual school census and EMIS data and do not refer to inspection reports. The relevance of inspections would increase if their results would be computerised and linked to (and used for verification of) school census data. Now, provinces and districts question the reliability of ASC data, but no initiatives are taken to improve the way reports are drawn up.

In 2002, the World Bank evaluated its support programme for the education sector in the period between 1996 and 2000 and concluded that 'sustainability of net effects ... was adversely affected by the weak institutional capacity of the MoE and

its associated institutions and by failure to follow up and reinforce earlier achievements. Communities are not maintaining peri-urban infrastructure, local management training is discontinued, examination reform has not received financial backing' (World Bank, 2002, Zambia Country Assistance Evaluation, p. 69).

The results of a project analysis in Masindi district in Western Uganda suggest that improved management may be the key to improving the education system. In Masindi, pupils' examination scores are approximately 50% higher than in comparable schools elsewhere in Uganda.

In 2000, an NGO started an education development project in Uganda in close cooperation with the Masindi District Education Office and the Education Standards Agency. The project focused its activities on enhancing the quality of education management at both school and district level. Before the project was initiated, it was determined that the basic institutional functionality at both levels was the main factor limiting educational performance. The project engaged in the following activities:

- delivering school management training to all head teachers, focusing on leadership, managing school improvement, financial management and curriculum management;
- training and support in school inspection procedures;
- supporting district planning and management interventions;
- providing budgetary support necessary to keep district vehicles and other equipment functional;
- developing information management systems at district level.

(Relatively) positive results are achieved through improved school management, motivated teachers and adequate monitoring activities (carried out by district inspectors). As a part of the approach, districts actively and effectively monitor schools. For this purpose, district officers make effective use of the Handbook for School Inspectors of the Education Standards Agency. The results of these inspections are computerised and used for further monitoring purposes. An additional analysis of the impact of (16) management variables shows that management is highly (and positively) correlated with examination results. The analysis clearly confirms the importance of (good) management.

8.5 Summary and conclusions

Chapters 5 and 6 provided a quantitative analysis of school-level interventions that have an impact on access and learning achievement. Though the analyses produced evidence suggesting that several interventions had been effective, other results are rather disappointing. This chapter was intended to provide further insight into these findings by analysing the development test and examination results at the school level and assessing the sustainability of two successful programmes: the Primary Reading Programme (PRP) and the Western Province Education Programme (WEPEP).

Evidence suggests, first of all, that the test and examination results of many Zambian schools fluctuate widely from year to year. There is a low correlation between grade 5 test results and results for the examination taken two years later. Correlations between examination results in time are higher, but they drop if the interval is increased, which means that the quality of schools, as measured by pupils' results, is not stable over time. The chapter gave several extreme examples. One school, for instance, produced impressive results in 2001 and 2005, but did poorly in 2003 and 2006. The province-level analysis shows that schools in the Copperbelt and Lusaka produce more stable results than other provinces. Fluctuations are largest in Luapula and Western Province.

These large fluctuations raise the question of the *sustainability* of particular programmes. This chapter analysed the sustainability two successful programmes: the Primary Reading Programme (PRP) and the Western Province Education Programme (WEPEP). The analysis compared the test and examination results of different years.

The analysis shows that the combination of the two programmes was particularly successful: especially in 2003, pupils in PRP schools that participated in the WEPEP programme produced excellent test results, even though the 4th graders took the same test as the 5th graders. An analysis of the examination figures of the same WP/PRP schools showed that in that year, their examination scores were considerably higher than those of other schools. This is remarkable because the pupils in grades 5-7 had not (yet) participated in the PRP. These schools were expected to produce good examination results in 2006, when the 4th graders of 2003 took their primary leaving examination. But that year, as in 2005, the examination results of these schools were particularly low (as were the examination results of other PRP schools outside Western Province).

Conclusions

The analysis of test and examination results reveals significant fluctuations of their results from year to year. Fluctuations of 30-40% are no exceptions. Growth of enrolment and a high teacher turnover cannot explain these fluctuations. They are caused by a number of weaknesses in the Zambian basic education system. These weaknesses are related to severe underfunding, lack of qualified and motivated teachers and head teachers and lack of effective management at the school and district level.

When the GRZ announced to raise the level of funding to the education sector to a minimum of 5% of GDP in the *Fifth National Development Plan*, this was a very important stimulus for the improvement of the quality of education. It deserves the full support of all parties involved. The analyses show that for the realisation of this objective, support should focus on the quality of teachers, school management and district management. Only then will the effectiveness of (other) investments be optimized.

Annex 1 About IOB

Objectives

The objective of the Policy and Operations Evaluation Department (IOB) is to increase insight into the implementation and effects of Dutch foreign policy. IOB meets the need for independent evaluation of policy and operations in all policy fields falling under the Homogenous Budget for International Cooperation (HGIS). IOB also advises on the planning and implementation of the evaluations for which policy departments and embassies are responsible.

Its evaluations enable the ministers to account to parliament for policy and the allocation of resources. In addition, the evaluations aim to derive lessons for the future. Efforts are accordingly made to incorporate the findings of evaluations into the Ministry of Foreign Affairs' policy cycle. Evaluation reports are used to provide targeted feedback, with a view to improving both policy intentions and implementation. Insight into the outcome of implemented policy allows policymakers to devise measures that are more effective and focused.

Approach and methodology

IOB has a staff of experienced evaluators and its own budget. When carrying out evaluations, it calls on the assistance of external experts with specialised knowledge of the topic under investigation. To monitor its own quality, it sets up a reference group for each evaluation, which includes not only external experts but also interested parties from within the Ministry.

Programme

IOB evaluations form part of the Ministry's evaluation programme (set annually by the Senior Management Board) that appears in the Explanatory Memorandum to the Ministry of Foreign Affairs' budget.

An organisation in development

Since IOB's establishment in 1977, major shifts have taken place in its approach, areas of focus and responsibilities. In its early years, its activities took the form of separate project evaluations for the Minister for Development Cooperation. Around 1985, evaluations became more comprehensive, taking in sectors, themes and countries. Moreover, IOB's reports were submitted to parliament, thus entering the public domain.

1996 saw a review of foreign policy and a reorganisation of the Ministry of Foreign Affairs. As a result, IOB's mandate was extended to the Dutch government's entire foreign policy. In recent years, it has extended its partnerships with similar departments in other countries, for instance through joint evaluations.

Finally, IOB also aims to expand its methodological repertoire. This includes greater emphasis on statistical methods of impact evaluation.

Annex 2 References

Africa Policy Department DFID, 2005. *Review of health and education progress in selected African countries* (RHEP-SAC), Synthesis Report, London, DFID.

Assist Consulting, 2007. *Basic Education Sector Zambia Limited Financial Flow Tracking Exercise* (LFTE), Lusaka.

Baker, Judy L. 2000. *Evaluating the impact of development projects on poverty*, Washington DC, World Bank.

Boissiere, 2004. *Determinants of primary education, outcomes in developing countries*, Background paper for the evaluation of the World Bank's support to primary education, Washington.

Bowasi, D.S., 2007. *Paper presented to the Joint Annual Review meeting on the teacher recruitment and deployment in 2006*, Lusaka, MoE.

Central Statistical Office Zambia, 2003. *Zambia DHS Eddata survey 2002, Education data for decision-making*, Lusaka, CSO.

Carvalho, Soniya and Howard White, 1997. *Combining the quantitative and qualitative approaches to poverty measurement and analysis*, World Bank Technical Paper no. 366.

Chisala, Victoria and Willem Cornelissen, 2005. *Evaluation of sector approach, working document Zambia*, Rotterdam, SEOR.

Colclough, Christopher, Samer Al-Samarrai, Pauline Rose and Mercy Tembon, 2003. *Achieving schooling for all in Africa; costs, commitment and gender*, Aldershot, Ashgate.

Chondoka, Yizenge A. and Charles Subulwa, 2004. *Evaluation of the SPARK curriculum in community schools in Zambia 2000-2004*, Lusaka, University of Zambia.

Chondoka, Yizenge A., 2006. *Situation analysis of Community Schools in Central Province of Zambia*, Lusaka, University of Zambia.

Copenhagen Development Consulting, February 2007. *The education sector 2006 review*, Executive summary presented at the Joint Annual Review, Lusaka.

COWI, 2005. *Joint Assistance Strategies in Tanzania, Zambia and Uganda*, Copenhagen, COWI.

Das, Jishnu, Stefan Dercon, James Habyarimana and Pramila Krishnan, 2003. *Rules vs. discretion: public and private funding in Zambian basic education*, Washington, World Bank.

Das, Jishnu, Stefan Dercon, James Habyarimana and Pramila Krishnan, 2004a. *When can schools improve test scores?*, Washington, World Bank.

Das, Jishnu, Stefan Dercon, James Habyarimana and Pramila Krishnan, 2004b. *Public and private funding of basic education in Zambia, Implications of budgetary allocations for Service Delivery*, Washington, World Bank.

Das, Jishnu, Stefan Dercon, James Habyarimana and Pramila Krishnan, 2004. *Teacher* shocks and student learning: evidence from Zambia, Oxford, Centre for the Study of African Economies.

Destefano, Joseph, 2006. *Meeting EFA: Zambia Community schools*, Lusaka, USAID.

Development Research Group, World Bank, 2005. *Improving Educational Quality through Interactive Radio Instruction*, Washington, World Bank.

Donge, Jan Kees van, 2007. Flexible SWAPs for strategic policy-making: reflections on the Zambian experience, in: *Development Policy Review*, 25 (4), pp. 473-494.

Duflo, Esther, 2004. Scaling Up and Evaluation. In: Bourguignon, Francois and Boris Pleskovic (eds.), *Accelerating development*, Washington, DC and Oxford, World Bank and Oxford University Press.

Duflo, Esther and Michael Kremer, 2005. *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.

Duncan, Alex, Hugh Macmillan and Neo Simutanyi, Zambia, 2003. *Drivers of pro-poor change: an overview*, Oxford, Oxford Policy Management.

Education Development Center Inc., 2004. *Zambia's Interactive Radio Instruction Program*, Lusaka, USAID.

Elbers, Chris and Jan Willem Gunning, 2006. *Assessing Budget Support with Statistical Impact Evaluation*, Free University, Amsterdam.

Examinations Council of Zambia, 2000. *Learning achievement at the middle basic level, Final report on Zambia's National Assessment Project1999*, Lusaka, Ministry of Education.

Examinations Council of Zambia, 2002. *Learning achievement at the middle basic level, Report on Zambia National Assessment project – 2001*, Lusaka, Ministry of Education.

Examinations Council of Zambia, 2005. *Learning achievement at the middle basic level, Zambia's National Assessment Survey Report -2003*, Lusaka, Ministry of Education.

Glewwe, P., Kremer, M., 2005. *Schools, Teachers, and Education Outcomes in Developing Countries, Second draft of chapter for Handbook on the Economics of Education.*

Government of the Republic of Zambia, 2006. *Joint Assistance Strategy for Zambia (second draft)*, Lusaka, GRZ.

Government of the Republic of Zambia, 2007. *Fifth National Development Plan 2006-2010*, Lusaka, GRZ.

Harland, Charlotte, 2004. *Orphans and vulnerable children in Zambia, 2004 situation analysis*, Lusaka, Ministry of Sport, Youth and Child Development.

Higgins, Cathal, 2007 *Issues in teacher education in Zambia*, Lusaka (not published).

Hoop, Kobus de, 2007. *The effectiveness of community based education in Africa: the case of Zambia*, Amsterdam, Tinbergen Institute, 2007 (MPhil Thesis).

IEG, 2006. *From schooling access to learning outcomes, an unfinished agenda, an evaluation of World Bank support to primary education*, Washington, World Bank.

IOB, 2003. *Local Solutions to Global Challenges: towards effective partnership in Basic Education* (final report), The Hague, The Netherlands Ministry of Foreign Affairs, September.

IOB, 2006. *From Project Aid towards Sector Support, an evaluation of the sector-wide approach in Dutch bilateral aid 1998-2005*, The Hague, Netherlands Ministry of Foreign Affairs.

IOB / Ministry of Education and Sports, 2008. *Impact evaluation of primary education in Uganda*, The Hague/Kampala, IOB/MoES.

Kingdon, Geeta, 2005. Chapter on Education Economics, in: *DFID Economists'* Guide, London, DFID.

Katharina Michaelowa, 2003. *Determinants of Primary Education Quality: What can we learn from PASEC for francophone Sub-Saharan Africa?*, Paris, ADEA.

Linehan, Shay, 2004. *Language of instruction and the quality of basic education in Zambia*, Background paper for the EFA Monitoring Report 2005, Paris, UNESCO.

Michaelowa, Katharina and Annika Wechtler, 2006. *The cost-effectiveness of inputs in primary education: insights from the literature and recent surveys for sub-Saharan Africa*, Paris, ADEA.

Ministry of Education, 2003. *Western Province Education Programme, Evaluation Report*, Lusaka, MoE.

Ministry of Education, 2004. *Challenges of taking BESSIP to the classroom - Towards effective partnerships in basic education, BESSIP Completion Report*, Lusaka, MoE.

Ministry of Education, 2005a. 2004 *Educational Statistical Bulletin*, Lusaka, Ministry of Education.

Ministry of Education, 2005b. *Provision of Education for All in Zambia, Strategic framework for EFA implementation*, Lusaka, MoE.

Ministry of Education, 2006. 2005 *Educational Statistical Bulletin*, Lusaka, Ministry of Education.

Ministry of Education, 2007a. *National Annual Work Plan and Budget* – 2007, Lusaka, Ministry of Education.

Ministry of Education, 2007b, *National Implementation Framework 2008-2010*, Lusaka, Ministry of Education.

Ministry of Education, 2008a. 2006 *Educational Statistical Bulletin*, Lusaka, Ministry of Education.

Ministry of Education, 2008b. 2007 *Educational Statistical Bulletin*, Lusaka, Ministry of Education.

Mumba, Elisabeth, 2002. *Non-formal education in Zambia: experiences of the working group on non-formal education in Zambia*, Lusaka, University of Zambia.

Mwansa, Audrey C., Alex Kaba, Lucas Zulu, John Kalokoni and Griffin K. Nuirongo, 2004. *Free basic education (Grades 1-7) policy implementation assessment*, Lusaka, Ministry of Education.

Netherlands Ministry of Foreign Affairs, 2000. *Education: a basic human right, development cooperation and basic education: policy, practice and implementation*, The Hague, the Netherlands Ministry of Foreign Affairs.

Netherlands Ministry of Foreign Affairs, 2005. *Results in Development, Report 2004*, The Hague, The Netherlands Ministry of foreign Affairs.

Ndoye, Mamadou, 2007. Africa: building the foundations for sustainable development, in: *IIEP newsletter* Vol. XXV, no. 3, July-September, pp. 3 and 13.

Ogawa, Keiichu, 2004. Public expenditure on education and resource management: case of Zambia, in: *Journal of International Cooperation in Education*, Vol 7, no 1, pp. 133-143.

OECD, 2007, *African Economic Outlook*, Paris, OECD.

Pitman, George Keith , Osvaldo N. Feinstein and Gregory K. Ingram, 2005. *Evaluating development effectiveness*, New Brunswick, Transaction Publishers.

Pritchett, Lant, 2004. Access to Education, in: Bjørn Lomborg (ed.), *Global crises, global solutions*, Cambridge, Cambridge University Press, pp. 175-234.

Ravallion, Martin, 2001. The mystery of vanishing benefits: an introduction into impact evaluation, *The World Bank Economic Review*, vol. 15, no. 1, pp. 115-140.

Ravallion, Martin, 2005. Evaluating anti-poverty programs, in: R.E. Evenson and T.P. Schulz (eds.), *Handbook of Agricultural economics Volume 4*, North Holland.

Rawlings, Laura, 2005. Operational reflections on evaluating development programs, in: George Keith Pitman, Osvaldo N. Feinstein and Gregory K. Ingram, *Evaluating development effectiveness*, New Brunswick, Transaction Publishers, pp. 193-204.

Rivkin, Steven G., Eric A. Hanushek and John F. Kain, 2005. Teachers, schools and academic achievement, in: *Econometrica*, Vol. 73, No. 2, March pp. 417-458.

Rosenbaum, P.R. and D.B. Rubin, 1983. The central role of the propensity score in observational studies for causal effects, in: *Biometrika* 70, pp. 41-55.

Skyt Nielsen, Helena and Niels Westergård-Nielsen, 1998. *Returns to schooling in LDCs: new evidence from Zambia, Centre for Labour Market and Social Research.*

Transparancy International, 2005. *Stealing the future: corruption in the classroom*, Berlin, Transparancy International.

UNESCO, 2004. EFA *Global Monitoring report 2005: Education for All: the Quality Imperative*, Paris, UNESCO.

UNESCO 2005. *EFA Global Monitoring Report 2006: Literacy for life*, Paris, UNESCO.

UNESCO, 2006. EFA *Global Monitoring Report 2007: Strong foundations, Early childhood care and education*, Paris, UNESCO.

Verspoor, Adriaan M. (ed.), 2006. *The challenge of learning: improving the quality of basic education in Sub-Saharan Africa*, Paris, ADEA.

White, Howard and Geske Dijkstra, 2003, *Programme aid and development, Beyond conditionality*, London, Routledge.

White, Howard, 2004. *Books, buildings, and learning outcomes: an impact evaluation of World Bank Support to basic education in Ghana*, Washington DC, OED, World Bank.

Wils, Annababette, Bidemi Carroll and Karima Barrow, 2005. *Educating the World's Children*, Washington, EPDC.

Wooldridge, Jeffrey M. 2002. *Econometric analysis of cross section and panel data*, Cambridge.

World Bank, 2001. *Zambia Public Expenditure Review, Public Expenditure, Growth and Poverty: a synthesis*, Washington, World Bank.

World Bank, 2006. *Zambia Education Sector Public Expenditure Review*, Washington, World Bank.

Annex 3 Glossary

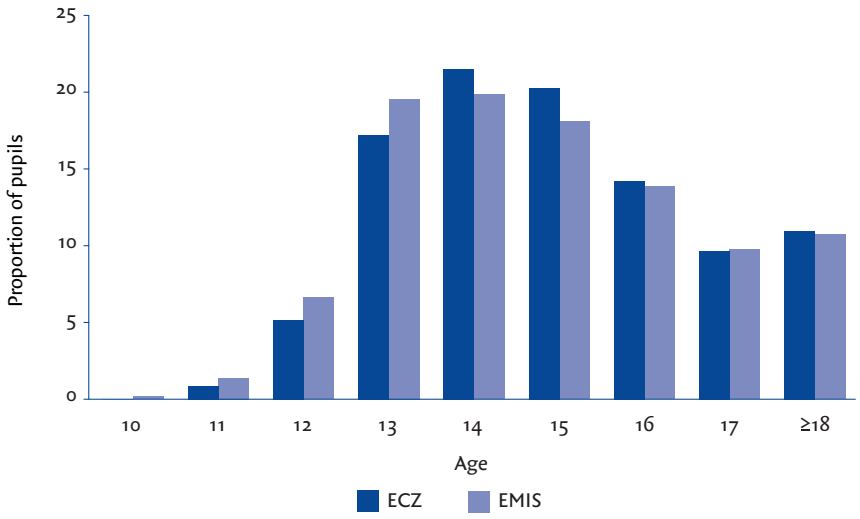
Basic education	The whole range of (formal and informal) educational activities that aim to meet basic learning needs. Basic education comprises primary education and lower secondary education. In this study basic education is the formal education at the lower, middle and upper basic level (grades 1-9).
Primary education	The first years of formal, structured education during childhood, usually from 6-7 years of age until 12-14 years of age. In this study primary education is the formal education and the lower and middle basic level (grades 1-7).
Enrolment	The number of pupils enrolled at a given level of education, regardless of age.
Gross enrolment ratio	Total enrolment as a percentage of the official school-age population.
Net enrolment ratio	Enrolment of the official age group expressed as a percentage of the corresponding population.
School attendance rate	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.
Survival rate	The percentage of a cohort of pupils enrolled in the first grade who reach each successive grade.
Completion rate	The total number of pupils completing the final year of primary education as a percentage of the population at the official primary graduation age.
Dropout rate (by grade)	The percentage of pupils or students who drop out from a given grade in a given school year.

Repetition rate	The proportion of pupils from a cohort enrolled in a given year who study in the same grade in the following school year.
Gender parity index	The ratio of female to male values of a given indicator.
Pupil teacher ratio	The average number of pupils per teacher, based on headcounts for both pupils and teachers.

Annex 4 Age distribution at grade 7

Net enrolment rates are computed by dividing the number of pupils aged 7-13 by the corresponding population group. This computation assumes that the reported age of pupils is reliable. This is not necessarily the case. A comparison between MoE EMIS data and ECZ data (exam data) shows that the examination data produce an average age that is higher than suggested by the EMIS data. Figure 3.1 illustrates this difference for 2005.

Figure 1 *Age distribution in EMIS and ECZ data (grade 7)*



Source: EMIS / ECZ.

According to the EMIS data, approximately 28% of the 7th graders are aged between 10 and 13 years; according to the examination data, this is only 23%.

This phenomenon may help to explain the high net enrolment rates. Differences decrease over time: whereas the percentage of pupils under 14 remains constant (23%) in the ECZ data, it decreases in the EMIS data (from 33% in 2001 to 28% in 2005). The figure shows, moreover, that most candidates are older than 13 (mostly 14 or 15).

Annex 5 The measurement of poverty

This study uses several indicators for measuring poverty and differences in wealth. Three indicators are based on the poverty maps for Zambia. These poverty estimates are computed at the district level and derived from CSO. Po is an indicator of the *incidence* of poverty. It denotes the number of people (within a district) falling below the poverty line. P1 is an indicator for the poverty gap or the *depth* of poverty. It measures the distance between the average income and the poverty line. P2 is the squared poverty gap. It is an indicator of the severity of poverty because it attaches more weight to the poorest people.

Chapter 7 also introduced three other indicators. They are derived from the 2000 Population Census. The first indicator denotes the average educational attainment at the ward level.[57] The second represents the *socio-economic position* at the ward level. Because of the high correlation between the two, they are combined to form a new indicator.

The technique used is factor analysis (principal components analysis). It is also used in (for instance) psychological tests, in which the psychologist attempts to gain insight into certain characteristics of a person. These characteristics (such as management qualities, perseverance or analytical skills) are measured on the basis of a number of questions. Principal components analysis combines (the answers to) several questions to form one indicator for that particular characteristic. This technique was also used in this report. The variable 'educational attainment' consists of several indicators:

57 A problem with the school census (EMIS) data is that the ward code is not consistently included. For the schools that did not specify their ward code, constituency level is used, instead.

- literacy of adults within a particular ward (r=0.95);
- percentage of adults who went to an institution of learning (r=0.92);
- highest level of academic education (grade), average at ward level (r=0.98);
- percentage of adults with a certificate, diploma or degree (r=0.79).

The *r* denotes the correlation of the original indicator with the new constructed variable. If there is no correlation r=0; if there is a perfect correlation r=1. So, the four variables (and especially the first three) are highly correlated with the new variable.

Similarly, a socio-economic variable (job status) was constructed on the basis of:

- percentage of persons with a paid job in the last year (r=0.92);
- occupation (percentage with a professional, administrative or clerical job) (r=0.84);
- percentage of persons with paid work (r=0.79).

Both variables are highly correlated (r=0.81) and thus the seven *original* variables were put together to form one new variable of 'socio-economic status.' This new variable is highly correlated with the education variable (r=0.97) and with the other socio-economic variable (r=0.93).

Annex 6 SACMEQ II

Chapter 3 offered a brief summary of learning achievements of Zambian pupils compared to pupils in other countries in southern Africa in 2000. The comparison was based on data obtained from the SACMEQ II tests.

In 1991, the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) started as a national survey on the quality of primary education in Zimbabwe. It was supported by UNESCO's International Institute for Educational Planning (IIEP) and soon expanded to other African countries. In 1995, this resulted in the establishment of a network of seven Ministries of Education, which conducts large-scale cross-national studies on the conditions of schooling and the quality of primary education. Its purpose is to inform policy development aimed at improving the performance of their systems and achieving EFA as well as the Millennium Development Goals. SACMEQ's overall objective is to:

1) expand opportunities for educational planners to gain the technical skills required to monitor and evaluate the quality of basic education, and
2) generate information that can be used by decision-makers to plan activities to improve the quality of education.

Due to the success of SACMEQ I, which was conducted between 1995 and 1998, it was soon followed and expanded by SACMEQ II. The expansion concerned both the content of the survey as well as the number of participating Ministries of Education. By 2000, the SACMEQ network had expanded to include fifteen members. The SACMEQ II surveys tested grade 6 pupils as well as grade 6 teachers.

SACMEQ II data have been used to analyse the impact of policy interventions on pupils' performance (at grade 6) in further detail. The database contains information on both teacher and pupil characteristics and performance.

The SACMEQ II database for Zambia consists of 173 different primary schools, 2,611 grade 6 pupils, 288 reading teachers and 286 math teachers.

Impact analysis of pupils' reading performance

This analysis covers regional, pupil, teacher, and school characteristics to determine the variables explaining variances in pupils' reading performance.

The regression shows that in 2000, differences between the provinces in Zambia were not significant. Urban/rural differences were significant: urban pupils performed better than rural pupils. Most pupil characteristics prove to be significant. Boys performed better than girls and older pupils did not perform as well as younger pupils. This confirms the popular hypothesis that children perform better at the appropriate age. As expected, pupils from better socio-economic backgrounds perform better. An important finding is that children perform better if they eat regularly. This conclusion confirms the benefits of school feeding programmes for children in poor regions. There is a negative relation between the additional lessons followed by pupils and their results. But one should be careful not to draw easy conclusions. Weaker pupils receive extra lessons. The analysis does not allow us to conclude that extra lessons have no effect. As expected, private schools perform better than public schools, even if differences in socio-economic background and school resources (including the number of teachers) are taken into account. Schools with more resources perform better than schools with limited resources.

Table 1 *Variables explaining pupils' reading performance (2000; SACMEQ II)*

	Coefficient	Standard error	t-value	
Regional Characteristics				
Central	-2.1	7.7	-0.3	
Copperbelt	-9.9	6.1	-1.6	
Eastern	-5.9	7.9	-0.7	
Luapula	7.0	9.0	0.8	
Northern	-9.6	6.8	-1.4	
North-Western	-20.1	10.7	-1.9	
Southern	-12.7	6.7	-1.9	
Western	-1.8	10.2	-0.2	
Urban	16.2	4.6	3.5	**
Pupil Characteristics				
Girl	-12.4	3.5	-3.6	**
Age	-3.4	1.2	-2.9	**
Meals per day	5.1	1.0	5.3	**
Household income + parent's education	18.2	2.4	7.5	**
Taking extra reading classes	-13.9	3.8	-3.6	**
Taking extra classes on other subjects	1.6	4.4	0.4	
School Characteristics				
Private	39.0	10.5	3.7	**
Average distance from clinic, road, etc.	0.04	0.05	0.8	
Teacher pupil ratio	276	148	1.9	
Bad school building condition	3.1	4.0	0.8	
Pupil Toilet Ratio	0.04	0.06	0.8	
Total resources	5.4	0.6	8.8	**
Constant	390	22	18.0	**

N = 1,930
Adj. R^2 = 0.27 / F = 35.1
**significant at p<0.01 *significant at p<0.05.
Source: SACMEQ II / computation IOB.

Impact analysis of pupils' math performance

The analysis of pupils' math performance is not significantly different from the analysis of reading performance. The main difference is that the total explained variance is considerably lower. This is consistent with the findings for the test and examinations.

Table 2 *Variables explaining pupils' math performance (2000; SACMEQ II)*

	Coefficient	Standaard error	t-value	
Regional Characteristics				
Central	12.3	7.0	1.8	
Copperbelt	-2.7	5.6	-0.5	
Eastern	11.5	7.3	1.6	
Luapula	13.2	8.2	1.6	
Northern	3.1	6.2	0.5	
North-Western	-3.1	9.8	-0.3	
Southern	-1.5	6.1	-0.2	
Western	10.7	9.4	1.1	
Urban	11.1	4.2	2.6	**
Pupil Characteristics				
Girl	-22.1	3.2	-6.9	**
Age	-3.3	1.1	-3.1	**
Meals per day	3.1	0.9	3.5	**
Household income + parent's education	8.7	2.2	3.9	**
Taking extra math classes	-2.1	3.5	-0.6	
Taking extra classes on other subjects	-1.4	4.0	-0.4	
School Characteristics				
Private	32.2	9.7	3.3	**
Average distance from clinic, road, etc.	-0.02	0.05	-0.4	
Teacher pupil ratio	370	136	2.7	**
Bad school building condition	7.1	3.6	2.0	*
Pupil Toilet Ratio	0.1	0.06	2.5	*
Total resources	3.1	0.6	5.5	**
Constant	409	20	20.7	**

N = 1,919 Adj. R^2 = 0.15 / F = 17.0 **significant at p<0.01 *significant at p<0.05.
Source: SACMEQ II.

Annex 7 Examination results 2001-2005

Variable	English			Math		
	Coefficient	z-score		Coefficient	z-score	
Copperbelt	-2.0	-3.0	**	-0.4	-0.6	
Central	-0.9	-1.3		0.3	0.5	
Southern	-2.8	-4.4	**	-1.2	-2.2	*
Luapula	2.7	4.1	**	4.1	6.6	**
Northern	-0.8	-1.2		0.7	1.1	
Eastern	-2.1	-3.3	**	-0.5	-0.9	
North-Western	2.6	3.7	**	2.3	3.6	**
Western	-0.8	-1.1		0.1	0.2	
Private/Church school	8.2	8.0	**	6.8	7.0	**
Grant-aided school	0.1	0.1		-0.5	-0.5	
Community school	-3.3	-1.0		-6.6	-2.1	*
Urban	3.4	6.6	**	1.6	3.3	**
2001	1.1	4.2	**	2.9	11.9	**
2003	-7.2	-2.9	**	0.8	3.4	**
Proportion orphans	-0.5	-0.5		0.6	0.7	
Proportion females	-3.4	-3.7	**	-3.3	-3.8	**
Pupil age	-0.5	-4.2	**	-0.2	-1.8	
School size	-1.4	-4.7	**	-1.5	-5.1	**
Book Pupil Ratio English	-0.1	-0.5				
Book Pupil Ratio math				0.4	1.2	
Teacher Pupil Ratio	44.4	2.5	*	10.1	0.6	
Classroom Teacher Ratio	1.1	2.0	*	0.8	1.4	
Teacher Attrition Rate	1.5	1.9		0.5	0.7	

Teacher age	-0.04	-1.7		-0.06	-2.7	**
Double class rate	0.2	0.5		0.1	0.4	
Exam centre ratio	-2.0	-1.9		-1.9	-1.9	
Prop. teachers with dipl.	2.5	2.5	*	1.5	1.6	
Qualification head teacher	-0.8	2.2		-1.0	-2.9	**
Poverty Gap (squared)	-5.2	-1.6		-1.8	-0.6	
Constant	42.9	14.2	**	42.6	14.7	**
N		4,349			4,349	
R^2		0.15			0.15	
Wald Chi^2		624			690	

**significant at p<0.01 *significant at p<0.05.
Source: ECZ, EMIS / computation IOB.

EVALUATION STUDIES PUBLISHED BY THE POLICY AND OPERATIONS EVALUATION DEPARTMENT (IOB) 2000-2008

Evaluation studies published before 2000 can be found on the IOB-website: www.minbuza.nl/iob-en

284 2000 **Institutional Development** *Netherlands support to the water sector.*
isbn 90-5328-274-2

285 2000 **Onderzoek naar de samenwerking tussen Mali en Nederland 1994-1998**
isbn 90-5328-278-5

286 2001 **Smallholder Dairy Support Programme (SDSP) Tanzania**
Inspection of its identification, formulation and tendering process
isbn 90-5328-298-x

287 2001 **De kunst van het Internationaal cultuurbeleid 1997-2000**
isbn 90-5328-300-5

288 2002 **Health, nutrition and population**
Burkina Faso Mozambique Yemen
isbn 90-5328-301-3

289 2002 **Cultuur en Ontwikkeling**
De evaluatie van een beleidsthema (1981-2001)
isbn 90-5328-302-1

289 2002 **Culture and Development**
Evaluation of a policy (1981-2001)
isbn 90-5328-305-6

290 2003 **Agenda 2000**
Hoe Nederland onderhandelt met Europa
isbn 90-5328-307-2

291 2002 **Nederlands schuldverlichtingsbeleid 1990-1999**
isbn 90-5328-306-4

292 2003 **Resultaten van internationale schuldverlichting 1990-1999**
isbn 90-5328-310-2

292 2003 **Results of International Debt Relief 1990-1999**
isbn 90-5328-314-5

293 2003 **Netherlands-FAO Trust Fund Co-operation 1985-2000**
isbn 90-5328-308-0

294 2003 **Co-ordination and Sector Support**
An evaluation of the Netherlands' support to local governance in Uganda, 1991-2001. isbn 90-5328-311-0

295 2003 **Behartiging van de buitenlandse belangen van de Nederlandse Antillen en Aruba**
Een evaluatie van de rol van het Ministerie van Buitenlandse Zaken
isbn 90-5328-316-0

296 2003 **Poverty, policies and perceptions in Tanzania**
An evaluation of Dutch aid to two district rural development programmes
isbn 90-5328-337-4

297 2004 **Over solidariteit en professionalisering**
Evaluatie van Gemeentelijke Internationale Samenwerking (1997-2001). isbn 90-5328-341-2

298 2004 **Onderzoek naar de kwaliteit van in 2002 afgeronde decentrale evaluaties**
Eindrapport. isbn 90-5328-344-7

299 2005 **Een uitgebreid Europabeleid**
Evaluatie van het Nederlands beleid inzake de toetreding van Midden-Europese landen tot de Europese Unie 1997-2003
isbn 90-5328-347-1

300 2005 **Aid for Trade?**
An Evaluation of Trade-Related Technical Assistance
isbn 90-5328-349-8

301 2006 **Van Projecthulp naar Sectorsteun**
Evaluatie van de sectorale benadering 1998-2005
isbn 90-5328-351-x

301 2006 **From Project Aid towards Sector Support**
An evaluation of the sector-wide approach in Dutch bilateral aid 1998–2005. isbn 90-5146-000-7

302 2006 **Evaluatie van het Nederlandse mensenrechtenbeleid in de externe betrekkingen**
isbn 90-5328-350-1

303 2006 **Dutch Humanitarian Assistance**
An Evaluation
isbn 90-5328-352-8

304 2007 **Evaluatie van de vernieuwing van het Nederlandse onderzoeksbeleid 1992-2005**
isbn 978-90-5328-353-0

304 2007 **Evaluation of the Netherlands' Research Policy 1992-2005 (Summary)**
isbn 978-90-5328-353-0

305 2007 **Impact Evaluation: Water Supply and Sanitation Programmes Shinyanga Region, Tanzania 1990-2006**
isbn 978-90-5328-354-7

306 2007 **Chatting and Playing Chess with Policymakers**
Influencing policy via the Dutch Co-Financing Programme
isbn 978-90-5328-355-4

307 2008 **Beleidsdoorlichting seksuele en reproductieve gezondheid en rechten en hiv/aids 2004-2006**
isbn 978-90-5328-358-5

308 2008 **Het Nederlandse Afrikabeleid 1998-2006**
Evaluatie van de bilaterale samenwerking
isbn 978-90-5328-359-5

308 2008 **Het Nederlandse Afrikabeleid 1998-2006**
Evaluatie van de bilaterale samenwerking (Samenvatting)
isbn 978-90-5328-359-5

309 2008 **Het Vakbondsmedefinancieringsprogramma**
Een evaluatie van steun gericht op versterking van vakbonden en vakbonds- en arbeidsrechten
isbn 978-90-5328-357-8

309 2008 **The Netherlands Trade Union Co-Financing Programme**
An evaluation of support for trade unions and trade union and labour rights (Summary)
isbn 978-90-5328-357-8

309 2008 **El Programa de Cofinanciamiento Sindical**
Una evaluación del apoyo orientado al fortalecimiento de sindicatos y de derechos sindicales y laborales (Resumen)
isbn 978-90-5328-357-8

310 2008 **Clean and sustainable?**
An evaluation of the contribution of the Clean Development Mechanism to sustainable development in host countries
isbn 978-90-5328-356-1

311 2008 **Primary Education in Uganda**
isbn 978-90-5328-361-5

312 2008 **Primary Education in Zambia**
isbn 978-90-5328-360-8

www.minbuza.nl

Ministry of Foreign Affairs
P.O. Box 20061
2500 EB The Hague
The Netherlands

www.minbuza.nl/iob-en

April 2008
ISBN 978-90-5328-360-8