AN EMIS FOR PALESTINE – THE EDUCATION MANAGEMENT INFORMATION SYSTEM IN THE WEST BANK AND GAZA STRIP

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Abstract – *This article provides an account of the introduction of an Education Management and Information System in the West Bank and Gaza Strip. The initiative, led by the Palestinian Ministry of Education, and supported by UNICEF, is described in terms of the educational goals targeted, the usefulness of an EMIS for the rational organization and management of an educational system, and the impact that the availability and sound use of data can have on improving quality provision. The particular political and educational circumstances of Palestine up to the start of the second Intifada in September 2000 are described in some detail in order to better highlight the challenges that had to be faced by the Ministry of Education, and to appreciate more thoroughly the extent of the successes achieved against the odds.*

Introduction: the search for quality in education

*E*ducation systems the world over – and particularly so in developing countries – are increasingly concerned not only with extending and consolidating access, but also with improving the quality of their educational services. Quality has become an issue for several reasons. Most importantly, the explosive growth in the education systems of many countries during the 1970s and 1980s, often in a context of increasing social demand but decreasing budgets, led to situations where less qualified teachers had to deal with larger classes, frequently in poor facilities, without textbooks or any source of instructional assistance (Hallak, 1990). Quality declined to such an extent that the social and economic benefits that parents and governments expected from their investment in education failed to materialize.

The shift in emphasis from quantity to quality in education can be seen in the stress that is increasingly being placed on learning outcomes. In other words, systems are paying much more attention to *indicators of successful schooling* – including increasing completion levels, declining gender and geographic gaps, and rising learning achievement – than to a spurious satisfaction with the fact that education services are being offered, without any serious attention to how successfully educational objectives are being reached. This shift is related to

notions of educational entitlement, as well as to notions of accountability – both towards core ministries and to external donors who are keen to have proof of the cost-effectiveness of their investment in education.

Quality of education and information systems

This shift towards results-based management of education systems has major implications, for the attainment of that goal depends on the availability of reliable data that are immediately retrieval and usable, and that are comprehensive and relevant. In other words, the close monitoring of educational quality requires an information management system, with a set of structures and procedures governing the collection, processing, analysis, presentation and use of information within the organization (Windham, 1994; Billeh, 2001).

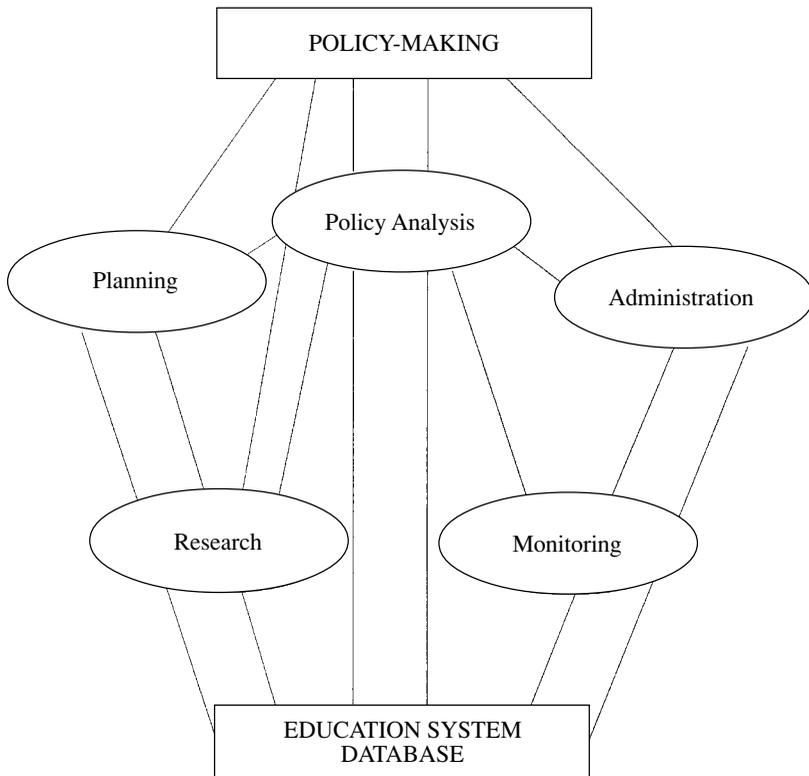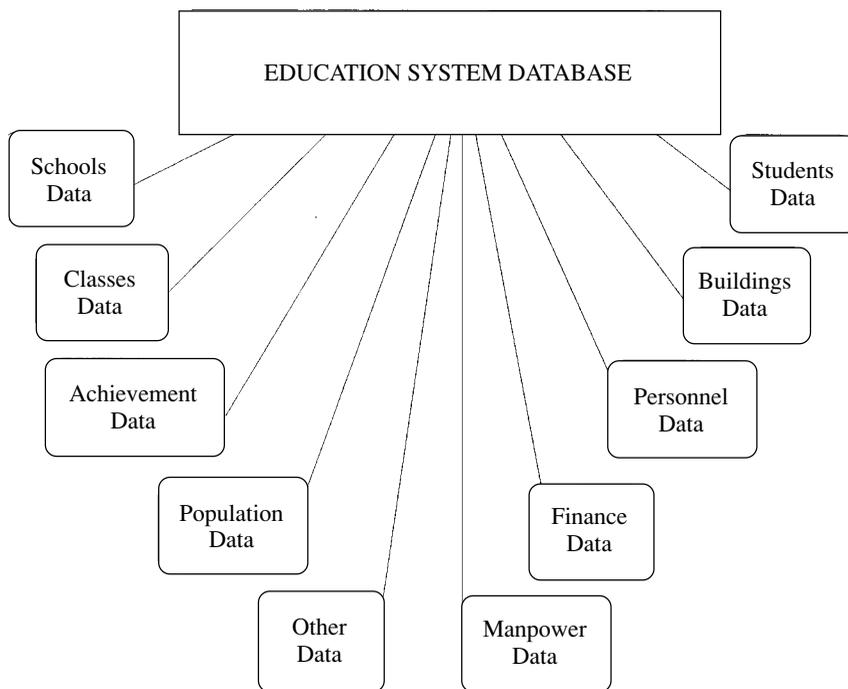*FIGURE 1: The Functions of an Education System Database*

FIGURE 2: Kinds of data in an EMIS

EDUCATION SYSTEM DATABASE

Schools Data

Classes Data

Achievement Data

Population Data

Other Data

Manpower Data

Finance Data

Personnel Data

Buildings Data

Students Data

The development of an information system requires a significant financial and human resource investment, an investment which, in contexts of deprivation, can only be justified if the benefits gained clearly outweigh the costs. In other words, one has to ask whether the improved collection and analysis of data leads to insights about the quality of the learning process and to its improvement. It is equally important to consider the extent to which information systems help avoid the expansion of irrelevance with the education system and the consequent waste of resources and human potential (Welsh 1993: 95). The literature on education information systems suggests that education planners and managers can benefit from comprehensive data because priority areas of concern can be more easily identified, education sector performance more readily monitored, and the impact of specific interventions more effectively assessed (Chapman, 1990; Chapman & Mählck, 1993; Billeh, 2001). Four inter-related elements of the education process are critical here, namely *curriculum*, *teacher training*, *instruction*, and *assessment*. Integrated data on these four different aspects can be used in strategic

planning of different policy scenarios, so that possible options are judged against such criteria as feasibility, affordability, relevance, sustainability, and effectiveness (Billeh, 1994).

Education management information systems in the MENA region

Such comprehensive and integrated data systems are not readily found in the Middle East and North Africa (MENA) region. Indeed, several analysts of educational development have noted that educational statistics in MENA countries are often either unavailable or unreliable – even with respect to basic information about enrolment and progression, let alone concerning expenditures, learning, or labour market outcomes (Heyneman, 1997). Typically, the weaknesses of information systems in the MENA region include one or more of the following (Billeh, 1994, 2001; Heyneman, 1997; Sultana, 1997; Human Development Network, 1998):

- Data forms are not comprehensive in the information they collect and which is needed for policy planning and management;
- Data collected are not integrated;
- Different Ministries – and occasionally even Directorates within the same Ministries – develop their own forms, and end up collecting data which overlap each other's domain, and which are not necessarily utilized in a way that contributes to a cumulative understanding of the educational issues at stake. Data elements, definitions, and methods end up varying between the different directorates and ministries;
- There is a lack of attention to the collection of data on a gender disaggregated basis, leading to difficulties in monitoring progress in the achievement of gender equality;
- More energy is spent in collecting than in utilizing the data, so that despite the availability of statistics, their impact on management, planning and policy analysis is minimal. In many cases, no education indicators are developed from the data;[1]
- It is rare to find a situation where qualitative and quantitative data complement each other, in such a way that information about processes complements that about the dimension and nature of the issue/s under consideration.

Such weaknesses are compounded by the fact that, generally speaking, there is not only a dearth of material resources, but of trained human resources as well, so that there are major challenges to overcome both in terms of designing and

running the information gathering system, and in interpreting the statistics. Related to this is another problem, namely the lack of a culture of planning on the basis of information rather than political and partisan whims. This leads to instability in policy frameworks, when the achievement of mid- to long-term educational goals requires that the educational system is insulated against major policy shifts caused by relatively minor changes in government (Human Development Network 1998: 25).

Developments in the MENA region

The factors that provide a context for the development of information systems and referred to earlier – namely rapid expansion in the reach of education services, increased complexity in educational activities, heightened pressure for more efficient use of resources, greater accountability requirements, and the improved availability of relatively low-cost technologies for handling large data-sets (Chapman, 1990) – have also started to have an impact on the MENA region. Jordan has led the way, and its national EMIS framework has served as a starting point and model for others in the region (Ahlawat & Billeh, 1997). Egypt has not only established an EMIS, but has also overcome an initial focus on hardware, in order to incorporate the different elements in an overall framework where the use to which hardware is put has become the main concern (Human Development Group 1998: 26). The United Arab Emirates has also shown a keenness to make progress in the development of its own management information system (Francis, 2001; Sultana, 2001).

In the context of this article, our main focus is on the way EMIS has been used to further the search for the qualitative development of the educational system in another territory in the region, namely the West Bank and Gaza Strip (WBGS).

An EMIS for the West Bank and Gaza Strip

It is impossible to provide an account of the contribution of EMIS is making and can make to the development of the education system in Palestine, unless a background about the state of education there is also presented. In the next section, therefore, some of the most pertinent features of the Palestinian education sector are briefly described, in order to better appreciate the challenges that the Ministry of Education (MOE) [2] has had to face since August 28th 1994, when Israel's civil administration transferred responsibility over education in the WBGS[3] to the Palestinian National Authority (PNA). The present article does not take into

consideration the devastation caused to Palestine generally, and to the education system in particular, both in the West Bank and Gaza Strip, since the outbreak of the second *Intifada* – also known as the *Al-Aqsa Intifada* – in September 2000.[4] The account presents developments in the EMIS up to July 2000. The most recent information – obtained in January 2003 – was that, despite the damage sustained in the interim period, the database at the Ministry had been more or less salvaged intact due to the backing of files, and the EMIS was up and running again.

Education in the West Bank and Gaza Strip[5]

When the MOE was set up, it found that it had to face a situation which was critical in more ways than one. During the 27 years of occupation of the WBGS, the Israeli Civil Administration only provided the minimum funding required to run the existing educational institutions, with the construction of school premises and additional classrooms being left to the municipal councils, village councils or local and international NGOs. As a result, not only did the existing educational institutions deteriorate, but they also became insufficient to cater for the increasing number of students and developing needs of the Palestinians. The PNA therefore inherited a deteriorated educational infrastructure with a serious lack of schools and classrooms, run-down buildings, and inadequate equipment and furniture. The following excerpt from a UNESCO (1999) brochure describing a project for the rehabilitation of 17 schools in the WBGS provides a striking picture of the prevailing situation:

'Ramshackle buildings, leaking roofs, outdated wiring, broken furniture and inadequate equipment… the general condition of the existing schools had deteriorated from lack of maintenance for years. Many worked in double and in some cases in triple shifts, especially in the Gaza Strip. Classrooms were heavily overcrowded, lacked proper electrical installations and had poor natural lighting. Teaching materials were lacking, as were specialized rooms and proper sanitary facilities, storage space and outdoor playing areas. In many cases these conditions created safety problems and were detrimental to learning.'

While in 1995, not all 137 government and 159 UNRWA schools in the GS and the 884 government and 103 UNRWA schools in the WB were dilapidated to the same extent, most were old structures providing unattractive, unstimulating, even unsafe learning environments. Many schools were rented, and not purpose-built. The situation in the 105 private schools was generally better, while UNRWA

schools, unlike public ones, followed set standards for construction. The majority of buildings, however, generally fell far below the requirements that educators recognize as hallmarks of child-friendly environments.

In addition to that, curriculum, textbooks, assessment strategies, credentialling systems and so on differed between the WB and the GS, since these two territories had followed – ever since the Arab-Israeli hostilities of 1948 – the educational system of Jordan and that of Egypt respectively. While this had enabled Palestinian students in the WBGS to continue their education at higher levels in state institutions of Jordan in the first case, and Egypt in the second, it also meant that in 1994, the new PNA's Ministry of Education had virtually two education systems on its hands.[6] Needless to say, one of the first challenges for the Palestinian Authority was to develop a unified curriculum as an important step towards improving and normalizing educational standards, not to mention towards creating a sense of national identity.

This is not to say that the educational background of Palestinians is necessarily poor. Indeed, various reports attest to the fact that the population and labour force of the WBGS is highly educated by regional standards, with good literacy rates (84% for WBGS) relative to the MENA region as a whole (57%) for those 15 years and over (Diwan & Shaban, 1998), and with one of the best enrolment rates in higher education in the Arab world (Unesco 1995: 7). Palestinians are known to value the pursuit of education, with several associations, societies, foundations and religious bodies playing a vital role in the provision of educational opportunities. Nevertheless, and despite the dearth of comprehensive and reliable data, a tentative base-line survey of the Palestinian situation in 1995, together with other documents[7] revealed that:

- Due to the first Intifada, around 50,000 individuals dropped out of education, and many have still not been re-integrated into the system. Between 30-40% of school time was lost for many institutions between 1988 and 1991, and 15-30% during 1991 to 1994, with many school closures leading to deterioration in student achievement. As many as 7% of the population may never have attended school.
- Teachers had not received any significant in-service training during the 27 years of occupation. Of the 11,066 teachers, 67% had no more than a two-year post-secondary diploma. Weaknesses were not only in teaching methods, but also in knowledge of the subject matter taught.
- Tests using national and international assessment instruments showed up considerable weakness in writing, estimation skills and problem-solving, with very low achievement in IIEA math and science tests when compared to other countries. One study found that Palestinian students performed consistently

and significantly lower than their Jordanian counterparts, regardless of subject, school authority, gender or location.

- While data regarding the percentage of enrollment of school-age children were unreliable, it was estimated that in 1994, 15-30% of children aged 6-11 years, 35-55% of children aged 12-14, and 65-75% of children aged 15-17 were not enrolled in school.
- There were significant drop-out rates across all sectors of the education system, with clear indications of a low internal efficiency.
- With school enrolment for WBGS growing at the rate of 2% annually, the problem of classroom overcrowding was attaining grave proportions, with as many as 60 children per class in an area not larger than 20m^2. Three-quarters of schools in GS were operating on double or triple shifts, and average class size exceeded 45.
- Curricula not only differed between the WB and GS, but were limited in their relevance to the social, cultural and economic needs of the Palestinian people.
- Schools had a very meagre – and often rudimentary – supply of educational resources and equipment, including up-to-date textbooks.
- Differences between the three systems of administration (public, private and UNRWA) represented a major obstacle in the development of a unified national education system.
- There was an uneven and under-developed system for developing high quality vocational and technical skills.

The MOE, therefore, had a very serious situation to deal with, and it had to do it under rather grim adversarial conditions. Not only had the MOE to take over the responsibility for the educational system in a very short period of time, but it had to do so in very tight financial circumstances where most initiatives required donor support, with an understaffed complement of personnel, many of whom were untrained and inexperienced in management. As if that were not enough, the MOE had – and indeed still has to face – a steep incline in student numbers.[8]

As we will note in greater detail in a section below, quick policy decisions have had to be made in crisis situations without having any reliable knowledge of the situation in schools. However, egged on no doubt by the sheer reality of the lack of natural resources in the Palestinian territories, education and training have had to be clearly identified as the foundation stone upon which a development strategy can be built. In all this there has also been a sense of an opportunity that must be seized: the years of neglect and deprivation, while extremely damaging, have led to a situation where one feels one can 'develop a radically new educational scenario', where 'systematic initiatives in

management and organization [could] ensure the development of an integrated and progressive education system to serve the Palestinians now and in the years to come.'[9]

Achievements

In less than a decade since being established, the MOE has achieved a great deal. I will here detail some of the more relevant achievements briefly, in order to both bring the background account of the educational sector in Palestine up-to-date, and also to be in a better position to highlight the role that EMIS played in the whole process.

- The harmonization, to the extent that is possible, of the double education system in the GS on the one hand, and the WB on the other, together with the planning of a new curriculum, scheduled to be introduced over a period of five years, starting with Grades 1 and 6 in the 2000/2001 school year. Syllabi for Grades 1 and 12 have been completed, and the preparation of textbooks and teacher guides is under way.
- The articulation of a five-year education development plan for 2000/2001 to 2004/2005, around which the MOE has managed to mobilize consensus and international support.
- For the 1998/99 school year, the number of students enrolled in Government schools totalled 549,404, of whom 49.57% were girls. 88.71% of the total were in basic education, and 11.29% in secondary education. The number of students enrolled in 1998/1999 represents a 40% increase, at the rate of 7.1% per year, over the number enrolled at the time the MOE took over the school system in 1994. Enrolment rates are 91.8% (92.6% for girls and 91.1% for boys) at the basic level, and 57.0% (56.9% for girls and 57.1% for boys) at the secondary level.
- The number of Government school buildings increased by 10.4% (reaching a total of 1,096), but despite of this, double shift schools had to be increased by 85% in the WB (from 33 to 61) and by 53% in the GS (from 45 to 69). By 1999, 73% of all schools were governmental (catering for 67.6% of all students), 16% were run by UNRWA (catering for 25.9% of students), and 11% private (catering for 6.5% of students).
- Drop-out rates for the whole education sector and for both genders were brought down from 2.9% to 2.1%. For the basic education sector alone, the rate dropped from 2.5% to 1.7%.
- The activation of an extensive teacher-training program involving 28,300 teachers and administrators in 1,241 workshops and courses, and the

establishment of minimum requirements for the recruitment of new teachers, who now have to be in possession of at least a first degree. Between 1995 and 1998, the number of teaching staff increased by 42.3%.

- The construction of 125 new schools, the adding of 1842 classrooms and 152 sanitary facilities to existing schools, and the rehabilitation and maintenance of 412 classrooms – to the tune of $US129.4 million, not including the contributions of local communities through the donation of land, building materials, labour and cash.
- A number of schools have been provided with modern equipment and materials, though 65% of schools are still without library rooms, 60% are without, 60% without laboratories,86% without audiovisual equipment, and 82% without computer labs.
- Extra-curricular student activities have been introduced as an integral part of the educational process.

Over and above these considerable achievements, and indeed often contributing to the identification of goals as well as of strategies to achieve those goals, is the MOE's introduction of a computer-based EMIS. In what follows I will first provide an account of how the MOE developed its EMIS, and then focus on the way this system contributed to the process of qualitative educational development in Palestine.

The information gathering exercise concerning EMIS revolved around three strategies:

(a) gathering *documentary evidence* about it – in terms of descriptions, reports, correspondence, questionnaire forms used to generate data, etc.
(b) *interviewing key people* from the MOE, both at the central level and the district level, as well as from UNICEF.
(c) *observing the manipulation of EMIS data*, both at the MOE in Ramallah, and at the district level in Nablus.

Establishing an EMIS in the WBGS

Given the scale of the task of building a national education system from the ground up, the MOE immediately felt the need for a standardized and comprehensive educational database which would enable it to assess the situation with a view to responding to needs and to planning both in the short and the long-term. The MOE found little to build on. Between 1967 and 1994, only the Israeli authorities could collect educational data, largely through circulating questionnaires to schools. These surveys mainly focused on such

quantitative aspects of education as the numbers of student, classes and classrooms, and generally neglected qualitative aspects such as dropout rates, the quality of teaching and teachers' qualification. Whole education sectors were ignored – including vocational education, literacy and adult education, and the education of children with special needs – while data concerning expenditure levels, as well as data pertaining to East Jerusalem were missing. In addition, only a small fraction of the data collected were published by the Israeli authorities, and what was published did not generally dovetail with or correspond to the statistics put out by other organizations such as UNRWA, the Arab Thought Forum, the Birzeit University Literacy and Adult Education Office, and so on (Ministry of Education, 1996). In short, there was not much in terms of information available, and the little that there was, was generally unreliable.

On the one hand, the lack of a statistical information system meant that the MOE could start out afresh, without being burdened by an already existing model, and having the opportunity to design a framework from the ground up, in response to the demands and needs of the situation. In a sense, WBGS found itself in a unique situation where a strategy could be developed in order to collect, verify, computerize, classify and categorize data in a scientifically consistent manner – practically at the same time as the very education system itself was being established. On the other hand, the challenge to do so is terribly daunting when one considers the odds that were against its success, given the sheer lack of material and human resources.

Indeed, early attempts at setting up an education information system of sorts reflected most of the weaknesses that were noted for the MENA countries. A report dated November 1994 noted, for instance, that (Billeh 1994: 2-4):

- Different directorates were designing their own forms without consultation with each other, and without using a unified coding system and manual in order to avoid collecting the same piece of information by more than one Directorate;
- No coding scheme was envisaged or developed before designing the forms;
- No data were collected on ages of students, an essential requirement if one is to calculate enrolment ratios;
- The forms also did not cater for the regular collection of information regarding school facilities and their maintenance and rehabilitation needs;
- Information on teachers and other employees were collected on a separate form that was not linked to the school data form;
- The overall use of data to feed into the construction of the education system was minimal.

That the situation was this critical was partly due to the fact that there were no personnel with a background in planning at the MOE, except one or two who had an academic interest without, however, having the benefit of practice and experience in the field.

The need for the design and implementation of an EMIS was deeply felt, with donor agencies such as UNICEF arguing that it was essential for WBGS to strengthen its national capacities for collecting, storing and retrieving educational data in a systematic manner, so that once the data collection tools were in place, the inclusion of a sample frame for measuring achievement at each school level could follow (UNICEF 1997: 17). With the support of UNICEF and other agencies, and with the training offered by IIEP,[10] the project of establishing an EMIS took off in earnest in 1995.

Beginnings

The setting up of an EMIS in WBGS received support from a number of donors, including the Swedish International Development Aid (SIDA) besides UNICEF, and also fell within the overall scope of the 1991 Madrid conference where different countries entered into a multilateral agreement to offer help to Palestine. As we will have occasion to note, one of the key ingredients of success in the introduction of the EMIS in WBGS – one attested to by many of the interviewees – was the excellent relationship between UNICEF as 'godfather' to the project, and the MOE. That relationship was often described in terms of a 'partnership', with material being drafted together, with workshops run collaboratively in a way that facilitated the sharing of learning experiences, and with several key encounters around such central tasks as the articulation of the first 5-Year Education Plan. As one interviewee noted, '… It started a great partnership between the MOE and UNICEF – a small project with big visibility: it made the MOE staff feel proud of what they were doing, in an impossible situation.'

Technical advice and support came in from various quarters, including a UNICEF-sponsored consultant from Jordan in 1994 who had IIEP training and experience in setting up an EMIS for his own country. Victor Billeh proposed a two-stage strategy for the establishment of EMIS and the development of planning capacity in the MOE, one addressing immediate and short-term needs which enabled the Ministry to develop the basic infrastructure for collecting school census data, the other targeting training at both central and district levels. The first stage would in effect provide the opportunities for training and experience in data collection, entry, cleaning, manipulation and analysis. A relational database (R: Base) was adopted on the basis of its successful use in

Jordan, together with other off-the-shelf software packages in terms of EMIS tasks related to spreadsheets, statistical analysis, word processing, and maintenance of computer system resources. Training was planned in such areas as the restructuring of data files, the creation of 'policy' files, the transportation of data to host programs, the preparation of statistical reports, the computation and derivation of educational indicators from a combination of proxy variables, EMIS analysis and applications, and the production of sophisticated reports and graphic presentations of data.

Between 1995 and 1997, the MOE benefited from a second UNICEF-sponsored consultant, an Australian Palestinian whose travel was funded through the project TOKTEN (Transfer of Knowledge through Expatriate Nationals) of UNDP Jerusalem. Ibatisam Abu-Duhou practically adopted the role of director of planning, and oversaw the establishment of the EMIS, including final decisions about computer specifications and software, as well as identifying training needs.

The EMIS project had to face a number of difficulties. One of the main challenges was the problem already alluded to in a previous section, namely the fact that the MOE practically had two different education systems on its hands in two distinct geographical areas. Depending on the fluctuations of the political situation, freedom of movement between WB and GS was more or less limited and restricted, with at times being prohibited altogether. This created enormous problems in the process of setting up an EMIS, and necessitated a lot of duplication of work, structures and training. One major advantage of having a consultant with an Australian passport was that she was allowed to travel between WB and GS, but this did not minimize the challenge of transferring knowledge – and creating a national system from a context of fragmentation.

This fragmentation could have easily deteriorated to the extent of having two 'ministries' of education in the different territories. In order to avoid such a situation, a strategic decision was made so that, irrespective of the educational background and experience of applicants to a particular vacancy at the MOE,[11] there would be a representation of both the WB and GS in key posts. Thus, if a General Director in any area of the MOE was from the WB, the Deputy would be from the GS; and vice-versa. It was also decided that no formal meetings of key Education Committees would be held if members from the GS could not attend because of restrictions on mobility imposed by the Israelis. Such decisions have ensured that the MOE function as one body, and in the case of EMIS, that this be adopted and 'owned' in both territories. Generally speaking, Gaza Strip personnel have the same capacity as West Bank ones, and have been offered the same opportunities for training, even though they have not always taken up those opportunities to the same extent as their West Bank counterparts.[12]

Progress and procedure

With the goal of establishing a comprehensive educational database for all educational levels, a memorandum of understanding was signed between the MOE and the Palestinian Central Bureau of Statistics (PCBS). Several interviewees from both the Ministry and from the Regional Offices noted that this collaboration was critical to the success of the establishment of the EMIS, and while the relationship was sometimes marked by competition, collaboration was generally the norm. This ensured efficiency in the collection and processing of data, including the annual publication of the *Education Statistical Yearbook*. Indeed, work teams were delegated by both the MOE and the PCBS to manage the database project, which aimed at:

- Standardizing the Palestinian educational statistics by applying standard data collection, verification, computerization, classification and categorization on a scientifically consistent basis;
- Facilitating data circulation and accessibility by educational decision-makers as well as educational specialists, researchers and other parties concerned with educational development and qualification;
- Translating the educational situation in different types of educational institutions into statistical figures and enabling educational planners and policy-makers to explore the future perspectives through comprehensive statistical indicators;
- Standardizing the data pertaining to different MOE directorates according to their respective needs and data computerization by special software for easy access as required;
- Retrieving numerical reports of qualitative indicators through cross-tabulation of several variables from the educational questionnaires and the publication of annual educational statistical reports (MOE 1996: 3).

The project management team designed five questionnaires to collect comprehensive survey data from the educational institutions, and addressed to schools and kindergartens, community colleges, universities, vocational institutions, and informal education/cultural centres. The questionnaires were designed in a way that met Palestinian needs and reflected the real situation, while at the same time conforming to international standards. They were field-tested, and personnel in charge of filling questionnaires were trained through workshops offered in the district Directorates of Education. A team was also trained in data verification prior to data entry. Questionnaires are computerized on the data entry program, and statistical reports can then be retrieved after the required statistical outputs are determined, and the primary tabulations of these outputs designed.

School databases cover such aspects as background information on the institution (name, year established, location and address, etc.); detailed information on students, and classes; information on classrooms and other rooms such as laboratories and workshops by size and property; information on school library, teaching aids, sports playgrounds, school services and facilities, and budget; and personnel statistics on school teachers, administrative staff, employees, technicians and janitors by personal data, qualifications, experience, number of lessons they teach, subjects and other relevant information.

The idea is to have both the individual districts – of which there are 16 – and eventually the school as the unit of analysis, with all the databases feeding in the information about that school. Presently, data bases include information on buildings, libraries, laboratories, inventories, training courses, archives, and so on. Other MOE departments use similar databases, and all databases are linked together through Access software.

At the stage of carrying out the present research, the questionnaires had been in use for six years. They had been modified a number of times, both to correct errors (e.g. duplication of information), and to address specific needs. Focusing on the questionnaires addressed to schools, it is important to point out that the forms are filled in by the Head. The entries are audited by the Head of the Education Division at the District level, leading to a high degree of reliability. Mistakes arise when certain terms are not understood in the way they are meant to be, and when the coding categories are not fully grasped (e.g. coding 'secretary' under the category 'technician'). Generally the forms are filled in at the end of October or beginning of November, when schools have settled down, and there are few changes that can render the questionnaire invalid. Heads are made aware of the fact that the filling in of the form is an instrument for diagnosis, and not a 'shopping list', in order to make sure that they do not dissimulate the situation in their schools (in the hope of obtaining more resources, for instance). While Heads have got used to filling the form, the MOE is moving in the direction of having most of the answers already coded and entered, with the schools simply verifying.

The completed questionnaires are then handed to the district Directorate of Education offices, where trained personnel enter the data. Two problems that generally arise are that: (a) computers have to be borrowed from schools, and this means that the PCs are not available for teaching during this time; and (b) those who enter the data are generally teachers, who are therefore not available in their classrooms for that period. The role of the MOE is to consolidate the data which reach it on diskettes, and to clean them and validate them. After doing this, the data are returned to the District office.

Data are verified in a number of stages, including sample initial verification, office verification of questionnaires and computer verification by using special software. There is also comprehensive verification of the statistical tables.

Information is retrieved for different purposes, such as to the drawing up of the annual education statistics reports. However, other data can be easily accessed by linking multiple variables from the different questionnaires and databases, and in response to specific inquiries by policy-makers, planners, and educational researchers. Some idea of the use of the EMIS databases will be provided in the sections below. At this stage it is important to give a sense of both the positive and less positive aspects of the EMIS in place.

Positive outcomes

There is little doubt that the claim by several MOE staff that Palestine is – or used to be until the Israeli reprisals following the second *intifada* – a leader in the MENA region when it comes to the collection of educational statistics is justified, particularly when we consider the expertise and experience that has been garnered in using those statistics for simulation purposes in the exercise of planning. The databases have achieved both a high degree of reliability and validity, as well as stability, so that it is now possible to have a time-series database with all the variables about schools that one would usually need to plan. This is not an insignificant achievement for any country by any means, let alone when six years earlier – as we have taken pains to document – the territory in question could only count on emergency planning, and had little if any reliable basic knowledge concerning its educational structures. Certainly, with 110,000 new students a year – of whom 65,000 enrol in state schools – and therefore with 300 new classrooms needed every year, and with the highest fertility rate in the world (at 6.8), one could simply not do without some form of efficient planning based on rational information systems.

The EMIS that the WBGS has established generally overcomes several of the problems that are common to the MENA region, and which we have identified earlier. The following is a list of achievements – one that is not necessarily comprehensive.

• The information provided is *reliable* to the extent that statistics provided by the Planning department of MOE are used by other Ministries and departments, avoiding the costly and counter-productive trap of having different entities collecting overlapping data which are not even comparable due to the use of different criteria or coding systems. Reliability had been established to such a degree that several interviewees were wondering

whether it was still necessary to have educational statistics generated by EMIS published annually, since the difference between one year and the other was minimal.

- There is also a good relationship with the Palestinian Central Bureau of Statistics, and hence a good connection with national statistics, facilitating the link between school data and national data.
- The information is quickly accessed, and can therefore be used to make projections fast. It can deal with changing scenarios, and facilitates the process of analysis, the answering of questions that arise and that require speedy answers.
- The EMIS takes into account the local context, including the challenge involved in planning in a context of deprivation. This comes through most of all in the flexibility offered by EMIS in allowing the possibility of playing around with different scenarios to see the effect specific choices had on costs (see Table 1). Tough questions such as: 'Should we reduce double shifts or keep them at their present level?' or 'Do we oblige pupils to travel to area schools in order to make more efficient use of resources?' are very difficult to answer when resources are minimal, and where choices between directing funding towards one service or another have to be made. EMIS has provided the opportunity to consider the implications of each choice in a three-dimensional and complex manner, so that decisions can be made in the most informed way possible. Such challenges had to be faced when considering the issues raised by the new curriculum, which has major implications for the kinds of resources that will have to be placed in schools.
- EMIS has encouraged rational educational planning and policy-making on the basis of information, rather than on the basis of political whims whose implications have not necessarily been thought through. As we will have occasion to note further on, this does not mean that decision-making is to be reduced to either a merely rational or a technocratic exercise. But, as one interviewee noted, EMIS data provide the fund-seeker with the ammunition to make a strong case in favour or against particular policies or projects, whether the fund-giver is nationally or internationally based. Policy-makers cannot get away with making claims in favour of specific projects when EMIS data can be used to immediately cost the initiative, and to spell out the implications – in terms of needs for classrooms, teachers, equipment, and so on – in detail. Donors are also more likely to support projects if the financial and resource implications are clearly identified in advance. The staff working on EMIS work out alternative scenarios, and if these are rejected, it is the onus of the policy-makers to come up with their own scenarios in terms of specific hypotheses or plans.

> • Policy-maker wishes to remove all double shift schools, and remain within the parameters of a 200 million dollar budget. EMIS shows how, if other priority commitments are to be met, the number of double-shift schools has to increase, and not decrease.
>
> • The idea of increasing vocational education from 3% to 15% had been broached by the policy-makers, This however meant that another $100 million were needed to pay for that. EMIS data showed that if the increase of the VET sector was 7% rather than 15%, the overall cost of the exercise would be reduced 60%, and was therefore a more attractive policy option in the short- and medium-term.
>
> • The impact on schools – and the implications for costs – when a new curricular area which required the use of computers is introduced, could be easily worked out because EMIS provides all the necessary data as to which school have a constant supply of electricity as well as computer labs, and which do not.

• Unlike some donor-promoted projects which recipients end up not identifying with, or which become unsustainable when external funding dries up, the MOE staff had made a clear commitment to EMIS. This commitment comes through in a number of ways. When UNICEF's contract in relation to the EMIS project came to an end, Palestinian staff took the responsibility for developing the system further, be it in terms of modifying questionnaire forms, coming up with improved strategies in collecting and analyzing data, or in the use of software. When, after the initial two years, funding for data entry was no longer forthcoming from UNICEF, the exercise was transferred to the district level, leading to a distribution of tasks that made the whole exercise simpler, less costly, and within the Department's capability. While UNICEF had supported the use of R: Base, the Department of Planning eventually opted to shift to Access, which gave them more flexibility in the use of data without losing the possibility of working with the statistics held in the R: Base. One UNICEF interviewee noted that Department staff were very proud of their achievements, and felt they were doing something useful and contributing to the educational development of their country. Being involved with the EMIS project provided them with opportunities to develop themselves, to travel and learn, to go on study visits, to be creative. 'When I go to the MOE', a UNICEF member of staff said, 'they call me and want to show me what they have done… It's like they're talking about their family!… If things were not like

that,' she added, 'how could they tolerate the coldness of the numbers?!' One of the MOE staff noted that despite all the trials and tribulations he had to cope with – including a miserably low salary – he nevertheless had a major commitment to his work: 'I actually enjoy it… because I feel I can create something – I believe in the benefit of building the country, of doing something for my people.'

- EMIS data are used. Staff calculated that on average, 3 to 4 questions per week are asked with answers having to be drawn from EMIS data. Other users of data include educational researchers, who on average made one request per week.

- Despite the pride there was in the technical accomplishments of the EMIS, there was a good number of MOE staff who were not mesmerized by statistics to the extent of losing sight of their purpose. Several noted that educational planning required persons who understood education, who had a vision for it and who were not engulfed by a civil servant mentality. The management of an educational system required leadership and not just technical skills: it was only a visionary leader who could use the statistical information in order to tell others where the possibilities, pitfalls and problems lie.

Problems and challenges

A number of challenges and problems concerning EMIS were either observed or reported during the fieldwork. It is useful to preface that account with a valuable insight provided by one of the interviewees, who noted three major difficulties in the field of educational planning in the Palestinian context. Two of these – namely lack of political stability and lack of financial resources – have already been referred to in different sections of this article. A third one is worth highlight further: namely what the interviewee referred to as 'lack of vision'. This does not mean that the planning department of the Ministry does not have a vision of where it wants to go – indeed, the first 5-Year Educational Development Plan sets out to do precisely that. Rather, the interviewee was referring to the absence of an organized community in the context of a state, where people are fully empowered to decide their own destiny. He noted that 'as a planner, you sometimes really need the community to tell you where it wants to go – and at times there is a vacuum', referring to the establishment of a national curriculum as an example.

- Some of the problems and challenges concerning EMIS were outside of the control of the MOE staff, related as these were to the situation of instability, both political – and often as a consequence – administrative. District borders could shift, with one particular town being attached to District X, and then to District Y, thus affecting aspects of the programming of the database.

- Others challenges are similar to those found in other small 'states' or territories with vulnerable economies. Staff at the MOE complained that they had to wear several hats at the same time, and that as 'multi-functional administrators' (Farrugia & Attard, 1989) they not only had to fulfil their role as supervisors and trainers, but also actually do a great deal of the data manipulation and analysis themselves. As with administrators in other low-income countries, staff interviewed were underpaid to the extent that many had to hold down a second job, or were increasingly tempted by higher paid employment with the private sector. Some of the technical people also felt that their skills were being under-utilized at the Ministry, and that the Ministry was not investing enough in their own development. They were therefore obliged to pay for their training courses themselves. As a consequence of this, the MOE had lost some highly skilled people in the IT area.[13]
- A key problem identified was related to fast-changing technology. This presents challenges linked not only to finance, but also to compatibility between systems. A case in point is the project of connecting the MOE with districts, and hence the need to set up servers, intranet, and possibly internet and a Ministry domain. A key problem here was not just buying the equipment, software and services, but also the technical challenges of linking with districts which were working with different versions of database software.
- Several interviewees noted that while the reliable data are now there, the capacity to generate data is greater than the capacity for its use. This seems to be true in terms of its application both by the policy makers at the central level, as well as by those at the district level. At the central level, there is still a lack of culture among decision-makers to develop policy based on evidence rather than on hunches and their past experience. The required culture change will obviously take time to come about, but at this stage many simply do not know how to read the data that EMIS generates and are not as aware as they could be of its potential. One case in point was when policy-makers decided 'behind closed doors' (as one interviewee put it) to decrease the formal age of entrance to school by one month. Suddenly they found 10000 more children eligible to attend school, with the implications that has for teachers, classrooms, furniture, and so on. 'We could have told them all that from our data base, had they asked us,' noted the interviewee.

  While EMIS tends to be most frequently used in relation to specific projects or questions, it is not being utilized in a systematic manner. One interviewee noted: 'What we need is the constant review of our policies based on information systems. We need to conduct policy-oriented research dealing with specific issues such as the unit cost of education; decentralization and its

prerequisites; surveying our capacity for printing and publishing; printing of textbooks in Braille…'

Part of the way to change that culture among policy-makers involves a concerted effort to help politicians understand and deal with statistics. One interviewee noted how at first, some politicians had exclaimed 'Take all these numbers away!' Now MOE staff are more careful when they present statistics, taking care to not only make paper copies of the statistics, but to also present slides to simplify and explain, emphasizing visual formatting to facilitate reading. They summarize information about each particular area, drawing connections between that and the main domains of the overall education strategy and plan. They present the statistics in the context of real problems and possible solutions. One example was the issue of access, and the pressure on space that could result from such factors as the doing away with double shifts, natural increase, or reducing the number of students in crowded classrooms. That issue could be looked at in terms of different angles. One could involve a focus on buildings, whereby calculations could be easily carried out through the use of EMIS data in order to calculate how many new classes were needed, the costs involved, and whether one builds more classrooms in existing schools or builds new schools.

It was through concrete examples such as these that many of the staff involved with EMIS communicated their intense desire to be of more use to their Ministry. They wanted to see all the MOE departments use the data effectively in planning, with their own staff carrying out policy research and analyzing data in a way that impacts on policy. They also hoped that other departments would use their services to help answer questions: 'The problem', noted one interviewee, 'is that everybody thinks he knows everything… that he does not need a research department… thinks he can do it himself', referring to a particular study of drop-outs which, in his opinion, was not carried out as efficiently or effectively as they could have done with EMIS data.
The same problem was being encountered at the district and school level as well. Generally, even though the head of statistics at the district level has been very well trained, there is little use made of the data generated – and the expertise of the statistician is not made use of. There seems to be little realization of the importance of the data, of how to exploit it, to the extent that when staff were asked to propose ideas as to what data they needed, in order to include this in the questionnaire, few if any answered.

- A further challenge concerns the potentially misleading nature of statistics which are not sufficiently disaggregated. One example of this concerned the

apparently high enrolment figures for the WB, when the average was actually hiding the fact that real enrolment in camps and villages could be very low. Similarly, unless one had enrolment rates for every grade, an overall fall in the drop-out rate could mask other problems, including, for instance, the fact that boys at the Grade 6 level were more prone to dropping out, or that Grade 9 was a critical year for girls who dropped out in large numbers at that level. The point was made that advocacy requires strong, disaggregated data, showing the difference between camp, village, city levels, or where the community is small. However, even when data were disaggregated according to certain criteria – such as on the basis of gender – it was clear that that was not enough. While data collected by EMIS are fully gender-disaggregated in accordance with international education data norms, gender considerations are not systematically integrated into the design and implementation stages of the project. Nor were the data systematically analyzed from a gender perspective – or socio-economic background one, for that matter. This is a key step to identifying means of improving the access to education and training opportunities of at-risk groups.[14] There was general agreement that these kinds of concerns had to be addressed more directly in the way the data were collected, with one interviewee noted that while they were not using EMIS 'to a satisfactory level for dealing with equity issues, the fact that they are there as categories suggests that training has to be offered to help people make more sense of them.'

Aspirations

Dynamic leaders of equally dynamic projects consider problems as challenges to be overcome, and lead to aspirations that improve the situation. Several of the persons interviewed throughout the fieldwork articulated aspirations for EMIS, and these are outlined systematically below.

• One of the key aspirations is *decentralization*. As the central functions of the MOE are strengthened and consolidated, there increasingly is an organized centre to decentralize from, as it were. As one of the General Directors noted, once the functions of the different units at the centre became more clear, one could more readily decide which of these functions could be 'exported' towards the local level. Decentralization encourages a sense of ownership, the identification of goals at the district level within the umbrella of a national policy, and in response to the needs of the community that the district serves. In addition, it is the proximity to the community that ensures that that community becomes involved. This is of critical importance in Palestine,

given that the biggest donor to education is the community itself (through donation of land, labour, money). UNICEF in particular is supporting this process of decentralization, considering it as a valid strategy to monitor the attainment of the 'Education for All' targets, as well as to ensure improved learning achievement across the board and access to education for underprivileged groups.

- Presently there are 16 regional offices in the WBGS. All regional offices have access to computers, and networks are being set up to facilitate transfer of data. Staff have been trained, and are increasingly ready to take on additional responsibilities. UNICEF has supported training, sponsored study visits, and provided some of the equipment needed, including computers and servers. 1999 had seen the first attempt at district-level collection and analysis of data. District officers appear to have been hesitant at first because decentralization implies a larger work load for them. However, they had ultimately been very satisfied since it gave them authority to manage their system. The district could, for instance, generate its own annual plan on the basis of the data collected.

- Decentralization had another aspect to it, namely the move from the district level to the school level. The aspiration is for schools to start entering and even manipulating the data themselves. This could not happen yet because many schools are still without computers and without trained staff. The idea of having schools linked to districts, and both linked to the MOE, also has technological implications. Between 1996 and 1999, the Ministry had built internal networks utilizing a main server and four other servers. That was the first level of networking. The second level of networking went beyond the Ministry to include the district level, where dial-up modems connect to the main server. In 1997/98, network cabling was set up so that in the future, instead of one computer only at a time, you could now have LAN to LAN, through the use of a lease line - different districts could connect to the main server at the same time. The aspiration now is to reach a third level of networking, where the idea is to connect schools, and to do so through the use of an Integrated Service Digital Network, which is better than a modem since the latter has to use a telephone line. Such aspirations cannot be attained in the immediate future given that some villages do not even have electricity yet, with 10% of schools not being in a position to have guaranteed electricity supply throughout the day. The 5-year plan does specify, however, that every school is required to have a computer so that each school can connect with the district office. This connection between schools, districts and MOE is very important given that at any moment Israelis can decide to stop people from travelling out of the Gaza Strip, or soldiers can be ordered to close a city or a

town, with staff ending up unable to travel to the MOE for several weeks if not months.

- Another key aspiration of MOE personnel involved in the EMIS is the development of even more comprehensive and integrated databases, through two strategies: (a) first, MOE staff hope to develop base-line indicator systems, and the introduction of the latter at district level. This facilitates opportunities to compare the national level with district levels, in order to identify priorities for action (in terms of national targets), and to provide guidelines for further development at the school and district level. The idea is also to integrate different data bases into one, including the general one on schools, the specialized ones (referring to information about buildings, for instance, or furniture, libraries, labs, educational technology, and so on), the qualitative databases (providing details on health, lavatories, state of drinking water, environment of school, and so on), and the information that had been collected on learning achievement, as well as on the in-service teacher training that had been offered. All this data need to be integrated within a unified system, with 120 indicators that are more focused on specific performance and real outcomes. (b) Secondly, MOE staff are aware that they need to have more information on the quality of educational services, rather than just quantity. Several interviewees noted that the challenge was to develop insights into the process of schooling, and to be able to understand better the extent to which, for instance, the level of teacher training, the educational background of parents, the presence of laboratories and libraries in schools, the following of private tuition classes, to mention just a few examples, had an effect on achievement levels of pupils. EMIS would thus be used to help identify zones for action, focusing more directly on specific targets linked to the 5 year plan. It would also harness information related to the 80 indicators established in the Education for All declaration.

- Another EMIS-related aspiration that MOE staff are presently turning into a reality is *School Mapping*, which is 'a set of techniques and procedures used to identify future education needs at the local level and to plan for measures to be taken to meet them.'[15] In the Palestinian context, the objectives for a school mapping database are closely linked to the process of decentralization, and are expected to allow districts and the MOE to develop multi-year plans for new school construction and to determine the site of these new schools. The database will also facilitate the use of the information to create a maintenance schedule for use at the MOE and district levels. School mapping therefore facilitates the identification of educational needs at the local level in order to plan for meeting them, thus creating a bridge between the planning of education and its administration on an annual basis. The exercise has three

elements: diagnosis, projection, and the preparation of proposals. The process takes place at the district level, with the proposal being the core of the school mapping exercise. One example of this would be the case where an increase of students is anticipated. School mapping helps identify the implications that that has for everything else at school (including budget, building, shifts). Given that with school mapping the locality is the unit of planning, one could more easily take into account important factors such as whether the sector was a high-population, average or small and remote one. On the basis of this kind of information, one could plan for the most efficient way of using scarce resources – such as whether it would be more feasible to bus students to another school in a locality close-by, rather than provide the same service in two different schools.

- Linked to school mapping is the Geographic Information System (GIS) which provides opportunities to make links with any type of database. In Palestine, GIS is being used to link EMIS with geographic data. Information is represented visually on maps, so that details related to services or resources within schools in a particular district or community can be immediately grasped. Planners can thus see at a glance which schools in a particular locality, for instance, do not have access to electrical power, or the distance that there is between schools in an area (represented as concentric circles representing 1, 2, or 3 kilometres, for instance) from a particular service (e.g. a laboratory). Maps can clearly show catchment areas, so that one could rationalize costs, and achieve equality of access to resources. In conjunction with EMIS, therefore, GIS provides the planner with a powerful tool to identify the needs of specific schools given curricular demands, and to develop a well-informed, flexible strategic plan for the future distribution of educational resources in the district. As with EMIS, such strategic planning allows for the manipulation of data to take into account multiple scenarios, so that an informed decision can be made with educational and financial consequences in mind.

Success stories

It is useful to describe some of the successes that Palestine has experienced in the use of EMIS, in order to give a better sense of its usefulness in educational planning.

- At the most basic level, EMIS has been successful in providing a computerized system where questions linked to several aspects of the education system can be answered with alacrity and precision. MOE staff are understandably proud of this achievement, with one noting that when a French consultant visited the

Ministry, and asked questions related to the teaching of French in Palestine, 'We gave him the answer in 5 minutes flat! He was so surprised, saying that even in France he would have needed at least an hour to get an answer… It's a good system of information – it helps us to continue our process. It is the foundation of the education system.' The speed and flexibility with which data can be retrieved served its purpose when, for instance, Palestine had to produce the Education for All report in a very short period of time, something which they were able to do most efficiently. In relation to that, a 'Learning Achievement Test' analysis could also be carried out thanks to EMIS, facilitating an understanding of the quality of education in Palestine in comparison to 21 other countries.

- More importantly, obviously, is the fact that EMIS provides information at different levels – it was generally acknowledged that without information on completion rates; without disaggregated statistics on the basis of age, gender; without knowledge of which services are being offered at the district level – and so on and so forth, one could not develop insights as to which areas of the education system needed urgent attention. As such, therefore, EMIS facilitates the demands of policy research. Interviewees referred to a number of examples in this regard, such as the study focusing on teachers' qualifications, which revealed the high number of unqualified teachers in the kindergarten sector. Another study carried concerned the relation of the teacher's specialization and qualification to the subjects s/he taught, as well as the distribution of teachers and subjects to the school levels, both primary and secondary (MOE 1997: 7-11). The study raised the dilemma of teachers who teach subjects which they are not specialized in, and the equally important dilemma of the nature and true extent of surplus and deficit specialization fields in schools. Another example of a good use of the EMIS data refers to the comparison that was carried out between those schools where learning achievement is high, and those were it is low, in order to identify elements in the environment which could explain the difference. In this case, it was observed that the variable did not seem to be either resources available or teacher qualifications, and that therefore one had to look at other possible contributing elements, such as, for instance, parental background of students.

- EMIS also provided the data to help carry out a gender audit, another UNICEF initiative. The fact that the data are disaggregated on the basis of gender – even if, as has been noted earlier, the framework underpinning EMIS has not been greatly influenced by an awareness of gender issues – has helped Palestine understand the fortunes and misfortunes of girls in the education system.

- It was also instructive to see how EMIS worked at one of the districts. It was very clear that EMIS data were not only being used, but were proving to be

vital in planning at that level, with school buildings and of using catchment areas in order to make the most efficient use of scarce resources – to mention only two of the issues addressed – surfacing immediately as areas of concern which EMIS had helped deal with. In the district visited, EMIS was being used in conjunction with GIS. On the basis of EMIS data, the person in charge of the system was in a position to project how many classrooms will be needed, the posts (for secretaries, teachers, deputy principals, principals) that will need to be filled on the basis of policies set by the Ministry. A profile of each school is built into EMIS, enabling future planning and simulation. In this particular case, the district officer had projected the number of teachers required in each area of specialization and the number of posts which were required for each subject – all on the basis of a set formula that took into account the number of periods in a subject per week, and the number of lessons a teacher has to teach. This enabled them to claim, with the utmost credibility and on a scientific basis, that these were their needs. Given that they had integrated school mapping into the exercise, they were also in a position to identify furniture and other resource needs in each school.

• It is probably correct to claim that EMIS proved to be most useful in the preparation of the first 5-Year Education Development Plan. Several interviewees who had been involved in the drawing up of the Plan stated that it would have been impossible to carry out the simulation exercises that the project entailed had it not been both for the data and the flexibility offered by the EMIS. The database was used as a tool to develop a simulation model to be able to calculate, and on the basis of which projections are made for the future at all the levels referred to (students, teachers, textbooks, etc.). Data were used for two purposes: (a) to see what the achievements were from 1994 to 1999, and (b) to project for the next 5 years. Different scenarios could be quickly inputted into the database, with a very quick response in terms of the implications of that scenario for costs, recruitment, resources, and so on. This had been essential, given the very high aspirations of the MOE and the community more generally, but the low budgets available.

Concluding comments

It seems clear that EMIS has helped the MOE make a solid contribution to the monumental project of state-building. Those involved in the technical aspects of EMIS are clearly aware of the educational aspects of the work they are doing – they are not just crunching numbers, but are thinking of educational processes and the implications that decisions based on statistical information can have on the real

lives of real pupils. The fact that many of them have come through schools themselves – as teachers and heads – shows through the comments they made, the evaluation of the usefulness or otherwise of the data, and their ability to distance themselves from the specificity of the data to reflect on the general educational picture. EMIS has been useful at the top administrative levels, in terms of planning and administration of resources. It has also clearly proved to be a major tool in the articulation of the first Five Year Plan. It has yet to filter down to the level of district and the school, though there are clear signs of an awareness of this need (particularly through school mapping), and some preparation and steps in that direction.

But perhaps the most important achievement of the Palestinian EMIS has been the quiet revolution it has initiated, in the shift that it has encouraged towards policy-making and educational planning and management on the basis of reliable and relevant data. This shift suggests that increasingly, the attainment of quality can be carefully measured and closely monitored, heightening the possibility that more learners have access to their educational entitlement. It has been pointed out by some analysts that the link between education information and educational quality in many societies is marked by a tension between what Welsh (1993) would refer to as two contrasting organizational cultures. One such culture privileges *informal* information structures that serve as a basis for sorting and channelling information and converting it to policy, plans, tactics and operations. The use of and access to this information are the product of relationships – and the latter are particularly close, complex and dynamic in small Mediterranean territories where the sociological dimension of scale creates 'face to face societies', and where the cultural reality of patronage networks constitute a key characteristic of the region and a matrix for much social interaction. In contrast to this informal information structure are *information systems*, which tend to be formal, following a set of clearly articulated rules governing information access, flow and use. The issue is not whether 'modern' and 'rational' information systems are necessarily 'better' than the more traditional information structures. The issue rather is the manner in which the values underpinning both approaches lead to the definition of what information is relevant and appropriate as a basis for decision-making. The fact that Palestine has opted for an EMIS and has made an exemplary commitment to its realization is a clear reflection of a deeper reality: the political pledge towards ensuring a quality education as an entitlement for all learners.

Acknowledgements

Notes

[1.] For one example of the capacity for collecting data outstripping the capacity to use it, see M. Altet & M. Develay's (1999) account of a Tunisian initiative.

[2.] Initially, the Ministry was also responsible for post-secondary education. That responsibility was transferred to the Ministry of Higher Education, created in 1996.

[3.] The Gaza Strip covers $378km^2$ and, with a population of around 1.2 million, is one of the most densely populated territories in the world. The West Bank covers $5879km^2$, and has a population of around 1.9 million.

[4.] For an account of the impact of Israeli reprisals on Palestinian education, see Sultana (2002), among others. By November 2001, the uprising and reprisals had caused the death of 797 Palestinians, 190 Israelis, and 11 foreign citizens. A total of 194 children under 18 years of age had been killed, with 166 being Palestinian, 27 Israeli, and 1 foreigner. As many as 16,570 Palestinians had been injured, including more than 7,000 children (PRCS, 2001), while the corresponding number for the Israelis was 1,810, of which 517 were soldiers, 1,240 civilians, and 53 children. 275 schools are situated close to flash points in the current conflict, and as a result, by November 2001, 93 Palestinian schools had been shelled, with 6 schools being obliged to close down for a period of one to two months. An estimated 31,117 student school days were lost in the West Bank, and 7,400 in Gaza.

[5.] Several sources were helpful in the writing up of this brief description. Among these, the most important were UNESCO (1995), and MOE (1999).

[6.] To this must be added the UNRWA schools which, since 1950, have been offering education services to Palestinian refugees throughout the region, and where the policy is to use the same curriculum as that of the country which is hosting the refugees.

[7.] Data cited in this section refer to several studies referred to in Unesco (1995). See also UNICEF and Palestinian Authority (1995).

[8.] The main reason for the increase in numbers is a steep birth rate. The numbers can multiply even further if refugees return in large numbers to the state of Palestine, once this is founded. The 1948 and 1967 wars saw over 750,000 Palestinians seeking refuge in Jordan, Lebanon, Syria, Egypt and the Gulf, and it is likely that several of these will want to return home.

[9.] Unesco (1995), p.51. One must keep in mind the insight shared by one of the interviewees, namely that Palestinians have to face this adversity with one major assumption in mind: 'as if it will work – that one day they will be a nation.'

[10.] IIEP has provided training courses in EMIS for MOE staff from several developing countries. For information about this see, *inter alia*, D. W. Chapman and L. Mählck (1993).

11. For a variety of reasons – not least because the GS had always been subjected to stricter control than the WB – staff from the latter area had had more opportunities to develop an international orientation as well as educational knowledge and leadership. The situation in the GS had been more difficult in other ways too, with Gaza often being in need of emergency assistance.

12. As a result of this, only 1 person from the GS had gone for training to the IIEP, while 4 WB staff had done so by the year 2000.

13. While it seems that such losses were replaced, the situation can easily be envisaged where the departure of key trained personnel has catastrophic consequences on a particular project. This has apparently happened recently in Oman, where MOE staff trained to introduce school mapping had left the Ministry.

14. The need for MOE staff to be trained in gender issues was identified in a gender audit document by UNICEF (1998). The document also notes that 'in the absence of a written policy of gender, the gender dimension of the EMIS project, and of MOE activities generally, was dependent on the attitudes of individual MOE staff members involved, and therefore was vulnerable to staff turnover.' The same is true of other inequality issues, such as those based on socio-economic backgrounds.

15. See T. Deeb (2000). The School Mapping Project was launched in October 1997 with the technical and financial support of the Australian government. During a second visit to the Occupied Territories on another project in 2001, I was shown evidence of the use of school mapping at the Ministry of Education.

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