Examinations Council of Zambia

The Role of the Zambia National Assessment Programme in Evaluating the Attainment of Educational Goals

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Abstract

Towards the turn of the 21st century, the focus of the Zambian educational goals shifted from mere expansion or building of more schools to include national and global concerns for quality Education For All. The education reforms of the 1990s culminated into the development of the new education policy document in 1996, called "Educating Our Future." This policy document had two overriding educational goals of broadening access and improving quality.

To attain these goals, resources were mobilised and investment strategies were formulated for the provision of quality Basic Education For All. In addition, the Ministry of Education in 1998 initiated the National Assessment programme as an inbuilt mechanism for monitoring and evaluating the attainment of educational goals. Key to the functions of the National Assessment Programme was the provision of empirical data that would inform and guide policy on the provision of quality Basic Education.

Specifically, the National Assessment programme assesses learning achievement at the Middle Basic Education level in relation to educational inputs and processes and how these are changing over time. So far, four surveys have been undertaken in 1999, 2001, 2003 and 2006.

This paper discusses the findings of the National Assessment surveys with regard to access and quality of education at the middle basic school level.

Introduction

The role of assessment in promoting learning has been a prominent feature in many of the educational reform efforts in the last few decades. Academicians and education practitioners alike have argued on the need to make assessment an integral part of learning for meaningful learning to take place in schools. The implementation of such ideals poses countless challenges. In Zambia, it was considered worthwhile to endeavour to use National Assessment to measure the attainment of the set educational goals.

This paper presents the experiences of the Zambian education system in its quest to use the National Assessment Programme to measure the attainment of educational goals. The paper gives the background of the National Assessment Programme, discusses the findings of the national assessment surveys with regard to access, the policy decisions related to access from 1999 to 2006. The paper further discusses the national assessment findings with regard to quality, the policy decisions related to quality and the quality trends from 1999 to 2006. Finally, the paper discusses the challenges faced by the education system in Zambia in implementing and using the findings of the National Assessment Programme.

It is worthy noting that although the National Assessment programme tests pupils in Mathematics, reading in English and four Zambian Languages (Cinyanja, Icibemba, Silozi and Chitonga), this paper focuses on pupil performance in reading in English and Mathematics.

Background

The education system in Zambia has since independence in 1964, witnessed four major educational reforms. The first and second education policy reforms addressed, to a larger extent, the broadening of access and participation in quantitative terms- such as building of schools. On the other hand, the 1990 World Conference on Education for All in Jomtien marked a new start in the global quest to make basic education universal and eradicate illiteracy. The focus of most participating governments, after the Jomtien conference, shifted towards quality aspects. Zambia's third and fourth education reforms, therefore, addressed the issue of quality. The shift was necessitated by the observed decline in educational standards and learning achievement levels in Zambia by the various studies.

In an effort to attain the policy goals as provided in education policy, *'Educating our Future (1996)'*, the Ministry of Education began with prioritizing basic education in order to improve access and quality of basic education from Grades 1 to 9. The objectives were implemented under the Basic Education Sub-Sector Investment Programme (BESSIP) from 1999 to 2003. At the end of BESSIP, the Ministry of Education adopted overall sector approach and developed a five year *Sector Plan from* 2003 to 2007. Further elaborate strategies for attainment of the EFA goals and Millennium Development Goal (MDGs) up to 2015 are laid down in the Fifth National Development Plan.

The Government, among other things, undertook to reform the Education System. Contrary to the 7-5-4 structure, with seven years of primary, five years of secondary (2 years junior and 3 years senior secondary), and four years of university education to first degree; the Education Policy document, *Educating Our Future 1996,* has proposed a new structure of 9-3-4, comprising nine years of basic education, three years of high school education and four years of university education to first degree, effective 1998. The new structure was a reminder that all children in Zambia should access nine years of good quality universal basic education. The new structure was accompanied by a curriculum paradigm shift from content based to outcomes based.

The Nature of the National Assessment System in Zambia

The National Assessment System (NAS) is an inbuilt instrument for monitoring progress made in the provision of basic education in Zambia. The Examinations Council of Zambia (ECZ) is the implementation agency. The first survey was conducted in 1999, and since then, the ECZ organises a survey to monitor the progress on basic education in Zambia every two years. The National Assessment Surveys were held in 1999, 2001, 2003 and 2006. The surveys are conducted at Grade 5 level, which is the beginning of the Middle Basic Education level in the basic education system in Zambia.

The surveys are sample based covering between 400 schools, which are randomly sampled using the stratified multi-stage cluster sampling design. 20 pupils per school are sampled using random numbers. The instruments for data collection consist of the pupil questionnaire, teacher questionnaire and school/head teacher questionnaire. Furthermore the pupils sit for achievement tests in reading in English, Mathematics and reading in one of four Zambian languages (Icibemba, Cinyanja, Silozi and Chitonga). The tests consist of 35 questions for English and 45 for Mathematics. The National assessment surveys capture information on pupil background factors, school related factors, teacher and head teacher factors. Through statistical analysis using the regression model, factors affecting learning achievement are derived and the extent to which they affect learning achievement are measured.

A selected group of teachers, curriculum specialists, examination specialists and other experts validate the results and define the minimum and desirable performance levels after the release of the initial results. The benchmarks are then used as a yardstick for measuring pupil performance.

Objectives of the survey

The objective of the National Assessment Surveys was to measure the main outcomes of the Basic Education System, which are access and learning achievement in relation to inputs and processes. In addition, the surveys also evaluated other interventions put in the system to attain the goals.

Therefore, apart from the overall objective of measuring learning achievement in relation to inputs and processes, the national assessment surveys also evaluated other interventions the Ministry of Education had put in place.

The 2003 survey was different from the surveys in 1999 and 2001 because it evaluated two interventions that were implemented to address issues of access and quality. The intervention on access and quality were the formalisation of community schools, which are an initiative by local communities, and the primary reading programme, respectively.

The 2006 survey also included the evaluation of Interactive Radio Instruction (IRI) centres, an intervention put to cater for the hard to reach children.

Methodology

Sampling

The target population for the assessment in all the four National Assessment surveys (1999, 2001, 2003 and 2006) carried out so far consisted of all Grade 5 pupils enrolled in public schools, grant-aided schools, private schools and community schools. The stratified multi-stage cluster sampling design was used to select the schools. This design was found appropriate because the sampling frame listed both clusters (schools) and elements (pupils) (Ministry of Education (MOE) 2001). Furthermore, stratification of clusters in most cases leads to gains in precision as long as the strata are internally homogenous.

In the first stage of the sampling process, schools were sampled, and in the second stage, Grade5 pupils were selected. The sample size comprised 400 schools, stratified by province, district and location (urban and rural). The target pupil sample was 20 Grade 5 pupils from each selected school, giving a total sample of 8,000 Grade 5 pupils. In the second stage of sampling, the Random number tables were used to randomly select the 20 Grade 5 pupils within the schools to take part in the National Assessment data collection.

The optimal square root method of allocation, which puts a flat minimal domain sample size for the smallest domain, has been used for sample allocation for the four surveys due to the high demand for good domain statistics in the country (Lesli, 1987): This method is similar to the Modified Equal Allocation method and is expressed as,

$$n_h \propto n\sqrt{W_h^2 + H^{-2}} \equiv n_h = nk\sqrt{W_h^2 + H^{-2}}$$

Where

n_h = Domain sample points

n = Total desired sample size

W_h = Relative domain size and

H = Number of domains.

Data Collection and Analysis

The data on pupil background were collected using the school/head teacher, teacher and pupil questionnaires. Data on pupil performance in English reading and Mathematics were collected using tests. Data collectors were trained on how to randomly sample the pupils, administer the questionnaires and the tests in order to collect data. Each data collector was given the Manual for Field Data Collectors as a guide, together with all data collection instruments. Members of the National Assessment Technical Committee trained the field data collectors and monitored the data collection exercise to ensure uniformity.

Data from test answer cards, teacher and pupil questionnaires were captured using Optical Mark Readers. All data were analysed by use of the Statistical Package for Social Sciences (SPSS). Frequencies were generated to show the various features and characteristics of the sampled Grade 5 pupils, teachers and schools. Mean scores and percentages were obtained at national and provincial levels according to school location and gender. Pupil results were analysed with reference to levels of performance established by panels of practicing teachers, curriculum specialists and examination experts at validation workshops held after data collection for each survey. At the validation workshops, the acceptable minimum performance levels (MPL) and the desirable performance levels (DPL) for pupils in each of the subjects (English reading and Mathematics) were agreed upon by experts.

Findings of the National Assessment Surveys

The paper presents findings related to access, followed by those related to quality, highlighting the policy decisions made under the two educational goals.

Access

The access indicators for the Ministry of Education are gross and net intake rates, gross and net enrolment ratios, attendance, absenteeism, drop out rates, completion rates, repetition rates, progression rates and gender equity.

With regard to National Assessment Surveys, the main measure of access is the distance and the time the pupils take to and from school. Captured information on enrolments, absenteeism and repetition and gender equity are only used to triangulate the school census statistics, and not to measure education quality.

The 1999 and 2006 surveys revealed that nearly 90 % of the Zambian pupils go to school within the radius of 5 km, which is in accordance to the set national benchmark. Of this proportion, half are within 1km and the other half travelled between 1 and 4 km. Meanwhile, about 10 % of the Grade 5 pupils still travelled long distances (above 5 km) to school. National Assessment results showed that the longer the distance pupils travelled to school, the lower the learning achievement. Figure 1 below shows the trends over the period 1999 to 2003:

Figure 1: Proportion of pupils travelling more than 5 km to reach school (1999-2006)
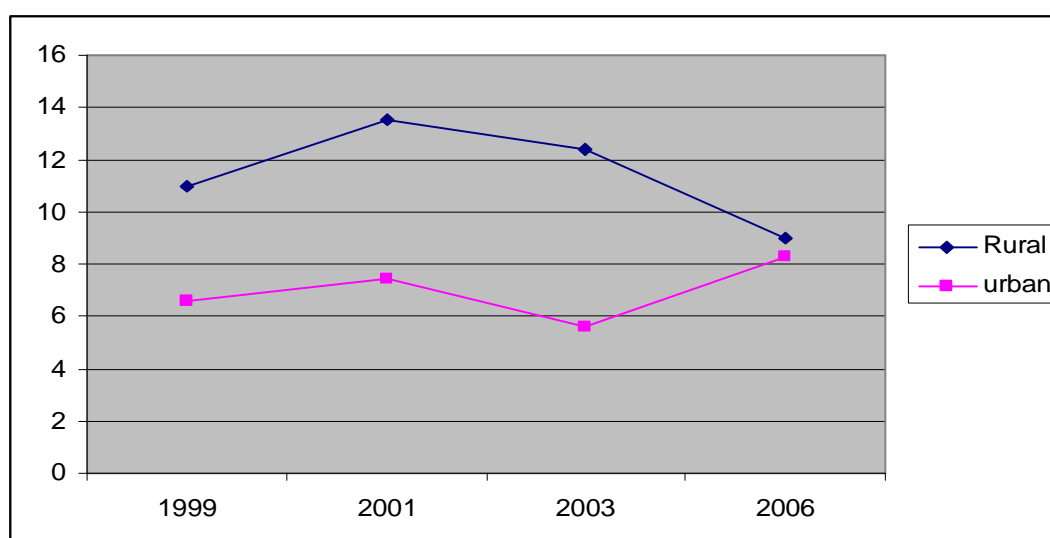
The trends of pupil proportions travelling long distances show an increase between 1999 and 2001 surveys. The trends then show a decline between 2001 and 2003, and they continued to decline in rural areas up to 2006. On the other hand, the trends show an increase in urban areas from 2003 to 2006.

The increase in the proportion of pupils travelling long distances between 1999 and 2001 was attributed to lack of adequate school places. Meanwhile, the observed decline in the proportions of pupils travelling long distances between 2001 and 2003 was attributed to the increased number of schools built, the formalisation of Community Schools, and establishment of Interactive Radio Instruction (IRI) centres. The continued decline between 2003 and 2006 in rural areas was a reflection of the government decision to build more schools in rural than in urban areas, while the trends show an increase over the same period in urban areas, partially as a result of the government's declaration of Free Basic Education (FBE).

Quality

The Ministry of Education quality indicators are qualification of primary school teachers, pupil teacher ratios, pupil textbook ratios, furniture and finally the learning achievement of pupils as revealed by the test results. This paper focuses on text book ratios and pupil performance as measures of quality.

Figure 2: Pupil-Book Ratios (2001-2006)
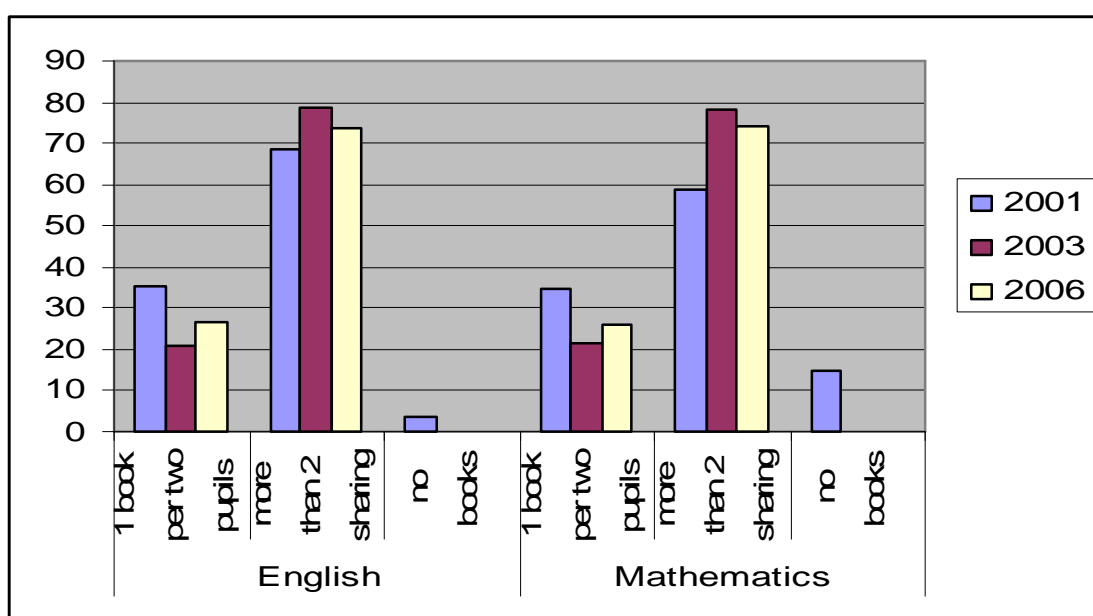
The majority of the pupils (59.9%) in English and (58.4%) in Mathematics shared a textbook between 2 and 4 pupils. Those who had a textbook each were 8.7 percent in English and 8.2 percent in Mathematics. Looking at the figures, the Ministry of Education target of one textbook per 2 pupils is almost being realised. In the 2003 survey, only about one third (30 %) of the pupils; (for 2001: 28.1% in English and 26.8% in Mathematics) met the Ministry of Education set target of one book per two pupils. These findings imply that in most cases more than two pupils shared the available books. The Ministry of Education has engaged private book sellers to supply materials to schools, and authorised the schools (head teachers and teachers) to choose the appropriate materials for teaching and learning in their schools.

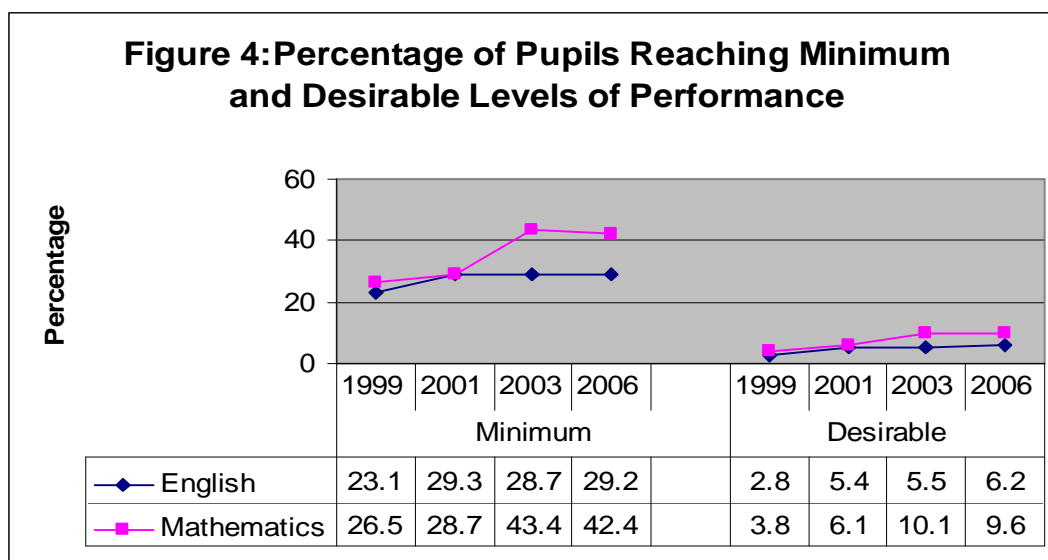**Figure 3: Mean Score Trends for English and Mathematics (1999-2006)**
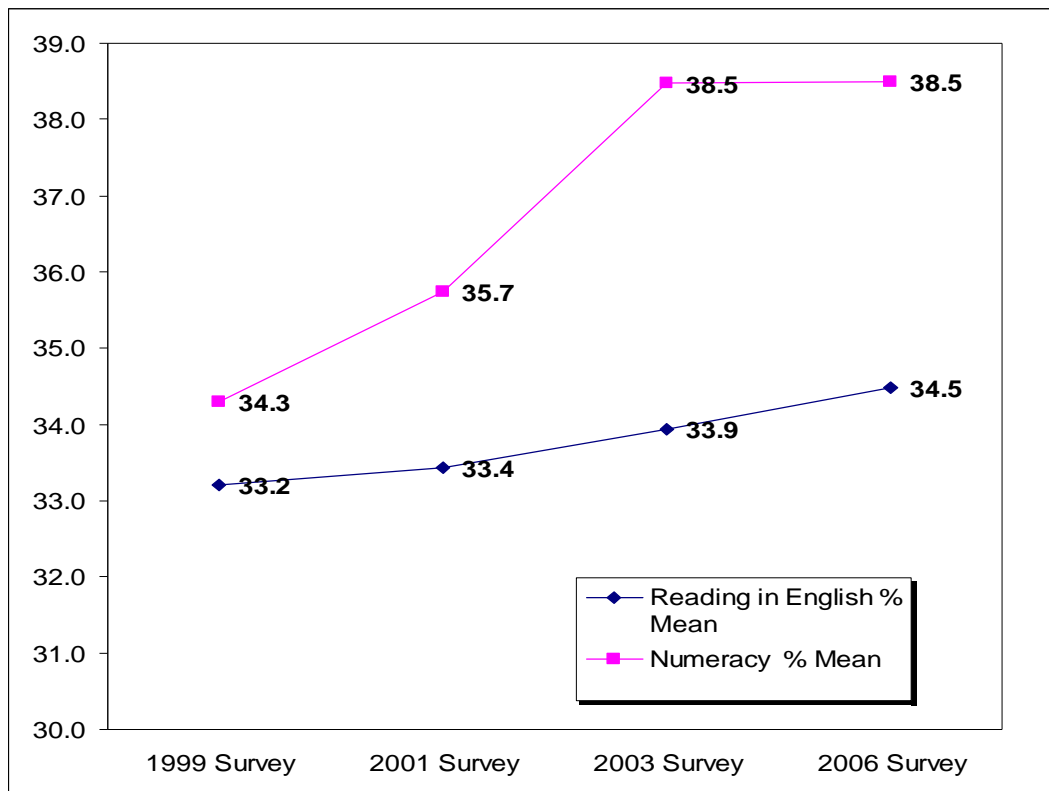
The trends in pupil performance in reading in English had been relatively stagnant from about 33.2% in 1999 to 34.5 in 2006. On the other hand, the trends in Mathematics had been improving from 34.3% in 1999 to 38.5% in 2006.

Table 1: Performance levels for reading in English and Mathematics (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%

Table 1 (above) shows the set minimum and desirable learning achievement levels for each of the surveys from 1999 to 2006. The performance levels were carefully set using the judgments made by a selected group of practicing teachers, curriculum specialists, and assessment experts. The group of experts analysed the test items against the curriculum content and judgments were made as to what composition of items consisted of minimum level and desirable level of performance.

The tests' content was also analysed in the context of the prevailing circumstances during the years of the surveys that may have affected the pupil performance positively or negatively. This exercise was achieved through the National Assessment Validation Workshops, which were held after each survey. The setting of new performance levels for each survey was important as this serviced to take into account various changes that may have taken place within and outside the school system. Figure 4 (below) shows the percentages of pupils that reached the set minimum and desirable levels of performance from 1999 to 2006.

Figure 4: Percentage of Pupils Reaching Minimum and Desirable Levels of Performance

	Minimum					Desirable			
	1999	2001	2003	2006		1999	2001	2003	2006
English	23.1	29.3	28.7	29.2		2.8	5.4	5.5	6.2
Mathematics	26.5	28.7	43.4	42.4		3.8	6.1	10.1	9.6

The results in figure 4 show that the percentage of pupils reaching the minimum and desirable levels of learning achievement continued to increase from 1999 to 2006. The performance increased the most between 2001 and 2003. The findings also indicated that few pupils were attaining the full mastery skills at Grade 5 level. The pupils' overall performance in mathematics was better on non-verbal items compared to verbal items, and worse of all on fractions. In reading in English most pupils could not read at the desired levels.

This led the government to change the language policy. In the new language policy, the language of instruction at Grades 1 and 2 is the familiar (Zambian) language of the area, while the pupils learn English as a language. The language of instruction from Grade 3 onwards is English, which also continues to be taught as a language beside a Zambian Language.

This intervention was championed by the Primary Reading and the New Breakthrough to Literacy Programmes, which have been adopted as teaching methodologies at Lower and Middle Basic Education levels. The argument behind this intervention and the language policy is that pupils learn to read and write more easily in the familiar (Zambian) languages, and that they can more easily generalise the ability to read and write once learnt, to English and other subjects.

Challenges

The challenges include the provision of feedback information to schools and ensuring that schools own and use the information to improve learning achievement. Although at Macro level, the Ministry of Education and its cooperating partners have been using the National Assessment findings to make policy decisions, the education system is not providing a direct link between the findings, proposed interventions and the functioning of the school system on the ground.

Conclusion

The Zambia National Assessment programme forms a basis for policy re-articulation and review of education in Zambia, as it identifies mitigating factors against learning achievement, and provides an avenue for policy makers to have greater insights on factors affecting teaching and learning in schools. Additionally, the National Assessment Programme has sought to provide fairly elaborate recommendations and pathways for the implementation of whatever recommendations made since its inception. The Ministry of Education has in the past used National Assessment results to ensure that the policies that affected learning achievement were tested for efficacy, consistency and relevance. In addition to using National Assessment results for high level policy decision making, the Ministry of Education continues to use the National Assessment results as one of its means of evaluating the attainment of the set educational goals.

References

Liseli, K. (1987): *The Survey Statistician/American Journal – Proxima and Maxima in Sample Designs.*

Ministry of Education (MOE) (1996): *Educating Our Future.* Lusaka, Ministry of Education.

Ministry of Education (MOE) (2000): *National Assessment Survey Report – 1999.*

Ministry of Education (MOE) (2001): *National Assessment Survey Report – 2001.*

Ministry of Education (MOE) (2003): *National Assessment Survey Report – 2003.*

Ministry of Education (MOE) (2003): *Strategic Plan* 2003-2007. Lusaka, Ministry of Education.