

**Approaches to Monitoring the Quality of Education in Developing Countries
– Searching for Better Research-Policy Linkages¹**

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The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of UNESCO-IIEP.

¹ This paper is dedicated to the late Professor T. Neville Postlethwaite (1933-2009), the ‘father’ of cross-national comparative research.

Introduction

At the World Conference on Education for All (EFA) in Jomtien in 1990, an expanded vision for meeting learning needs was outlined which included the requirement to improve and assess learning achievement (UNESCO, 1990). Educational quality was further emphasized in the World Education Forum in Dakar in 2000, specifically in goal #6 which states: “improving all aspects of the quality of education and ensuring excellence of all so that recognized and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills” (UNESCO, 2000).

Since Jomtien, many countries have significantly improved participation rates in education. However, these advances have not necessarily led to corresponding improvements in the quality of education. For those countries and societies where participation in education is not assured, achieving ‘quality education for all’ is even more of a challenge.

Quality has also been recognized as an important element in educational policy documents by the World Bank (1995; 1999). As can be seen in the report by the World Bank Independent Evaluation Group (2006), however, their basic education projects in developing countries since 1990 have been criticized as putting too much emphasis on increasing participation rates. The report indicates that there is a lack of focus on the learning achievement of children. Moreover, it suggests that developing countries and their partners need to not only emphasize the achievement of MDGs but also review their Fast Track Initiative (FTI) national plans and work towards improving student learning outcomes.

The purpose of this paper is three-fold: (1) to briefly review the different methods of measuring the quality of education that are in place internationally, as well as their importance; (2) to compare how educational quality is featured and monitored in National Education Sector Plans (NESP) of developing countries including EFA-FTI countries; and (3) to look in more detail at two country cases regarding the link between results from quality assessments and policy interventions.

Quality of education and its importance

Since the late 1960s, the UNESCO International Institute for Educational Planning (IIEP) has hosted a series of international conferences on the theme of educational quality. As pointed out by Ross and Mählck (1990), these conferences reflected different interpretations of the concept of the quality of education. The 1960s was a time of ‘philosophical debate’ on how to define the quality of education (Beeby, 1969; Peters, 1969), while during the 1970s ‘pragmatic approaches to planning’ the quality of education dominated (Adams, 1978). The ‘operationalization of measuring’ the quality of education took place in the late 1980s to 1990s (Ross and Mählck, 1990). The conception of what constitutes the quality of education is continually evolving, and the late 1980s to 2000s saw the establishment of more comprehensive interpretations (OECD 1989; Amagi, 1996; Pigozzi, 2006; Anderson, 2004; UNESCO, 2004a).

While it is difficult to capture the notion of educational quality in absolute terms, it has been the general practice of assessment studies to define quality in terms of (i) students' learning achievement and (ii) the characteristics of their learning environment.

As seen in the literature (for example, Hanushek & Wößmann, 2007; World Bank Independent Evaluation Group, 2007), good quality education in terms of learning outcomes in literacy, numeracy and life skills can contribute to increased work productivity, higher individual income levels, economic and social growth, improvement in health, the generation of innovative ideas, and the rapid learning of new technology.

In addition, improving educational quality is often recognized as a strategy to increase participation rates in education. For example, parent's choice regarding investment in their children's education could be influenced by their perception of the quality of school education (UNESCO, 2004a).

Various forms of assessments to measure quality

Cross-national surveys

The importance of regularly collecting information on the quality of education is increasingly recognized. This research is necessary to account for the massive investments in education and to better understand how to improve the quality of education. In industrialized countries such research has been ongoing for the past 50 years, but only more recently evaluations of the quality of education are beginning to attract more attention from researchers, organizations such as the World Bank as well as the media.

The International Association for the Evaluation of Educational Achievement (IEA) pioneered the measurement of the quality of education, commencing their first pilot study internationally in 1958, followed by the First International Mathematics Study (FIMS), First International Science Study (FISS), Second International Mathematics Study (SIMS), and Second International Science Study (SISS) in the 1960s and 1970s. The Reading Literacy Study (RLS) and Computers in Education Study (COMPED) were organized during the 1980s while Trends in International Mathematics and Science Study (TIMSS), Progress in International Reading Literacy Study (PIRLS), and Civic Education Study (CIVED) were undertaken during the 1990s and 2000s (Elley, 1992; Beaton et al., 1996; Martin et al, 1996; Grisay & Griffin, 2006). These cross-national surveys also led many countries to undergo national assessments of the quality of education.

In 1997 the Organization for Economic Cooperation and Development (OECD) launched the Programme for International Student Assessment (PISA) to assess the achievement of 15-year olds in Reading literacy, Mathematics, and Science every three years starting in 2000 (OECD, 2007).

A number of developing countries have also taken part in sub-regional networks conducting comparative surveys since the 1990s. For example, the Zimbabwe study in 1991, organized collaboratively by the Zimbabwe Ministry of Education and UNESCO-IIEP, developed into the

Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) with 15 Ministries of Education as their members. In addition to data on Reading literacy, Mathematics, and Health Knowledge, SACMEQ has also collected data on the characteristics of schools, classrooms, and teachers.

In Francophone Africa, *Conférences des Ministres de l'Éducation des Pays Francophones* (CONFEMEN) has collected data on student achievement since 1991 in the *Programme d'Analyse des Systèmes Éducatifs des Pays de la CONFEMEN* (PASEC).

In Latin America, the *Laboratorio Latinoamericano de Evaluación de la Calidad de la Educación* (LLECE) commenced assessments of the quality of education in 1997 under the leadership of the *Oficina Regional de Educación para América Latina y el Caribe* (OREALC) (Postlethwaite, 2004b; Kellaghan, 2006). The second survey (SERCE) which was completed in 2008 included Reading, Writing, Mathematics, and Natural Science (UNESCO, 2009).

National assessments

Many countries have established national assessment mechanisms to periodically monitor and evaluate the quality of their education systems (Kellaghan & Greaney, 2001). In some OECD countries such as the USA, Japan, the UK and Canada, this has been standard practice since the 1970s (Greaney & Kellaghan, 1996; Postlethwaite & Kellaghan, 2008). In Vietnam, the Ministry of Education collaborated with the World Bank and UNESCO-IIEP in 2001 to measure the reading and mathematics achievement of Grade 5 pupils. Other Asian countries carrying out national assessments include Cambodia, Laos, India, Indonesia, Nepal, Sri Lanka, and Thailand (Kellaghan, 2006). In Latin America, Mexico is an example of a country which has undertaken many surveys since the 1990s to measure the level of literacy and communication, as can be seen in the *Evaluación Nacional de Logro Académico en Centros Escolares* (ENLACE) and the *Exámenes para la Calidad y el Logro Educativos* (EXCALE) (Athie, 2008).

Advantages and disadvantages of joining cross-national surveys

With many possible mechanisms available to measure the quality of education, policy makers and researchers may wonder whether it is better to join a network (international or sub-regional) or conduct their own national assessments, or both.

One obvious advantage in joining a cross-national survey is its 'comparative framework' (Greaney & Kellaghan, 1996), where each country can be placed in an international perspective with a reference point based on the international average. Secondly, since the same technically-sound methodology needs to be used at the same time in all participating countries, the national capacity can be developed by capitalizing on the expertise made available to participating countries (Murimba, 2006). This can in turn lead to lower staff requirements and costs at country level with respect to national surveys. Thirdly, cross-national findings are more likely to attract media attention and more readily provoke political dialogue within participating countries (Schleicher, 2006).

However, a legitimate concern expressed by some Ministers is the unfair comparisons via 'league-table' in which countries are ordered in ranking (Murimba, 2006). Moreover, taking into consideration the different contextual and cultural background, cross-national surveys are often criticized as less attuned to local issues and concerns (Greaney & Kalleghan, 1996).

Methodological issues

A summary of the different characteristics of a selection of cross-national surveys is presented in Table 1 below.

Insert Table 1 about here

- Target population

One of the important issues in research design is how to define the target population. For OECD PISA, for example, the target population has been 15-year-old students. In this methodology, depending on the repetition policies and flexible intake systems, it might be required to take a sample from a number of different grades, and sometimes across different education cycles (for example, some from upper primary schools and some from lower secondary schools). If facilities and teaching materials are different depending on the grade or the cycle, a more complex sample design is required in order to ensure that the measured values regarding the characteristics of the learning environment can be appropriately generalized to the population (Postlethwaite, 2004a; Grisay & Griffin, 2006).

Unlike PISA's age-based definition of the target population, the IEA surveys are age/grade based. For example, the target population for TIMSS 1995 included (i) students enrolled in the two grades containing the largest proportion of 9-year-old students, (ii) students enrolled in the two grades containing the largest proportion of 13-year-old students, and (iii) students in their final year of secondary education (Postlethwaite, 2004a; Grisay & Griffin, 2006). In this methodology, national comparisons are made within the same two grades, where the same curriculum is used for each grade. However, international comparisons might be made across different grades, depending on the difference of the school-starting years and the education structure.

SACMEQ has been using a pure grade-based population at the Grade 6 level. This is because most of the participating countries have relatively high repetition rates and late entries to primary school. By the time pupils reach Grade 6, there is a large variation in age. Policy makers in SACMEQ countries wished to find out the determining elements of the learning environment on achievement, and age differences at Grade 6 are considered to be a potential determining element (Postlethwaite, 2004a; Saito, 2008). Grade 6 was also identified as the target population because this was the final grade of primary education in most SACMEQ countries.

- Test framework

Although the trend in international and/or sub-regional studies has been to measure student achievement in basic subjects such as Reading and Mathematics, their test frameworks are not necessarily the same. For example, IEA's TIMSS used the curricula of the participating countries in order to construct their tests. The test blueprint was organized using the 'domain' as one dimension and the 'cognitive level' as another. The Mathematics domain included (i) geometry, (ii) measurement, (iii) algebra, and (iv) data, and the cognitive level included (i) knowledge of facts and procedures, (ii) application of concepts, (iii) problem solving, and (iv) logical thinking² (Beaton, et al, 1996). The Mathematics test of SACMEQ was similar to that of TIMSS 1995, with (i) number, (ii) measurement, and (iii) graph/data as the domain, and (i) knowledge, (ii) understanding, and (iii) application as the cognitive level.

For Reading literacy, IEA's PIRLS and SACMEQ had the same domains: (i) narrative prose, (ii) expository prose, and (iii) document. For the first two domains, the cognitive level included (i) verbatim, (ii) paraphrase, (iii) inference, and (iv) main ideas. For the document domain, two levels were used: (i) locate, and (ii) locate + process.

Unlike IEA's and SACMEQ's test frameworks, OECD PISA did not use school curricula as the basis for its test framework. Rather, PISA focuses on the kind of competencies which will be useful in adult life (Postlethwaite, 2006; Postlethwaite & Leung, 2006; Ross et al., 2006b). In PISA, three subjects have been measured: Reading literacy, Mathematical literacy, and Scientific literacy. Compared to IEA and SACMEQ, the PISA blueprint has been organized differently. For example, in Mathematics, the three dimensions measured were (i) contents (quantity, space/shape, change/relation, uncertainty); (ii) process (recreation, relation, critical thinking, and aptitude); and (iii) situation (private, educational, professional, public, and scientific) (OECD, 2007; Ross et al., 2006b).

It is important to recognize these differences and to use a test framework that corresponds with the priorities of the country. If the Ministry is mostly concerned about whether schools have taught the specified curricula to an acceptable standard, then a test framework similar to the ones used by IEA or SACMEQ would be more suitable. On the other hand, if the Ministry is more concerned about whether schools enable adolescents to acquire the knowledge and skills they are expected to have need of in the future, then the methodology used by PISA would be more appropriate (Saito, 2008).

- Outcomes not often covered in assessments
 - (i) Measuring behaviors and attitudes towards school subjects

Both the PISA and IEA studies include measures relating to attitudes and emotions. Although behaviors and attitudes of students toward school subjects are considered very important elements which could influence student achievement, such measurements have not been established as standard practice compared to the measurement of knowledge and skills. Furthermore, as shown in the TIMSS results (Beaton, et al, 1996; Mullis, et al, 1997), Asian

² For TIMSS 2003, cognitive framework has been modified. See the following link for detail:
http://timss.bc.edu/PDF/t03_download/t03cdrpt_appendix_A.pdf.

countries such as Singapore, Korea and Japan had very contrasting results where many students with high achievement on Mathematics and Science had rather negative attitudes towards these subjects. It is reasonable to say that the development of definitions and methodologies to measure attitudes and emotions is still an ongoing process. However, it is important to investigate the reasons why in some cases there was no relationship between achievement and attitudes in certain subjects, and to use this information to improve the quality of education.

(ii) Measuring sustainable life skills

Since the International Conference on Education for Sustainable Development (ESD) in Johannesburg in 2002, attention has been given to the importance of acquiring sustainable development skills in addition to the basic school subjects (Ross et al., 2006a). However, while the definition of ESD is still very vague³ it is difficult to develop a good measurement framework. There is a movement to relate ESD skills with life skills, which have been defined by various international organizations (UNICEF, 2005; UNESCO, 2004b; WHO 1999). None of these definitions have been accepted as the standard (Ross et al, 2006b). However, there is general agreement that one of the areas which life skills should encompass is knowledge and behavior regarding health. The SACMEQ III survey carried out in 2007 included the measurement of pupils' and teachers' knowledge of HIV and AIDS, as requested by the Ministers of Education from Southern and Eastern Africa during the SACMEQ Assembly in 2003. Measuring other areas of ESD, such as environmental needs, has also been on the discussion agenda during several of the SACMEQ Scientific Committee Meetings (SACMEQ, 2007).

(iii) Measuring teachers' performance

In many research surveys, the evaluation of teacher performance is absent or receives little attention (Anderson, 2004). For example, none of the PISA studies collected data about teachers' background information. TIMSS and PIRLS did collect information on teacher characteristics, but not on teacher's subject-matter knowledge. The IEA did carry out a classroom observation study looking at teaching performance via video (Hiebert et al, 2003). In general, due to strong opposition from teachers' unions, it has been very difficult to measure teacher's performance. However, SACMEQ did test Grade 6 teachers during SACMEQ II (Reading and Mathematics in all SACMEQ countries except for South Africa and Mauritius) and during SACMEQ III (HIV/AIDS knowledge in all SACMEQ countries and Reading and Mathematics in all SACMEQ countries except Mauritius). For these surveys, it is possible to put pupils' and teachers' ability on a single scale for each subject using modern Item Response Theory. It is therefore possible to compare pupil achievement in Reading literacy and Mathematics with the achievement of their teachers in these subjects.

Impact of research on educational plan implementation

Comparative review of EFA-FTI countries

³ "Skills required to satisfy the social, economic, and environmental needs of the present generation without compromising the needs and resources available for future generations" (Ross, et al., 2006, p. 289)

It is obvious that data collection should not be the end of survey research. Research would be meaningless if information on quality improvement is not reflected in the policy making process. It has often been discerned that educational policy formation led by Ministers of Education rarely capitalizes on empirical evidence (Mendelsohn, 1996; Reimers & McGinn, 1997). Curiosity-driven research undertaken in universities may not be very relevant to the policy concerns of Ministries of Education, and would therefore have little or no impact on educational policy decisions (Murimba, 2006; Saito, 1999). The impact of SACMEQ at national and international levels has been presented separately in Table 2. This section contains a comparative review of the NESPs of FTI countries⁴. Many FTI countries have been undertaking either international or sub-regional cross-national assessment to measure learning achievement (see Table 3).

Insert Table 2 about here

Insert Table 3 about here

According to UNESCO (2008a), in order to make the process and outcomes regarding the quality of education more transparent, FTI countries have been urged to include the following information in their national plans:

- Description of education results to be achieved
- Baseline data of student learning outcomes
- Description of the assessment system in use

Despite these efforts, UNESCO (2008a) reported that many of the national plans addressed quality only partially. In most EFA-FTI countries, learning assessment systems are still in development. Based on a review of educational plans of 35 EFA-FTI countries, UNESCO identified several factors which are associated with quality and grouped them into five categories (see Table 4).

Insert Table 4 about here

In terms of indicators on the quality of education, UNESCO (2008a) reported that most countries do not go beyond the basic set of indicators, mostly relating to inputs. These include gross and net enrolment rates, repetition rates, survival rates, primary completion rates, gender parity index, student and teacher attendance, instruction time, teacher qualification, pupil/teacher ratio, and pupil/textbook ratio. Examples of more elaborated indicators include percentage of children

⁴The list of FTI countries is updated periodically. The endorsed countries as of March 2009 have been listed in Appendix A.

who achieved the established national standard at certain grades, percentage of children provided with a hot meal in schools, and level of ICT usage in schools. It appears that most countries identify indicators in the context of the present 'realities' (UNESCO, 2008a). For example, if a country has not yet achieved the provision of basic school inputs, these would be the priority in the plans before the establishment of more elaborated indicators.

In conceptualizing the quality of education, the general trend in the plans was to describe the importance of a student centered and safe, inclusive learning environment, where better trained teachers deliver relevant and useful contents. A significant number included use of distance learning for both teacher development and student learning. Other, less commonly included indicators, are: mother-tongue instruction; availability of textbooks and learning materials in local languages; locally chosen/produced curriculum and textbooks, more specialized private schools to cater for students' particular needs; use of integrated learning systems to reduce the need for and cost of textbook development, school lunches, health and counseling services; inclusion of local myths and stories to increase relevance; and flexible accommodations (for example for young mothers) (UNESCO, 2008a).

Two case studies

This section will focus on two examples, one African country and one Asian country, to examine the link between research and educational plan implementation in more detail.

- The Case of Malawi

- (i) Identification of research needs

In Malawi, free primary education was introduced in 1994. In concrete terms, this translates into a jump from 1.9 million to 3.2 million primary school population from one year to another (Chimombo, et al., 2005). Consequently, there was an acute shortage of teachers and classrooms. Counting on some 20,000 temporary unqualified and retired teachers who were newly recruited that year, the pupil/teacher ratio was maintained at the previous 60:1 ratio. However, the pupil/qualified teacher ratio became 120:1. In addition, the pupil/classroom ratio jumped up to 160:1 because no new classrooms were constructed. This required some schools to have open-air classes.

In the wake of the Jomtien Conference on Education for All in 1990, Malawi was one of several Sub-Saharan African countries that requested the IIEP in 1993 to help them establish a capacity development programme in the area of monitoring and evaluating the quality of education. The proposal stressed the need for educational planners to obtain competencies in this area as well as to bring about an information culture where research information would be used for educational policy making (Moyo, et al, 1993). It was decided that Reading literacy would be tested because this was considered to be the most critical subject that would form the basis for other subjects.

A series of training programmes were organized, which subsequently led to the formation of a consortium called SACMEQ. As one of the founding members of SACMEQ, Malawi has been very active in its participation. The policy concerns of senior decision makers in these countries,

including Malawi, were translated into specific research questions. Based on these research questions, educational planners proceeded to develop the questionnaires and tests. SACMEQ considered quality to consist of the following elements, all of which could influence pupil achievement in Reading, Mathematics, and Health Knowledge:

- School characteristics (type, location, size, resources, principal's qualification, parental involvement etc.);
- Teacher characteristics (age, sex, qualifications, behavior, in-service training, classroom resources, etc.); and
- Pupil characteristics (age, sex, attendance, repetition, socio-economic status, nutrition, home help, etc.).

The methodologies adopted by SACMEQ were to ensure high validity and reliability especially in such areas as sampling technique, test construction, data collection, data cleaning and data analyses. The SACMEQ approach has made possible different ways of comparison (Ross et al, 2004):

- Comparison among countries
- Comparison over time
- Comparison between pupils and teachers
- Comparison against Ministry's benchmark standards (defined by subject experts)
- Comparison with other international studies (TIMSS, PIRLS, etc.)
- Comparison with levels of competence
- Comparison of equity (gender, distribution, social)

(i) Improvement of Malawi's research capacity

Malawi had a late start in the main data collection for the SACMEQ I study due to a problem in securing funding. The data collection was therefore postponed from 1995 to 1998. Furthermore, there was a large amount of missing data, and therefore their SACMEQ I report was treated as an 'interim report', i.e., not satisfying the SACMEQ technical standards (Milner et al., 2001).

When the SACMEQ II study commenced in 2000, it was found during data collection that some of the selected schools turned out to be junior secondary schools where there were no Grade 6 pupils. The operation was halted, and the problem was traced to the Education Management Information System (EMIS). In mid 2002, the country requested the SACMEQ Coordinating Centre to organize a special training workshop for Malawi. Experienced National Research Coordinators (NRCs) from Kenya and Namibia were sent as faculty members to lead training sessions in Malawi. Two months after the training, Malawi was back on track and able to complete data collection by the end of 2002, data cleaning in 2003, and the SACMEQ II report in 2005 (Murimba, 2005; Chimombo et al, 2005).

For Malawi, some important lessons were learned from these difficult experiences. For example, the importance of involving professionals with different areas of expertise and from different organizations in the training activities, i.e. from the Ministry of Education, University of Malawi, Centre for Educational Research and Training and the UNESCO National Commission. The self-

help approach also contributed to building the sense of local ownership that characterizes the SACMEQ project.

In concrete terms, Malawi saw a tremendous improvement in strengthening the national EMIS (Murimba, 2005). For the SACMEQ III study, Malawi was one of the first SACMEQ countries that completed data preparation and cleaning (Hungu, 2009). In SACMEQ countries in general the time of completion was significantly reduced due to the new “Janitor” data quality management software developed at IIEP. This software automates many of the data cleaning processes which previously required external assistance. This is another example of how participation in a cross-national study could lead to an increase in research capacity.

(ii) Research results and policy implications

The impact of participation in SACMEQ on research capacity, as described above, needs to be separated from the impact of the research results on policy implementation. The SACMEQ I results for Malawi were not satisfactory to policy makers. Findings demonstrated that there were certainly negative spin-offs from free primary education. The already very low percentage of Grade 6 pupils who owned textbooks, notebooks, and pencils during SACMEQ I was even lower for SACMEQ II. Although there was a slight improvement in SACMEQ II with regards to teacher qualification, teaching materials, and school resources, there was a general shortage of human and material resources, especially in Central West, South West, and Shire Highland divisions (Chimombo et al, 2005).

The achievement results were a difficult reality to accept. Malawi’s SACMEQ I mean reading score for Grade 6 pupils was the lowest in the sub-region, and only one-fifth of Grade 6 pupils were considered to meet the ‘minimum’ level of the Ministry benchmark standard in Reading. The SACMEQ II results revealed a serious deterioration in quality; less than 10 percent of the Grade 6 pupils met the ‘minimum’ benchmark standard (Chimombo et al, 2005).

As was the case for the other SACMEQ countries, the policy suggestions were classified into five different categories depending on the level of intervention:

- (1) consultation with staff, community, and experts
- (2) review of existing planning and policy procedures
- (3) data collection for planning purposes
- (4) educational research
- (5) investment in infrastructures and resources

In addition, each policy suggestion included the relevant department for implementation, expected cost and duration. Ten policy suggestions out of a total of 52 dealt with shortages in materials, and they appeared throughout these different categories. For example, one policy suggestion stated that District Education Managers should make sure that education advisors and schools are encouraged to use the teacher development centres (in the second category above). Another policy suggestion elicited the Ministry of Education to establish clear guidelines on norms for material provisions (in the third category), while another suggestion urged the Planning Unit to search for more resources to cover the deficits in materials (in the fifth

category) (Chimombo et al, 2005). It has been reported that these suggestions were used as inputs to the development of the educational policy investment framework (Murimba, 2005).

(iii) Review of Malawi NESP

The Malawi NESP defines as its mission “to provide quality and relevant education to the Malawian nation”. For pre-primary, secondary, vocational technical, and higher education sub-sectors, the number one priority has been ‘access and participation’, followed by ‘quality’. However, for the primary education sub-sector, ‘quality’ has been the number one priority (UNESCO, 2008c).

The NESP listed the following indicators as important ones in order to improve the quality of education:

- Reduced drop-outs and repetition
- Improved teacher distribution
- Increased survival rate
- Increased supply of teachers

None of the indicators listed dealt with pupil achievement. There was mention of SACMEQ as a capacity building tool. However, there was no reference to the research results for policy planning purposes, nor for programme intervention (UNESCO, 2008c).

- The Case of Vietnam

(ii) Identification of research needs

Since independence in 1945, Vietnam has experienced a series of education reforms. Although mass education was introduced in the reform following reunification in 1975, the key reform was associated with the transition from a command economy into a market economy under *Đổi Mới* (Le, 2006; UNESCO, 2008b) in the late 1980s. Education was considered to be an important factor for the economic development of Vietnam, and therefore received high priority (World Bank, 2004).

In the early 1990s, the Vietnam government undertook an education and human resource sector study, jointly supported by UNESCO and UNDP (UNESCO, 2008b). This was followed by an education financing study, which was jointly conducted by the World Bank and the government in 1996. In both studies, the focus was on the costs and financing of development, renovation, and reform of the different sub-sectors of the education system. There was no attempt to define the quality of education or investigate learning achievement (Griffin, 2007).

In Vietnam, quantitative expansion took place during the 1990s, and the Net Enrolment Rate (NER) for primary school exceeded 90 percent. At the end of 1990s, some 15,000 primary schools enrolled over 10 million pupils in Vietnam. While practically no data were available before the reform, it was reported that the survival rate in primary school was 68 percent, and the transition rate to secondary school was 98 percent (Le, 2006).

In the late 1990s, the government decided to look into the first-ever national assessment of learning achievement for pupils at the upper primary level. It was the Ministry officials themselves who decided on the policy questions for the study. These policy questions were related to: level of Grade 5 pupil achievement in Reading and Mathematics, the level of material and human resources compared to Ministry benchmarks, and equity of material and human resources. A large-scale monitoring study was then launched by the Ministry of Education and Training in 2000. This survey is one of the few projects which has focused on learning outcomes rather than school access (World Bank Independent Evaluation Group, 2006), and it emerged from the collective efforts of the Ministry of Education, the World Bank, and UNESCO-IIEP (World Bank, 2004).

(iii) Research design, capacity building, and results

The assessment was a cross-sectional survey involving a scientific sample of all pupils in Grade 5 and their teachers in all of the 61 provinces⁵ in April 2001. Reading literacy in Vietnamese and Mathematics were selected as the focus. Since a new curriculum was supposed to be introduced in 2000, the tests covered both the old and new curricula. The study also included background questionnaires for pupils, teachers, and school heads. The final data archive contained data from 72,660 Grade 5 pupils and over 7,000 teachers in 3,636 primary schools in Vietnam (World Bank, 2001).

The survey methodology adhered to high standards based on the international standards set by the International Association for the Evaluation of Educational Achievement (IEA) and SACMEQ. The local team of the National Institute for Educational Sciences (NIES) was trained by an international team of specialists in the areas of sample design, test construction, and data preparation (Postlethwaite, 2004a; World Bank, 2004).

Results revealed that a large proportion of Grade 5 pupils were in schools without access to some of the key material resources for learning, such as wall charts, lockers, bookshelves and lamps. In addition, there were virtually no classroom library books for pupils to read. In terms of pupil achievement, a profile of skills in each subject was established, and there were important provincial differences in achievement for both subjects (World Bank, 2004).

The final chapter of the Vietnam report contains a series of policy suggestions that were drawn up from hard evidence on the quality of education, providing feedback to the original policy questions. Following the SACMEQ example, these policy suggestions were presented together with implementation time frames, estimated costs and the relevant Ministry departments responsible for their implementation. Out of some 40 policy suggestions, three suggestions were directly related to achievement, eight suggestions dealt with the quality of material resources, and seven suggestions dealt with human resources. Other suggestions were related to home environment, school process, and further data collections.

For example, one policy suggestion was for the provincial authorities to consider undertaking a review of school resources (short time, low cost), while another suggestion was about increasing

⁵ In 2008, the number of provinces in Vietnam was increased to 63.

material resources to isolated schools (medium time, high cost). Regarding pupil achievement, the Ministry was to introduce a new assessment framework based on a profile format (in which a score is associated with descriptions of skills achieved) for the new curriculum (medium time frame, low cost). It was also suggested that the Ministry use this tool as an intervention programme for specific groups of pupils and teachers (also medium time and low cost). These suggestions were written by educational planners for review, consultation, dissemination, and implementation by the Ministry of Education and Training (World Bank, 2004).

(iv) Review of Vietnam's policy documents

In 2003, the government together with UNESCO prepared the Education Strategic Development Plan 2001-2010 and National Action Plan for Education for All (Socialist Republic of Vietnam, 2003). There were also the Five Year Socio-Economic Development Plan 2006-2010, Millennium Development Goals (MDGs) / Vietnam Development Goals (VDGs), and Five Year Strategic Education Development Plan 2006-2010. These policy and plan documents formed the basis for the Law of Education in 2005.

In these documents, improving educational quality was spelled out as one of the government's sector priorities for all the sub-sectors. The focus was on the following four areas (UNESCO, 2008b):

- Improvement of overall quality, stressing national spirit and socialist ideal;
- Abolition of gender disparity;
- Improvement of teaching/learning methods, encouraging creativity, self-study capability, and use of ICT;
- Assuring career-oriented knowledge rather than subject-oriented knowledge.

It should be noted that the fourth focus above would go along with the PISA test framework rather than the national assessment framework established in 2001.

UNESCO (2008b) reports that Vietnam considers the following as contributing factors for improving the quality of education: school hours, school shifts, teachers' salaries, and learning outcomes. However, no details were given concerning the type of learning outcomes, i.e., whether these outcomes are to be described through an average score or a profile format. Although user-friendly policy suggestions were provided in the Vietnam assessment study of 2001 regarding the use of a format to measure the profile of Grade 6 pupils' achievement, there was no trace of the use of these policy suggestions in the review provided by UNESCO (UNESCO 2008b). Moreover, despite the enormous investment made by the World Bank in carrying out the Grade 5 assessment which took place in 2001, no further assessment plan was mentioned in the educational plan documents prepared by the Vietnam Ministry of Education (Vietnam Government & UNDP, 2005; Vietnam Government, 2005; Ministry of Education and Training, 2003).

Weak link between policy suggestions and policy implementation

From the detailed review of two country cases, it seems clear that a distinction needs to be made between the following different types of impact:

- Impact on national research capacity
- Impact of assessment results on policy intervention
- Impact of policy intervention on educational quality

In the case of Malawi, the importance of assessment (experience from SACMEQ) has been identified as the first type above. Some policy suggestions were incorporated in a few of the policy documents, yet the impact on educational quality is yet to be seen. For Vietnam's case, although some of the indicators used in the World Bank report match those in the Strategic Plan, there was no clear linkage between the policy suggestions and policy interventions.

The SACMEQ research studies and the Vietnam Grade 5 assessment of 2001 have been based on the policy concerns of senior decision makers in Ministries of Education. These studies have employed high technical standards with respect to the methodologies used and contain hard evidence that can be used for policy making in a user-friendly format. The policy suggestions and agendas for action were written by educational planners from these countries and endorsed by the Ministers. Nevertheless, the final stages in the policy cycle (policy reform, agenda for action and programme implementation) are yet to take place in these countries. However, there are a few SACMEQ countries that have intensively and successfully used the SACMEQ policy suggestions in their policy documentation and/or investment framework for education. Their dissemination and communication strategies as well as the co-ordination and harmonization between planners and decision-makers, planners and donors, and donors and decision-makers have been documented in the literature and are worth examining (Hovland, 2005; Leste, 2005; Murimba, 2005; Nzomo & Makuwa, 2006).

Improving the communication and dissemination of assessment research results

One of the reasons for the lack of integration of research results in policy dialogue and policy reform is the inadequate and/or ineffective communication and dissemination of results among policy and decision makers (Mendelsohn, 1996; Gunderson, 2007). A promising tool which was specifically developed to improve the communication of results for decision making is StatPlanet⁶ (Van Cappelle, 2009). This visualization tool is currently used by SACMEQ, UNESCO, and a number of other international organizations as well as government agencies for the purpose of improving the communication and dissemination of data.

StatPlanet enables the visualization of research results in the form of interactive thematic maps for spatial analysis (such as comparisons between countries, provinces or regions) and interactive graphs (i.e. bar charts, time series and scatter plots). StatPlanet automates the transition from data to visual presentations, and enables users to visually browse through the data and select the type of visualization which is most relevant to their needs. It also includes functions for automating the process of merging data from different sources and databases, for example EMIS and national census data, regardless of database structure and naming conventions.

StatPlanet offers a number of advantages over existing, non-electronic means of disseminating research results and data within Ministries of Education, such as publications and reports.

⁶ <http://www.sacmeq.org/statplanet/>

Visualization is useful for data analyses and makes it easier to derive meaning and understanding from data. StatPlanet also facilitates and speeds up the process of merging and visualizing data – tasks which Ministries of Education may not always have the time, resources and/or staff to do otherwise. By automating these processes, the time between data collection and data analysis can be reduced. Disseminating data as early as possible is important to ensure that the data is still relevant and of interest to policy makers and planners. By the time research results are released to the public realm (which could take from several months to several years), the policy interest could already have dissipated (Gunderson, 2007).

The software itself is easy to disseminate. This is of course an important criteria if it is to be used for the dissemination of research results (e.g. within the Ministry or to district offices around the country). StatPlanet does not require installation, runs on virtually any computer, and can be used online as well as offline without requiring Internet or Intranet. Its file-size is sufficiently small to be sent as an e-mail attachment, and it can easily fit on a USB flash drive. Visualizations produced with StatPlanet can also be exported as ‘static’ images, to be inserted in reports and presentations for example.

In contrast to many other data visualization or mapping systems, StatPlanet is very much targeted towards non-technical users, rather than statisticians, GIS specialists, database administrators, or other expert users. It is intended to be easy to use for educational planners and policy makers without requiring particular training in statistics or databases. Feedback from users of StatPlanet so far suggests that ease of use is one of its strongest points, and that little or no training is required to start using the software.

Further research and development in the area of data visualization for decision making would need to focus on catering to the particular needs of policy makers and planners, and coming to a better understanding of how data are currently communicated, disseminated and used at the different levels of educational administration.

Conclusion

In this paper, the concepts and issues of measuring the quality of education have been discussed in the context of the EFA goals. An analysis of the linkage between learning assessment activities and policy interventions was made based on a UNESCO desk review of education plans from 35 countries as well as more detailed case studies of Malawi and Vietnam. It was found that while the quality of education is recognized as an important element in most education plans, there is no consistent way of interpreting or measuring it.

Many countries are making significant investments in assessments of the quality of education, which naturally raises the expectation that such assessments are used to improve quality. However, as long as there are no significant efforts towards linking the outcomes of such studies to concrete education plans and educational policies, these studies are unlikely to have much impact. One of the ways to improve this linkage is through the better communication and dissemination of results, which should take place at all levels of educational administration. Constructive dialogue is also needed, in which the outcomes of such studies are openly discussed in relation to educational policies and national plans.

While sophisticated and innovative methodologies have already been developed to measure the quality of education, the processes of linking research results with policy still seem to be at a developmental stage. This is a challenge not only for researchers and policy makers, but also for development partners to ensure that: (i) policy and planning become more firmly grounded in objectively verifiable scientific evidence and (ii) policy interventions have an impact on the improvement of the quality of education.

Table 1: Various cross-national surveys with different characteristics

Cross-national Surveys	Coverage	Priority	Target Population	Test Framework
OECD-PISA	International (OECD members and partners)	Measuring progress / identifying trends	15 years	Competency required for future life
IEA-TIMSS/PIRLS etc.	International (mainly industrialized countries)	Measuring progress / identifying trends	The mode grades for 10 years and 14 years and the final year in secondary	Competency within the curriculum
SACMEQ	Sub-regional (Southern and Eastern Africa)	Capacity building	Grade 6	Competency within the curriculum
LLECE	Sub-regional (Latin America)	Generation of indicators	Grades 3 and 6	Competency within the curriculum
CONFEMEN-PASEC	Sub-regional (Francophone Africa)	Generation of indicators	Grades 2 and 5	Competency within the curriculum

Sources: Compiled by the authors based on Grisay & Griffin (2006), OECD (2007), IEA (2005a; 2005b), Ross & Makuwa (2009), UNESCO (2009), CONFEMEN (2009).

Table 2: Impact of SACMEQ research results on educational policy

Type of SACMEQ impact at the National Level	BOT	KEN	LES	MAL	MAU	MOZ	NAM	SEY	SOU	SWA	TAN	UGA	ZAM	ZAN	ZIM
To inform presidential commissions of inquiry into education							X								X
To use as inputs to Education Sector Analysis		X										X			
To develop National Assessment systems			X									X	X		
To develop Education Policy Investment Frameworks				X								X	X		
To develop Education Sector Master Plans or Strategic Plans					X	X	X								
To lead to educational reforms and school improvement initiatives			X				X	X					X		
To strengthen national EMIS		X		X											X

Source: Murimba (2005); Lest (2005); Nzomo & Makuwa (2006).

Table 3: EFA-FTI countries' participation in international and regional assessment studies

Countries	International	Regional
Benin		
Burkina Faso		PASEC
Cameroon		PASEC
Central African Republic		PASEC
Djibouti	TIMSS 2003, 2007	PASEC
Ethiopia		
Gambia		
Ghana	TIMSS 2003, SISS	
Guinea		PASEC
Kenya		SACMEQ I, II, III
Lesotho		SACMEQ II, III
Liberia		
Madagascar		PASEC
Mali		PASEC
Mauritania		
Mozambique		SACMEQ II, III
Niger		PASEC
Rwanda		
Sao Tome and Principe		
Senegal		PASEC
Sierra Leone		
Yemen		PASEC
Cambodia		
Mongolia	TIMSS 2007	
Tajikistan		
Timor-Leste		
Vietnam		
Guyana		
Haiti		
Honduras	TIMSS 2007	SERCE
Nicaragua		SERCE

Source: Compiled by the authors based on UNESCO (2008a), Ross & Makuwa (2009)

Table 4: Percentage of educational plans that dealt with factors associated with quality based on a desk review of EFA-FTI plans for 35 countries

Category	Factors associated with quality	% of plans
Learners, family and community	Decentralization of the system	74
	Family and community support	59
	Affordability	44
Enabling inputs	Textbooks and learning materials	86
	School/classroom libraries	86
	Gender sensitive/inclusive environments	86
	In-service professional development for teachers	82
Teaching/learning interactions	Differentiated, multi-grade teaching	63
	Learner-centered, constructivist methods	46
	Inclusion of local knowledge	46
Learning outcomes	Vocational and life skills	87
	Foundational cognitive skills	51
	Participation in economic development	29
	Participation in civic duties	29
Assessment practices	Formal learning assessment programmes	74
	Monitoring and evaluation systems	26
	Informal, alternative practices	1

Source: UNESCO (2008a).

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Appendix A: Fast-Track Initiative (FTI) Country Endorsement Schedule (as of February 2009)

Endorsed Countries							Countries expected in 2009-2010	Other Eligible Countries
2002	2003	2004	2005	2006	2007	2008		
<ul style="list-style-type: none"> • Burkina Faso • Guinea • Guyana • Honduras • Mauritania • Nicaragua • Niger 	<ul style="list-style-type: none"> • The Gambia • Mozambique • Vietnam • Rep. of Yemen 	<ul style="list-style-type: none"> • Ghana • Ethiopia 	<ul style="list-style-type: none"> • Kenya • Lesotho • Madagascar • Moldova • Tajikistan • Timor-Leste 	<ul style="list-style-type: none"> • Albania • Cambodia • Cameroon • Djibouti • Kyrgyz Rep. • Mali • Mongolia • Rwanda • Senegal 	<ul style="list-style-type: none"> • Benin • Georgia • Sao Tome & Principe • Liberia • Sierra Leone 	<ul style="list-style-type: none"> • Central African Rep. • Haiti • Zambia 	<ul style="list-style-type: none"> • Angola • Bangladesh • Bhutan • Burundi • Comoros • Dem. Rep. Congo • Rep. of Congo • Eritrea • Guinea-Bissau • Lao PDR • Malawi • Nigeria (3-4 States) • Papua New Guinea • Solomon Islands • Tanzania • Togo, Tonga • Uganda • Vanuatu 	<ul style="list-style-type: none"> • Afghanistan • Cote d'Ivoire • India • Indonesia • Kiribati • Myanmar • Nepal • Nigeria (other States) • Pakistan • Somalia • Sri Lanka • Sudan • Zimbabwe

Source: World Bank FTI Secretariat (2009); UNESCO (2008a).