



B • R • I • D • G • E • S

Basic Research and Implementation
in Developing Education Systems

CASUAL PAPERS

DRAFT: [REDACTED]

Paper not formally reviewed.
[REDACTED]

**Structural and informational analysis of the Ministry of Education,
Hashemite Kingdom of Jordan**

Jennifer E. Spratt

Research Triangle Institute
Research Triangle Park
NC

June 1990

This study was conducted under the auspices of Project BRIDGES (Basic Research and Implementation in Developing Education Systems), directed by the Harvard Institute for International Development and the Harvard Graduate School of Education, Harvard University, under cooperative agreement with the Office of Education and Training, United States Agency for International Development and the National Center for Educational Research and Development, Hashemite Kingdom of Jordan.

ACKNOWLEDGEMENTS

Fieldwork for this study was conducted during a site visit to Jordan between March 11 and March 31, 1990. I thank Amal Kharouf of the National Center for Educational Research and Development and facilitator, interpreter, and fellow analyst for the study, and without whose tireless efforts little of what is successful in it could have been accomplished. I thank also Russell G. Davis for his constant inspiration, Victor Billeh and the National Center for their kind hospitality, Anmar Kaylani and Kayed Salameh for facilitating several visits and for sharing their own insights, and Thomas Cassidy for an invaluable pre-trip orientation.

CONTENTS

I. Introduction

- A. Purpose of the study
- B. Methodology

II. The Jordanian educational system

- A. Structure of the system
- B. Teacher qualifications and hiring

III. Organizational structure of the Ministry of Education

- A. Legislative level
- B. Central Ministry administration
- C. Central Technical Affairs directorates
 - Educational Planning, Research, and Development
 - Education and Supervision
 - Curriculum and Educational Technology
- D. Central Administrative and Financial Affairs directorates
 - Administrative Affairs
 - Financial Affairs
- E. Central Services directorates
 - Projects and School Building
 - Examinations and Evaluation
 - Computer
- F. District directorates
 - Amman-1
 - Amman-2
 - Irbid
- G. School organization
 - Madrasat Arjaan
 - Culliyat Hussein
 - Girls' Comprehensive High School

IV. A selection of essential MOE tasks

- A. Planning and development tasks
 - Annual enrollment projections

- Annual personnel needs determination
- School construction
- Preparation of the Statistical Yearbook
- Ad hoc data analysis requests
- Long-term human resources planning

B. Administrative tasks

- Hiring and posting of personnel
- Purchase of equipment and materials
- Procurement and distribution of textbooks

C. Educational tasks

- Textbook and curriculum development
- Teacher evaluation and pedagogical advising
- Student class examinations and promotion
- Placement of basic education graduates into secondary specializations
- The General Examination

D. Summary

V. Critical issues in task accomplishment

A. Data quality considerations

- Lack of adequate data validation
- Need for more data
- Inaccuracies in estimation

B. Institutional efficiency and coordination of information management

- Manual versus computerized data processing
- Existing capacity for computerized data management
- Control of information
- Coordination and cooperation across units
- District-center coordination
- A multitude of forms

C. Personnel factors

- Technical expertise of staff
- Staff turnover versus continuity
- Level of understanding and appreciation of statistics

D. Attitudinal and conceptual considerations

- The "lack of trends" argument
- Plans without planning
- Resource management
- Social factors

E. Summary

VI. Recommendations in the spirit and context of the Educational Reform

A. Modifications in organizational structure

- Capitalize on existing structures
- Develop horizontal linkages within and across institutions
- Coordinate data collection
- Decentralize data entry, access, and analysis

B. The human factor

- Identify key experts and influential figures
- Promote participatory decision-making
- Support computerization with training
- Foster attitudinal change

C. Strategic prioritization of substantive tasks

- Demonstrate improved efficiency in information management
- Improve estimation methods and capacity for long-term planning
- Demonstrate EMIS capacity to monitor Reform process and progress
- Conduct scientific research on Reform outcomes

References

Appendices

Appendix A. Ministry officials and other persons interviewed

Appendix B. Interview format

Appendix C. Summary listing of selected forms employed in information collection by MOE departments and directorates

Appendix D. Ministry of Education organizational chart

Appendix E. Educational enrollments and schools by District Directorate, 1989-1990

I. Introduction

The Hashemite Kingdom of Jordan (1989 pop. 3.1 million; area 96,000 square kilometers), lacking the material resources of its oil-rich neighbors, may be said to have concentrated development efforts on its most valuable natural resource: its people. One result is an educational system that has managed to keep up with an extremely high annual population growth rate for the region (3.8 percent) and still increase educational participation. Jordanian statistics show current enrollment rates of over 98 percent of school-age children under the age of 12, over 80 percent in the 12-18 age range, and one of the highest rates of higher educational participation in the world. From a 1960 average of little over 30 percent adult literacy, the current figure is over 80 percent.

In the midst of these impressive figures on educational expansion and participation, a closer look uncovers considerable disparities in the educational resources available across different communities and neighborhoods. Ministry of Education (MOE) officials agree that much of the disparity results from difficulties in the accurate estimation of student enrollments, staffing needs, and material requirements from year to year, producing an inefficient and poorly distributed use of resources. Within a single school district, one fully equipped school building may be operating at only two-thirds capacity (or even used to house administrative offices), another may have classrooms filled well beyond capacity, and still another may be held in cramped, poorly-lit, rented facilities unsuited for modern pedagogical methods.

And yet, Jordan has little lack of data, regularly collected at several levels and by different directorates and divisions of the Ministry. With a relatively small educational system by international standards -- just over 3000 schools and 20,000 practicing teachers at the pre-university level -- it might appear that the MOE's 12 central General Directorates and 23 district directorates should have little difficulty in making use of these data for planning, decision-making, monitoring, and overall management of the system.

The capacity of information to support sound decision-making depends in large part, certainly, on its quality and quantity. But an integrated system of information for such purposes, or management information system (MIS) involves much more than this. An effective MIS must also promote the coherent integration of information into the decision-making process; at the very least by ensuring that the appropriate information is distributed at the proper time to the units of the system that need it, and in a form that is readily accessible to the decision-makers who will make use of it. For such an integration to occur, further, the system's design must be founded on an understanding of prevailing decision-making processes in the institution in which it is to be used, and a sound assessment of the technical and organizational strengths and weaknesses of the institution.

The present study attempts to provide such a foundation for the design of a new management information system for Jordan's Ministry of Education, through an organizational and information flow analysis of the institution. The paper explores existing procedures of information collection, access, dissemination, and utilization in the context of critical planning and management activities of Ministry departments, so as to identify the annual cycle of informational needs of each department and to inform the development of a more efficient and responsive educational management information system for Jordan.

A. Purpose of the study

The most sophisticated MIS is likely to be met with skepticism or dismay by its intended users, and risks falling into disuse, if it does not provide the required services, reflect the existing practices, and address the persistent problems of the institution it is intended to assist. On the other hand, if the system can be designed to exploit, extend, and enhance the strengths of existing procedures, while meeting head-on their most bothersome, user-defined weaknesses, a new MIS is much more likely to be received with confidence and enthusiasm, and to be maintained beyond the initial period of installation and staff training.

The present study was undertaken to assess the current state of information gathering and use in the Jordanian Ministry of Education, and to inform the design and development of a modernized educational management information system (EMIS). The study endeavors to provide a basis for the development of an EMIS that is appropriate, realistic, and responsive to the perceived information needs and problems that exist in the current system, especially with regard to the quality and efficiency of educational planning efforts.

This basis should include a solid description of the procedures of planning, decision-making, and administration currently employed in the organization's typical cycle of activities; the nature, timing, and form of information required to carry out these activities; and the obstacles and inefficiencies of current procedures as perceived and experienced by individuals working within the organization. In addition, the Jordanian context of reform demands attention to intended or expected changes in current procedures and activities, and to indicators of the reform's implementation and outcomes, so as to identify means of monitoring the efficiency and effectiveness of the reform process.

B. Methodology

The primary method of investigation employed in this study consisted of semi-structured interviews with MOE officials in multiple departments and at several levels. The interviews explored each department's major tasks and responsibilities, the time frame governing these tasks, the types of information needed to perform them, and obstacles to their accomplishment. Horizontal and vertical cooperation in information gathering and decision-making practices within and across departments were also discussed. Interviews were conducted with the Secretary General of the MOE, seven General Directors,

four central MOE Directors, three District Directors (Amman-1, Amman-2, and Irbid), thirteen district-level and central MOE division heads, three school principals with visits to their schools, the Human Resources Director in the Ministry of Planning, and five professional staff members of the NCERD. A complete listing of persons interviewed is provided in Appendix A.

Interview sessions were typically at least an hour in length, and often longer; interviews loosely followed the semi-structured schedule of questions set out in Appendix B. The author was accompanied on every interview by a representative of the NCERD, who made introductions and provided Arabic-English translation when necessary.¹ Interviews were conducted in English or in Arabic and English depending on the level of English fluency of the individual being interviewed; at least half of all interviews were conducted entirely in English. Interview arrangements were intended to allow discussion with one interviewee at a time, preferably without others present. While in many cases this arrangement was possible, initial sessions at district directorates could be characterized as group events, with interview questions often sparking multiple, simultaneous, energetic discussions. Central MOE sessions and the second day of contacts with each district directorate allowed more individualized discussions. Transcriptions of all interviews, prepared by the author in English, were reviewed by A. Kharouf to check for inaccuracies.

The analysis of material generated in the interviews was complemented with a study of government documents. These documents included descriptions of MOE structure, activities, and responsibilities (MOE, 1989a, 1989b), the Plan of Action for Educational Reform, 1989-1998 (Billeh & Jaradat, 1989), the 1988-1989 Educational Statistical Yearbook (MOE, 1989c), the 1986-1990 Five-Year Plan for Social and Economic Development (MOP, 1986), and a wide range of forms currently employed by specific departments to gather the information required in the performance of their duties (see Appendix C for a listing of these forms).

II. The Jordanian educational system

Pre-university education in Jordan has undergone extensive growth and a number of structural reforms in the past three decades. The most recent period of reform began in 1987 with the "First National Conference for Educational Development," which called for a ten-year comprehensive plan for educational evaluation and reform. This plan is characterized by an emphasis on the quality and content of the education delivered and the skill level of school leavers, through extension of the length of compulsory education (from nine to ten years) and through qualitative improvements in teacher training requirements, curriculum, and school facilities and equipment.

¹ Ms. Amal Kharouf, Dr. Anmar Kaylani, Dr. Kayed Salameh, and Dr. Mohammed Rashed assisted the researcher, who is conversant in Arabic, in this manner. Dr. Russell Davis was also present at most interviews.

A. Structure of the system

Prior to the Reform now in progress, public pre-university education comprised three levels: (1) an elementary cycle of six years; (2) a preparatory cycle of three years capped by a national examination; and (3) a three-year secondary cycle also culminating in a national examination. Elementary and preparatory students received a single national curriculum, while secondary students were streamed into one of several academic (arts or sciences) or technical (industrial, commercial, agricultural, hotel, or nursing) curricular tracks, or referred to a Vocational Training Center for further training.² Promotion from the elementary to the preparatory cycle was based on class performance and school grades, while promotion and streaming from preparatory to secondary depended on national examination results, as well as on the student's rank-ordered choices for secondary specialization, place of residence, and the availability of the desired specialization in the student's residential area.

The current Reform has modified the above structure such that as of the 1989-1990 school year, elementary and preparatory cycles have been combined into a single level of "basic" compulsory education and extended from a total of nine to ten years, while secondary education has been reduced to two years. The national examination at the end of the preparatory cycle has been replaced by class performance and school grades in the determination of promotion and specialization in secondary school. The secondary cycle has also added a few technical specializations, and the national General Examination at the end of secondary school will no longer govern graduation, but only entrance into higher education.

The Jordanian educational system has thus eliminated standard, national-level examinations from the basic and secondary educational cycles. As explained by the General Secretary of the MOE, old examinations law stated that the General Examination was held at the end of the secondary cycle, while the new law states that it takes place after the completion of secondary school. In the first instance, the examination was considered part of the secondary cycle; students who did not pass it did not receive a secondary school degree. Under the new law, the examination is placed outside of pre-university education, as a gateway to higher education; secondary school completers will receive their degree even if they do not pass the examination.³

² Vocational Training Centers are run by the MOE, the Ministry of Labor, and the Vocational Training Corporation.

³ In the old system, furthermore, students were required to take all subjects in their specialization stream in the first session of the exam (Letters, 7 subjects; Sciences, 7 subjects; Commercial, 10 subjects, etc.). Under the Reform, students now have the option to spread their examinations over two years, choosing which subjects they would like to sit for in the first year, and taking the remainder as well as any failed first-year subjects the following year. As of 1993-1994, students may be given 3 years to achieve passing marks in all subjects; at that time examination sessions, currently

Secondary academic education in Jordan may be moving toward the "comprehensive" high school, which requires both a full academic curriculum and one vocational specialization. Comprehensive schools typically have 35 to 38 sessions per week, depending on the track, rather than the 31-32 sessions in regular secondary schools. Such schools were introduced in Jordan in the early 1980's, and male and female comprehensive high schools are now operating in several large directorates (including Amman - 1, Amman - 2, and Irbid). According to the section head for vocational education in the Irbid Directorate of Education, the MOE is reviewing plans for the conversion all high schools to comprehensive high schools by 1995.

In addition to Academic and Vocational Tracks in secondary education, there are non-degree vocational training opportunities offered through the MOE and the Vocational Training Corporation (Mu'assasat at-Takwiin al-Mihaani). Programs, offered in hairdressing, woodworking, mechanics, electricity, etc., may operate in part as salaried apprenticeships, with about half-time efforts devoted to coursework and half-time to on-the-job experience. After completing a two-year MOE vocational training program and one full year in the job market, vocational students also have the option to sit for the General Examination as free candidates and may thereby re-enter degree-bearing academic or vocational streams in college or university.

Private basic education and secondary schools serve about 8 percent of the student population, primarily in urban areas. Another 15 percent of students are served in UNRWA-supported schools operating in the West Bank and Gaza Strip. Private preschooling establishments are also available in Jordan.

Higher education in Jordan falls under the jurisdiction of the Ministry of Higher Education, established in 1985. As such, this level is beyond the scope of the present study except insofar as it relates to the training of teachers and to educational research activities. Briefly, the Government of Jordan supports four public universities,⁴ three teachers' colleges conferring bachelors' degrees, and over fifty community colleges conferring 2- and 3-year diplomas. In addition, government scholarships support Jordanian students enrolled in colleges and universities the world over. Jordanian participation in higher education is thought to be among the highest in the world; in 1984-1985, some 27205 students, representing 21% of the 18-23 age group, were enrolled in Jordanian higher educational institutions; while another 45902 students were studying abroad in 1983-1984 (Ministry of Planning, 1986).

B. Teacher qualifications and hiring

Prior to the current Educational Reform, teachers of primary and preparatory levels were required to hold a teaching diploma representing three

held in December and May, may also be reduced to a single Spring session per year.

⁴ These include the University of Jordan in Amman, Yarmouk University in Irbid, the University of Science and Technology near Irbid, and Mu'tah University in Karak.

years of post-secondary study, while secondary-level teachers were required to hold a bachelor's degree in their area of teaching specialization. In efforts to raise educational quality and to address the growing problem of an surplus of University and College graduates seeking teaching jobs (thought to total about 20,000 women and 500 men), the current reform calls for an upgrading of these qualifications. Teachers of grades 1-4 (class teachers) are now required to hold a bachelor's degree in elementary education; teachers of grades 5-10 (field teachers) must hold a bachelor's degree in teaching with a general field specialization; and secondary school teachers (subject teachers) must complete a bachelor's degree in their specialization and a one-year course resulting in an advanced teaching diploma.

Teachers who are already in service are being given additional training to bring them up to the levels of education required by the Reform. Currently 25,000 teachers, hired before the new qualifications requirement came into effect, do not have University-level training. Teachers holding community-college three-year diplomas (representing nearly 68 percent of the active teaching staff in the 1988-1989 school year) are expected to enroll in evening and summer-school courses at area universities and/or receive in-service training to complete their bachelor's degrees, while secondary school teachers with bachelor's degrees will attend additional university programs.⁵ So far 3140 teachers have received in-service training at the newly established Teachers' Higher Certification College (with branches in Amman and Karak, and summer sessions in Ma'an); about 300 others are currently participating in upgrading programs at Yarmouk and other Universities.

The annual hiring of new teachers occurs at the national level, through the cooperation of the Civil Service Bureau with the central MOE Personnel Directorate. Hiring is based on the estimated total numbers, levels, and specializations of new teachers required, determined through a lengthy estimation process carried out by the MOE Directorate of Planning, district directorates, and schools. Teachers generally expect to be posted in their home districts; specific school postings are arranged at the district office. While the overall number of teachers available in Jordan is more than sufficient to fill the need for them, the demand for home-district postings produces distribution problems at the district level, when the levels and specializations of the available teaching staff are out of balance with the district's needs. Similar distribution problems have also been noted for Egypt (Toronto, 1989).

In grades 1 through 4, while classes are mixed gender, nearly all teachers are female. Beyond the fourth grade, schools in Jordan are for the most part gender-segregated, a practice supported by cultural practice and public opinion. In addition, while there appears to be no legal requirement

⁵ It should be noted that no systematic arrangement has been made to provide additional training for recent community-college graduates of teacher-training courses who have not yet entered the teaching force, and whose teaching diplomas are now insufficient to secure them a teaching position, according to the Secretary General of the MOE and confirmed by the Director of Human Resources in the Ministry of Planning.

that women teach in girls' schools only, and men in boys' schools, teaching appointments tend to follow this pattern, whether by design or de facto. As Ms. Kharouf observed, even out-of-work female teachers would not be likely to accept a placement in a boys' school, "because boys are too noisy."

III. Organizational structure of the Ministry of Education

The Jordanian Ministry of Education, like many organizations, is composed of legislative, administrative, and operational levels. It is the largest civil service employer in the government, with about 50,000 employees of whom over 80 percent are teachers. In 19-- the education sector commanded - percent of all government recurrent expenditures. While the legislative level is strictly centralized, administrative and operational levels exist both within the central office of the Ministry and in 23 district directorates throughout the country. The organizational chart of the MOE is presented in Appendix D.

A. Legislative level

The governing body of the Ministry of Education includes the Minister of Education, the legislative Board of Education, and the advisory Committee of Education.

The 18-member Board of Education constitutes a legislative and advisory body of the Ministry of Education. Board members include three officials in the MOE, the Minister, the General Secretary, and the General Director of Curriculum and Educational Technology; as well as former Ministers of Education; the Secretary General of Planning; the Minister of Islamic Affairs; and other officials representing several segments of Jordanian society. The Board takes decisions on proposed educational research, curriculum changes, and new textbooks and materials; and sets annually the criteria for secondary school admission. The Board also advises the Minister regarding matters of national educational policy, the connection of education to national development, plans for MOE development including educational projects, teacher qualifications, the general MOE budget, and the implementation of the law (Monosty of Education, 1989a).

The Committee of Education, also headed by the Minister, includes the General Secretary and Assistant General Secretaries of Education, all General Directors of the central MOE, and several District Directors.

B. Central Ministry administration

Below the Minister, the Board, and the Committee sit the central administrative directorates, divisions, and sections. The General Secretary of Education presides over all administrative and operating activities of the MOE, assisted by three Assistant General Secretaries responsible for Administrative and Financial Affairs directorates; Technical Affairs

directorates; and Services directorates, and by the General Director of the Minister's Office.⁶

The General Secretary and Assistant General Secretaries oversee and approve the activities of the General Directorates below them. General Directors are expected to report their activities to the Assistant General Secretary of their area (Technical, Administrative, or Services), and to solicit required approvals from them. At every level of the Ministry there is a financial ceiling to decisions that must be adhered to. According to the General Secretary, about one-half to two-thirds of all decisions on proposed actions by General Directorates can be made directly by the Assistant General Secretary, depending on financial aspects of the action. The remainder must be referred to the General Secretary or to the Minister for authorization. Assistant General Secretaries may also inform the General Secretary of actions and decisions they have themselves taken.

In some cases a General Director will send requests for approval directly to the General Secretary, due to time constraints or to personal differences of opinion with the Assistant General Secretary. In response, the General Secretary will take action, but returns the response through the proper channel, i.e., through the Assistant General Secretary, since this individual must be aware of all activities of the general directorates for which he is responsible.

Assistant General Secretaries also play an important role in facilitating horizontal coordination of action across General Directorates in their jurisdiction. For urgent, major issues which concern more than one General Directorate, the Assistant General Secretary has the authority to convene a meeting of the directorates involved. In the course of such meetings, many decisions can be taken on the spot, thereby circumventing the often inefficient routine bureaucratic channels. In the view of the General Secretary, this type of action has proved to work very well in practice.

The Assistant General Secretaries are also increasingly involved in the process of selecting individuals for high-level appointments in the MOE. While they do not have the authority to hire General Directors, Directors, Division Heads, or Supervisors, the Assistant General Secretaries review the candidates and may make strong recommendations to the General Secretary and to the Minister of Education, who makes the final hiring decision. According to the General Secretary, unanimous recommendations by the Assistants are followed about 95 percent of the time. The Assistant Secretaries perform a similar role in the selection of MOE staff to receive scholarships for higher education. This While mistakes are still made in the selection of the right person for the job, the involvement of the Assistant General Secretaries in candidate reviews has vastly improved the success rate in the view of the General Secretary.

⁶ This last office, which includes departments of Cultural Affairs, Information, Law, and Chief Clerk, is beyond the scope of the present paper.

C. Central Technical Affairs directorates

Technical Affairs directorates within the Central MOE include the General Directorate of Educational Planning, Research, and Development; the General Directorate of Education and Supervision; the General Directorate of Curriculum and Educational Technology; the General Directorate of Student Affairs; and the Laboratory Equipment Center.⁷

Educational Planning, Research, and Development. The General Directorate of Educational Planning, Research, and Development is one of the oldest departments in the MOE. It currently includes Directorates of Planning; Research; and Documentation.⁸ The Planning Directorate has four divisions, each with a division head and five or six employees: Planning; Statistics; Budget; and Educational Tax. The Directorate of Research includes divisions of Educational Research, Development and Follow-up, and Economics of Education.⁹ The Documentation Directorate comprises Translation, Educational Publications, and Documentation divisions.

Educational Planning, Research, and Development is responsible for the following principal tasks: (1) preparation of the Education portion of long-term (five-year and ten-year) Plans for Economic and Social Development, submitted to the Ministry of Planning; (2) annual estimations of enrollments and the amounts and types of additional teachers, administrative staff, facilities, and equipment required for the preparation of the general education budget and the job cadre chart (Planning Division); (3) preparation and publication of the annual educational yearbooks of statistics and activities; (4) training of local, regional, and national Planning staff in planning theory and methodology; (5) execution of educational research and non-research reports requested by Ministry officials and international donor agencies;¹⁰ (6) evaluation of the achievement of educational policy objectives; (7) maintenance of information files on the Reforms, Plans, other

⁷ The latter two units are not discussed in the present paper.

⁸ Prior to the National Conference in 1987, Research and Planning constituted a single Directorate.

⁹ The Economics of Education section was formed as a result of the September 1987 National Conference on Education.

¹⁰ Recent research efforts have included studies of the effects of academic television on pupils; girls' nonparticipation in vocational education programs in Directorate of Deir Allah (a survey study commissioned by UNESCO); and the history of elementary education in Jordan from the Emirate to the present. A study into double-shift schools is currently underway. The central Committee of Education recommended in March 1990 that all masters' students in Education be required to write their theses on topics identified by the MOE as problems in need of study. The Directorate of Educational Research would then take on an administrative role, with the Dean of Education, in distributing these topics among students.

activities and progress, and proposed projects in need of financing;¹¹ and (8) the provision of bibliographic services (including cataloguing of all MOE-generated documents, and procurement, cataloguing, and lending of books and journals related to education) to MOE staff, teachers, and university students.¹²

While the principal responsibility for a discrete task typically resides with one directorate or division, other units may assist at critical times of year, as in the Spring preparation of annual planning estimations. And many tasks, such as the preparation and publication of the Statistical and Educational Yearbooks, further, require explicit cooperation across several units. In the Directorate of Educational Research, as explained by the Director, it is not unusual for a single study to call on all three divisions within his directorate. In his view, the breakdown of the directorate into divisions is principally for administrative, rather than strictly functional purposes.

¹¹ The Research and Development Directorate's Follow-up division maintains files of urgent district requests for specific research or evaluation studies, arranged according to type, so that if money becomes available through the National Committee on Cultural Affairs and donor agencies, it can be directed appropriately and efficiently where needed. The Research Directorate also coordinates the actual project plan when funds are released for a particular project.

¹² Bibliographic services are provided by the Documentation division, whose five staff members have the following discrete duties: (1) cataloguing of all Unesco documents; (2) subscriptions and classification of Arabic and English journals; (3) procurement and cataloguing of Arabic books; (4) procurement and cataloguing of English books; and (5) maintenance of archives. The Director of Documentation notes that most requests from MOE directorates are for periodicals rather than books. Books are classified using the Dewey Decimal system; periodicals are catalogued and kept alphabetically. MOE documents and research reports received from UNESCO, ALESCO, ISESCO, and other organizations are filed according to about 70 subheadings; there is currently no attempt to maintain a catalogue of individual holdings. Current book holdings include about 3000 Arabic and 3271 English titles, and a number of uncatalogued books used for exchange. The English collection is rather out of date; acquisitions over the 9 years 1980-1988 (693 books) hardly exceeded acquisitions of the previous five years 1975-1979 (648 books). The procurement of books published outside of Jordan through purchase is bureaucratically difficult, requiring Central Bank funds and authorization; thus exchange is an important means of procurement. Renewal of journal subscriptions is a less difficult matter, but most journal holdings are also acquired through exchange. Subscriptions to 12 Arabic-language journals were purchased this year, while over 120 journals (e.g., University publications from Arab countries, and publications produced by other Jordanian ministries) were received free or through exchange. English-language journal subscriptions totalled 14 this year; about 100 others are received free or through exchange.

The Educational Research Directorate is advised by a Committee of Educational Research external to the directorate. This committee is composed of the MOE General Secretary; the Assistant General Secretary for Technical Affairs; the General Director of Planning, Research, and Development; the Director of Research; the Division Head of Research; Jordan University Dean of the Faculty of Education; and Jordan University Dean of Scientific Research. The committee reviews all individual research proposals on the basis of topic, methodology, and budget; research is financially supported if accepted. The committee may also confer awards of JD 500 to well-done research.

Education and Supervision. The General Directorate of Education and Supervision contains four directorates: (1) Academic Education (13 staff), with basic, secondary, and parallel (nonformal) education divisions; (2) Certification, Training, and Supervision (16 staff), with divisions for certification of teachers, in-service training of teachers, and teacher supervision; (3) Private education (4 staff), with kindergarten and basic/secondary divisions;¹³ (4) Vocational Education (24 staff) with divisions designated for agriculture, commerce, industry,¹⁴ nursing, home economics, non-degree vocational centers, and follow-up.

Within the General Directorate of Education and Supervision, the Academic Education Directorate takes part in planning annual school needs with central MOE Planning and Personnel directorates, taking specific responsibility for determining the specializations of teachers required; evaluating the hiring plan produced by the Personnel Directorate and reviewing the credentials of hired teachers; and determining the number of literacy training centers and other nonformal educational opportunities required annually. The Certification, Teacher-training, and Supervision Directorate works in cooperation with Curriculum Directorate specialists in the training of district supervisors to orchestrate and conduct in-service teacher training programs; coordinates and evaluates district supervisors (of whom there are about 400 in the district directorates); and selects supervisors from among candidates nominated by local district directorates from teaching and administrative school staffs.¹⁵ The Private Education Directorate is responsible for the licensing and evaluation of all private schools in the

¹³ This directorate was established very recently, in February, 1990.

¹⁴ This section conducts surveys of vocational school graduates to record their subsequent activity (university or employment) and felt needs, a potentially rich source of information on the education-employment interface.

¹⁵ Nominees are interviewed, selected, and trained by this Directorate. In principle, all supervisors must have a master's degree (bachelor's prior to 1988), teacher certification, and at least five years' teaching experience; many have over 20 years' experience. In practice, some primary-level supervisors have only a BA but with at least 4 credit hours in education; all secondary level supervisors have a BA and certification. The General Directorate also prefers supervisors to have experience in educational administration.

country.¹⁶ The Vocational Education Directorate shares in the planning of vocational education needs with the Planning and Personnel Directorates; and with district-level vocational supervisors, conducts technical visits to a sampling of schools each year.

Curriculum and Educational Technology. The General Directorate of Curriculum and Educational Technology is responsible for educational "curriculum" in its broadest sense. It is composed of four directorates: (1) Educational Computer (18 professional staff), with divisions for computer curriculum and teaching materials, software development, and maintenance; (2) Educational Technology (49-50 professional staff), with science laboratories and equipment, educational TV and radio, audio-visual aids (e.g., transparencies), and libraries (planning for school library acquisitions) divisions; (3) Curriculum (27 professional staff), where subject specialists are grouped into humanities (including Arabic language), math and sciences, vocational subjects, foreign languages (English and French), and West Bank curriculum divisions;¹⁷ and (4) Textbooks (27 professional staff), which includes editorial, design, production, and distribution divisions.¹⁸ The General Directorate also maintains clerical and financial units.

The principal responsibilities of the General Directorate of Curriculum and Educational Technology include: (1) design, development, and revision of educational curriculum; (2) design and preparation of educational technology; (3) writing and production of textbooks; (4) preparation of the general examination, through the cooperation of curriculum subject specialists with the Examinations directorate; (5) review of school teaching schedules before their submission to the Board of Education for final approval; and (6)

¹⁶ Application to establish a school is made to the District Directorate, which then examines the site and staff qualifications, and prepares and submits a report to this central directorate for licensing. Annual renewals after initial licensing may be done at the district level.

¹⁷ Curriculum subject specialists are also habitually consulted on an individual and informal basis by the General Director for in-service teacher-training, and may teach part-time at the teacher training colleges.

¹⁸ The Textbooks directorate was established in 1989 as a result of the Educational Reform. Prior to this date, individual authors would be commissioned to develop subject-specific texts as needed. The texts would then be reviewed by the Curriculum directorate, approved by the Board of Education, and produced through contract with external publishing agencies. Through the establishment of the new Directorate, the capacity for development of entire textbook series has been institutionalized, including in-house textbook production. In the view of the General Director, the Textbook Directorate remains in need of modification, however, such as instituting final editing by Curriculum Directorate subject specialists. While "editors" in the Textbook Directorate are themselves subject specialists, the prestige of specialists in the Curriculum Directorate remains greater, and attracts the highest quality specialists.

informal cooperation with the General Directorate for Certification and Training in the development of training courses for in-service teachers.

D. Central Administrative and Financial Affairs directorates

The Assistant General Secretary for Administrative and Financial Affairs presides over the General Directorates of Administrative Affairs; Financial Affairs; and Financial Audit.¹⁹

Administrative Affairs. The General Directorate of Administrative Affairs contains four directorates: (1) Personnel, which includes cadres, files, and leaves (transfer, secondment, return, military service, retirement)²⁰ divisions, and separate divisions for male and female staff appointments; (2) Salaries, which includes salaries and benefits, salary grades (coordinated with the GOJ Department of Civil Service Employment), and pension (retirement, termination, allowances) divisions; (3) Civil Service Social Security, which, working in coordination with the Social Security Department of the GOJ, confers social security benefits, and maintains records on termination, years of service, and other information for both graded and contract employees; and (4) Educational Social Security, concerned with aspects of Social Security specific to employees in Education, such as special benefits upon death of parent or severance of spouse.

Financial Affairs. The General Directorate of Financial Affairs contains two directorates: (1) Accounting (36 staff), with divisions of Accounting, Documents and Cash, Deposits, and Internal Audit; and (2) Supply (17 staff), with divisions of Tenders, Deliveries, and Transfers. The General Directorate also coordinates the 42 drivers for the entire MOE. The General Directorate of Financial Affairs reports directly and monthly to the Ministry of Finance. With the Budget division of the Directorate of Planning, the General Directorate prepares a summary report of annual budgetary needs, submitted to the Ministry of Finance (MOF). It receives education funds from the MOF in monthly amounts, and dispenses money according to strict MOF and MOE procedures. Apart from textbooks and examination materials, which require only MOE approval regardless of the amount, purchases in any one category of materials not exceeding 1000 JD nationally may be made with MOE/GDF approval; expenditures over 1000 JD require MOF authorization. The Accounting Directorate within the GDF checks every material request by a district directorate of education against the original budget submitted by the district; significant changes from the budget must also receive MOF approval.

¹⁹ The General Directorate of Financial Audit is not discussed in the present report.

²⁰ Secondment arrangements require coordination with the Ministry of Foreign Affairs and with individual embassies; according to the General Director, a telephone call will often suffice to determine staffing requests from foreign governments. Two-years' military service is required of all Jordanian males; the timing of this service must be coordinated with the Ministry of Defense.

The Supply directorate is responsible for the procurement, storage and distribution of the requested materials and equipment to the district level.

E. Central Services directorates

Central Services directorates include the General Directorate of Projects and School Buildings; the General Directorate of Examinations and Evaluation; and the General Directorate of Computer.

Projects and School Building. This General Directorate is composed of four directorates: (1) Engineering Affairs (120 professional staff²¹), with Study and Design, Supervision (of construction) and Follow-up, and Estimates divisions; (2) Projects Services (26 professional staff), with Equipment and Procurement, Technical Assistance, and Accounting divisions; (3) Building Services (15 professional staff), with Acquisition (of sites), Maintenance, and Renting divisions; and (4) Teacher Housing (6 professional staff).²² Principal tasks and responsibilities of the General Directorate include (1) construction of new schools; (2) equipping and furnishing of schools; (3) implementation of technical assistance provided by donor agencies and MOE for in-service technical training of Projects and School Building staff abroad; (4) maintenance of existing schools and preparation of maintenance budgets; and (5) acquisition of school sites.

The General Directorate of Projects and School Building is principally an executive department, with little decision-making power except in conjunction with Educational Planning, Research, and Development and district directorates for site selection, etc. The General Director has prior authorization for all executive decisions from the Minister of Education and Secretary General, once decisions regarding size, type, and site of schools have gone through the proper approval channels.

Examinations and Evaluation. The General Directorate of Examinations and Evaluation coordinates the writing, administration, correction, and results dissemination of the General Examination at the end of secondary school, community college examinations, and West Bank University examinations. Directorates within the General Directorate include (1) General Examinations, with the General Examinations division (2 computer staff, 3 scientific, 2 letters, 2 vocational) which coordinates the drafting of examination

²¹ The staff is principally made up of engineers, two-thirds of whom work permanently in the districts but report to the central Directorate.

²² Most such housing is built by the Housing Corporation, although some is provided by the MOE. The Ministry also maintains a fund for housing loans to teachers. Housing site considerations include lack of facilities, especially in remote areas, and as an incentive for teachers to come to undesirable areas. In these cases free housing may be made available. The Directorate works in close conjunction with the District Directorates to determine need.

questions,²³ and the Examination Certification and Records division (3 staff), which processes requests for certified copies of exam results (at 600 fils per copy); (2) Examination Results, which includes the Results division (2 staff; seeking 5 more) for the computerized processing of results, and the Test, Measurement, and Evaluation division (1 mathematician; seeking 4 more subject specialists);²⁴ and two administrative units, Secretaries (Director and 2 secretaries) and Accounting (2 staff members).

Computer. The General Directorate of Computer has three divisions: (1) Programming and Analysis, with Analysis and Programming (8 staff) and Operations (9 staff) units; (2) Maintenance and Supplies (2 staff); and (3) Data Entry (11 staff). Principal tasks and responsibilities of the General Directorate of Computer include advising other MOE units regarding their computer requests; and providing all computer analyses requested by other units. The directorate does no data collection of its own, but processes and utilizes databases compiled by other MOE units and Government agencies. Principal clients of the Computer directorate include the General Directorate of Examinations (for the computation of results on the national general secondary examinations, as well as community college and West Bank University examinations); the central MOE Personnel Directorate (for monthly salary and payroll processing and occasional other analyses); the Statistics Division of the General Directorate of Educational Planning, Research, and Development (for computations and analyses required in preparation of the Statistical Educational Yearbook); and the Recruitment Bureau for the Civil Service Department, a separate GOJ Department.

F. District directorates

There are currently twenty-three district directorates of Education in Jordan: two directorates serving urban Amman (the second established in 1989 only), one serving the Greater Amman metropolitan area, one in each of nineteen other districts, and one for private schools. Appendix E provides a list of these directorates, with basic statistics on schools and student enrollments in each directorate.

The district directorates, each headed by a Director of Education, fall under the immediate supervision of the General Secretary of the MOE. The activities of specific units, however, are often carried out in close collaboration with parallel units in the central Ministry. While the exact organizational structure of district offices may differ according to the size of the directorate and the discretion of the District Director, each district

²³ The actual drafting of examination questions is performed by individuals selected by the Committee of Examinations (a MOE body external to the General Directorate of Examinations), using specifications prepared by subject specialists within the Curriculum Directorate.

²⁴ The single staff member of this section, Ms. Bahija Bectar was present at the end of the interview with the General Director. She is a mathematician who has had training at ETS and is currently working on the development and piloting of IAEEP math and science tests for ages 9 and 13.

office visited included separate units for administrative affairs (personnel; planning and statistics; buildings and equipment; budget and finance) and technical affairs (academic education; academic supervision; vocational education and supervision; examinations; educational technology; student affairs; and guidance).

A critical role played by the district directorates is that of intermediary between the central Ministry and individual schools. All directives, materials, and information requests from the central MOE to schools are relayed through the district office. District offices are responsible for the day-to-day and annual tasks of textbook and materials distribution, management and record-keeping of specific teacher placements and movements (including transfers, retirement, and secondment), examination administration, and information gathering for their own and central Ministry purposes. All formal communications from individual schools to the central Ministry, likewise -- teachers' comments on new textbooks; principals' requests for special program funding; staff transfer requests; complaints -- should properly be sent through their respective district offices.

In addition, the district directorates conduct all educational supervisory school visits; determine passing grades based on grade distributions in their district; authorizing equipment, library, and laboratory supply procurements up to a set financial ceiling; and conduct periodic meetings of principals, teachers, and guidance counselors on a variety of topics. They are also responsible for processing and approving all student transfer requests to and from the district;²⁵ directing adult literacy education programs²⁶ and school dropout study programs;²⁷ processing requests of home-study candidates to sit for examinations at each grade level;²⁸ organizing sports events, trips, student volunteer activities, reception of

²⁵ A student desiring to transfer makes a request first to the school to which s/he would like to transfer, to determine if a place is available and for school approval. The request must then be submitted to the District Directorate of Education for approval, upon which the student's original school is notified. The bulk of such requests is processed in July, although they may occur at any time of the year.

²⁶ There are currently 45 adult literacy centers in Amman-1 (10 male and 35 female centers). Six to seven hundred students aged 10 years and up, usually with no prior education, are currently enrolled in Amman-1 alone.

²⁷ These programs are available to former students beyond the 3rd grade level at a cost of 20 JD per semester. Students may take courses, sit for examinations, and eventually take the General Examination for university entrance. There are currently eleven Centers in Amman-1 with about 1000 students aged 13-50; about two-thirds of all participants are female.

²⁸ Amman-1 District receives about 100-120 such requests every year, from candidates at the grade 4 level or above. To determine the appropriate grade level, the District employs the last grade level reached, or gives a short examination.

foreign students, parties, and music and arts presentations; and coordinating school health inspections by MCE inspectors.

The twenty-three district directorates also work in direct coordination with the central MOE on specific tasks. In cooperation with MOE/Planning, district-level planning units collect information from schools to estimate the next year's enrollments and educational needs. In cooperation with MOE/Projects and School Building, the district-level building units determine site selection and coordinate MOE engineers affiliated with their directorate in the supervision of building.

Each district directorate also maintains a Committee of Education analogous to the advisory Committee at the national level. Members of district-level Committees of Education typically include the District Director, Administrative and Technical division heads, section heads for Personnel, Planning, and Supervision, and a few educational supervisors.

To illustrate the variety in internal structure of individual district directorates, the structure of the three directorates selected for pilot activities by NCERD and Project BRIDGES (Amman-1, Amman-2, and Irbid) are presented briefly below. All three are large urban districts, thus the full range of possible structural arrangements is by no means represented.

Amman-1. The Amman-1 District Directorate of Education contains two administrative and three technical divisions. The first administrative division includes Personnel, Accounting, Supplies, and Internal Audit sections. The second administrative division includes Planning and Statistics; Building; and Engineering and Maintenance sections. The first technical division is responsible for academic supervision and examinations. The second technical division is responsible for academic education (section head, 5 staff); student affairs (section head, 10 staff); and vocational education (section head, 7 staff). The third technical division, the Educational Resources Division, includes a Director and support staff (administrative secretary and typist); a Section of Guidance, and a Section of Technology of Education which serves Amman-1, Amman-2, Zarga, Balqa, and private school districts.

Amman-2. The Amman-2 District Directorate includes two administrative and two technical divisions. The first administrative division (3 professional and 15 clerical staff) includes personnel; planning and statistics; and building and materials sections. The second administrative division (23 staff) includes finance; instructional materials; and internal audit sections. Amman-2's first technical division (24 staff) includes Examinations (1 head; 5 staff); Academic education (1 head; 5 staff); Guidance (1 head; 1 staff); and Student Affairs (1 head; 9 staff) sections; the other technical division includes Academic supervision (23 staff); Technology (library; laboratories; materials); and Vocational education and supervision (30 staff).

Irbid. Irbid's District Directorate of Education has one technical and two administrative divisions. Administrative Division 1 includes Personnel; School Buildings; and Planning, Statistics, and Budget sections. Administrative Division 2 includes Accounting and Supplies/Equipment sections.

The Technical Division includes Compulsory and Secondary education; Academic Supervision; Vocational Education and Supervision; Student Affairs; Examinations and Evaluation; Educational Resources; and Guidance sections. The directorate also has Diwan (general office management) and Public Relations offices.

G. School organization

As in the district directorates, the organizational structure of individual schools is to some extent governed by the size of the establishment, and further by the nature of the school (gender, specializations, grades taught). All schools have teachers, certainly, but the size, even the presence, of administrative and support staff will depend on the size of the student body and teaching staff. By Jordanian law, all groups of ten children without an accessible school have a right to a school facility; schools exist of seemingly every size, condition, and combination of grade-levels (though generally contiguous), defying neat categorization in many cases.

Three schools in the Amman-1 district directorate were visited, providing a glimpse of the range of school size, structure, type, and facilities that exists. A brief description of each school is presented below.

Madrasat Arjaan. This small, rented early elementary school serves 42 first, second, and third grade boys and girls from the Arjaan neighborhood. While the area seems more populous than the small school enrollment would indicate, the school's headmistress explained that most children from the area go to the Sport City school on the other side of the neighborhood, or to private schools. The school staff includes the headmistress and three female teachers for grade levels 1, 2, and 3. At the time of our visit, the headmistress was teaching the Grade 1 class, as the regular teacher was recovering from a back injury. The headmistress holds a bachelor's degree and a teaching certificate in early elementary education. The 1st and 3rd grade teachers hold 2-year teaching certificates in Math and Arabic, respectively, while the 2nd grade teacher has a BA in technical education. All staff are young women, in their late 20's or early 30's.

At the early elementary level, students receive 26 instructional sessions per week. Four out of five days a week, school is in session from 8:00 a.m. to 12:20 p.m. (5 sessions). The fifth day runs somewhat longer, from 8:00 a.m. to 1:10 p.m. (6 sessions). At time we arrived, the 3rd grade class was out on the terrace receiving instruction in prayer.

Culliyat Hussein. Culliyat Hussein is an older, scientific boys' high school, built in 1949, with two later additions, and is known as one of the best public high schools in Amman. The school has 12 administrative staff (principal, vice principal, computer lab technician, science lab technician, librarian, full-time guidance counselor, secretary, and other support staff), 35 teachers, and about 950 students. The entire staff and student body are male.

The school includes 6 tenth grade classes, 7 first year secondary, and 7 second year secondary; secondary grades are science stream only. Students arrive at 7:30 each morning, to begin a schedule of five to seven 45-minute sessions per day for a total of 31 periods per week. The school day is over by 1:30; the school week is a five-day week, with Thursday and Friday off. Following the national curriculum, all grade levels take courses in Arabic, English, Math, Physics, Chemistry, Biology, Religious Studies, and History and Geography. In addition, tenth graders take Computers, Art, and PE; first-year secondary students take Art, PE, and Palestine Studies.

With its strong reputation, Culliyat Hussein receives about 1000 requests each year from students wishing to enter the 10th grade. Of these, only 300 can be accepted, on the basis of residence (those living closest by have priority) and school grades. As in all schools, about 36% of all 10th graders at Culliyat Hussein remain in the scientific academic stream in secondary school, while 24% enter the Letters stream, and 40% are placed in vocational streams each year. Letters and vocational students must transfer to other schools, while scientific students may remain at the College. Thus every year about 110 tenth-grade graduates of the school remain and continue in the science track, while 200 transfer students from other schools enter Culliyat Hussein at the first year secondary level.

Each class has its own "base" classroom, with about 48 students per class seated at rather small, cramped double desks in classrooms designed forty years ago for classes about half their current size. Teachers rather than students rotate from room to room to teach their subjects; students leave their classroom only for lab work and breaks. Separate physics, chemistry, and biology laboratories, housed in a newer building, are considerably more spacious, and are well-equipped with lab tables and instruments. The computer lab, for tenth grade classes only, is situated in the old building in a regular small classroom and had 10 computer terminals, each serving groups of 4 or 5 students at a time. The school library, also in the new building, is also quite spacious and reasonably well equipped, with books arranged by the Dewey system.

Principal administrative tasks at the school include daily tasks such as registering student and teacher absences and ongoing "problem solving" at all levels of the school. Monthly reports are prepared for the district directorate on library activities, laboratory experiments, and the use of educational television in the classroom.²⁹ Other periodic tasks include the maintenance of records and the filling out of forms from the MOE district, and the coordination of parent assemblies and volunteer activities. On a monthly

²⁹ Two weekly educational television programs, created by the central MOE Educational Technology Directorate, are shown in each of several subjects, including English, Geography, Physics, Biology, Arabic, and History.

basis, the principal exchanges school visits with other principals to discuss common problems and solutions.³⁰

Girls' Comprehensive School. This school for girls from grade 10 to second year secondary was established in 1975; the current Headmistress has directed the school for ten years. Other school staff include 54 teachers, a guidance counselor, 2 librarians, 2 lab technicians, and five administrative staff (2 administrative assistants, secretary, storekeeper, accountant). 600 female students were enrolled in 1989-1990. Entrants typically come from specific feeder schools; about 50 additional requests for transfer to this school are accepted each year. Given the current under-enrollment of the school, it is likely that all entrance requests are accepted.

The school's "comprehensive" curriculum offers a complete academic curriculum for both science and letters tracks for grades 10 to 12, and requires an additional 4 to 5 sessions per week in one of 10 vocational or technical subject areas for grades 10 and 11. The school also offers two vocational secondary tracks (commerce and nursing), and a number of 2-year non-degree VTC (Vocational Training Center) courses.

Comprehensive curriculum students are given one month at the beginning of their 10th grade year to sample the vocational areas and to select one, from among beauty culture, sewing, ceramics/handicrafts, child care, music, agriculture, electricity, computers, typing, and home economics. In 12th grade, academic-track students return to taking academic subjects only, in preparation for the General Examination. Graduates of comprehensive schools receive special high school diplomas. The top 10th percentile of graduates of the school is typically accepted into the university.

The school is bright, colorful, and well-maintained, with prominently displayed examples of student artwork on corridor walls, in the directress' office, library, and elsewhere. Classrooms, labs, library, and workshops are spacious and well-equipped; the school also has an on-site nursery for staff children and a large garden with a greenhouse of plastic-sheeting. As in Culliyat Mussein, students are assigned to a single classroom for all academic subjects, leaving this room only for labs and vocational training workshops.

³⁰ Meetings of school directors are also institutionalized and orchestrated by the district directorates. In the Spring of each year (typically between 20 January and 6 March), each district directorate convenes school directors by subdistrict for a day-long meeting of student presentations and administrative discussions. Among the topics discussed are problems of school dropout and absenteeism and potential solutions; ideas for student activities; and shortages or surplus of books and other materials and equipment in individual schools, so that exchanges can be made without involving the central Ministry. Summary reports of each topic discussed and actions taken are prepared by a selected committee of school directors and submitted to relevant directorates in the central MOE and at the district level.

IV. A selection of essential MOE tasks

In their everyday tasks and through explicit efforts, the Ministry offices and schools of the Jordanian educational system generate, process, and make use of literally tons of paper bearing information about the functioning of the system. Information is gathered for planning and development, for routine but often complex administrative actions, and for qualitative educational objectives such as the evaluation of students, teachers, and the system itself. The present section provides a descriptive account of the current approach to a number of critical tasks in each area.

A. Planning and development tasks

Successful educational planning, whether for the annual estimation of educational needs for teaching staff, school facilities, equipment, and materials, or for the realization of longer-term objectives, requires at a minimum (1) a relatively accurate base of information on current educational enrollments, staff, and facilities and their adequacy, and (2) information reflecting likely (or desired) changes in these figures for the future period in question. For this reason, much of good planning depends on the gathering and processing of information. In the Jordanian system, as the following examples show, planning tasks involve a great deal of information, but standard estimating formulas, higher staff members' experiential knowledge, and stark fiscal realities are also clearly present in the "planning" process.

Annual enrollment projections. A principal task of annual planning is the estimation of student enrollments in the following year, so that adequate staff, equipment and materials, and facilities can be made available to accommodate them. In late January or early February of every year, just after midterm examinations, the central MOE Planning Directorate sends forms to the district directorates, which are then distributed to each school headmaster. The forms request current school-level data on the number of students in each grade level at the school, the number of teachers and their specializations, other staff, and the number and condition of classrooms and other school facilities (Appendix C, Form 1). The headmaster also makes crude estimations of expected enrollments in the following year, assuming a 5% increase in the first-grade class, and with no adjustment for transfers (other than from known feeder schools), grade repetition, or school dropout.³¹ Completed forms are returned to the district directorate.

In mid February, each district directorate's Planning division checks the data consistency of each form, and may make preliminary adjustments based on district-level knowledge of population, budget, and the expected

³¹ In principle, a school director should contact feeder schools to determine the probable number of students coming into his or her establishment, although the final "estimate" of incoming students is likely to depend as much on the known physical capacity of the school as on an assessment of real student flow.

educational tax revenue from each school.³² A summary table and report of district-wide educational statistics and estimated requirements are prepared from the school-level data provided (Appendix C, Form 2). The summary report is then reviewed, adjusted, and finally approved by the district-level Committee of Education. The district-approved report is then submitted to the central MOE Planning Directorate by late February or early March for further revision.

From late February through the month of March, the central Planning Directorate works for one or two days with each district-level Planning division to discuss and adjust or negotiate the need projections in the district's summary report. Adjustments are made using estimated repetition and dropout rates, migration patterns, and, perhaps most importantly, known resources. The intuition and experience of the senior staff, rather than hard data, appear to be the principal source of these estimations. When revised, the summary report is submitted to the national-level Committee of Education for final approval. Once approved, the final report is returned to the district directorate, with copies sent to the central General Directorates of Administration, Finance, and Education for implementation. The process is completed by the end of April or the beginning of May.

The next phase is that of evaluating the accuracy of predictions, and making adjustments based on real enrollments. This phase begins with the distribution of a second copy of the school survey form, in September or October. On this copy, enrollments and other information for the current year and the previous year are entered. The district directorate spends about one week verifying the information against other information on each school kept in its files and against the previous Spring's figures, and district-level Planning staff meet individually with school principals to discuss the source of any discrepancies across figures that may be found, before a copy of each school form is sent on to the central MOE Planning Directorate. A second copy of the form is kept in district files; while a third copy is returned to the school. The district directorate also prepares a second summary form of all schools in the district, a copy of which is submitted to the central MOE Planning Directorate.

In November, field visits to a sample of schools in each district are carried out by teams composed of representatives from the district directorate and from the central Planning, Education, and Personnel directorates, in equal participation. Based on the findings of these visits and the information supplied in the Fall school surveys, each district makes adjustments in staff postings and facility and equipment procurement requests. This phase should be completed by December so that staff transfers and procurements may be sought for the Spring Semester if necessary. Staffing adjustments are resolved through transfers rather than new staff hiring when possible, although social

³² The accuracy of the figures provided in this form are checked, according to a district-level administrative head, through routine requests for the same information, using the same form, multiple times each year, and through the extended role of cooperative supervisors (see section V.A. below).

pressures often make this process difficult.

Annual personnel needs determination. Some may argue that the annual orchestration of personnel supply is essentially administrative in nature rather than a "planning" task. It constitutes, however, a critical complement to the above process of enrollment estimations in the determination of the number and types of teachers and other staff required by schools to function in the following year, and is therefore presented here.³³

The central MOE Personnel Directorate typically begins its "supply orchestration" task in March or April of a given year, in close cooperation with the central Planning and Education Directorates and with district directorates. Leaves of absence, retirements, secondments to foreign placements, returns from leave and secondment, internal transfers, and military service must be taken into consideration in this process, which thus also demands coordination with the Ministry of Foreign Affairs and foreign embassies for secondments, and with the Ministry of Defense for 2-year military service requirements.

All transfer and requirement requests are due by a cutoff date set annually by the Committee of Education, usually around the 15th of April. In May, on the basis of requests submitted and the enrollment estimations described above, a paper of personnel requests is prepared and submitted to the Committee of Education for approval. The Committee determines annually the criteria and rules governing changes of status, given the ever-changing needs in Jordan and abroad. Once the personnel needs paper is approved, the General Directorate of Administrative Affairs works "day and night" from May to September to fulfill the personnel needs of each district and each school so as to be ready for the new school year. Placements abroad and of returnees create a particularly acute work crunch from June to August. Other routine staffing needs of the MOE are addressed during the relatively slower period from October to May.

This task relies heavily on a wealth of information regarding personnel currently in the schools, maintained at the district directorates and in the central MOE Personnel Directorate. Information on every teacher's qualifications, salary grade, specialization, number of class sessions per week by level (Basic or Secondary), address, birthdate, and other detail is gathered every October on a School Staffing form from the central Personnel Directorate distributed through district offices (Appendix C, Form 3). The form also contains summary tables to be filled out indicating the number and types of staff available and needed and the number of classes by level and type. Schools are given about two weeks to complete the form and return it to the district directorate, which then checks for internal consistency before

³³ The magnitude and complexity of managing and monitoring the placement, movements, and status changes of teachers and other Ministry personnel combine to make this operation perhaps the most formidable challenge for EMIS design; Dr. Russell Davis has advised the undertaking of "a special study and analysis" of the current process of personnel information management to inform that portion of the new EMIS (Jordan March 1990 trip report of Russell G. Davis, p. 7).

submitting it to the central MOE Personnel Directorate.

General and confidential files on all school staff members are maintained both at district and central MOE/Personnel levels. Every district-level Personnel division sends weekly reports to MOE/Cadre regarding staff needs and surpluses in particular schools in the district. Among the documentation and information maintained are alphabetical files of one-page certificates with critical information on each teacher; copies of the school staffing form for each school (see above), bound into great separate ledgers for male- and female-staffed schools; and notebook of staffing needs and surpluses, divided by subject areas and by male and female schools.³⁴ Another set of giant ledgers is maintained for registering all internal and external transfer requests, based on information provided in a personnel transfer form (Appendix C, Form 4). Transfer priority is given on the basis of seniority and qualifications. The number of requests is great; about half of all teachers in Amman-2 District requested transfers last year.

A related task is the determination of teaching specializations required by schools, which calls for the input of the central Directorates of Education (Academic; Vocational/Technical) during the March-April meetings with the Planning Directorate and district directorates in which annual enrollment estimations are discussed. The central Education Directorates then also work with the Personnel Directorate to coordinate the numbers and placement of teachers needed by each specialization and level. Once the new school year begins, central MOE subject specialists and district-level supervisors visit a sample of schools to determine if the plan was implemented.

School construction. In principle, any community with ten or more children is entitled to a public school facility. The general location, size, and type of proposed new school buildings are determined by the central Planning Directorate, the General Directorate of Education and Supervision, and district directorates through an analysis of the "educational requirements" of a given locality, i.e., the number, levels, and types of student places that need to be accommodated. Every Fall, Education and Supervision regularly collects information on the condition of schools, the number of students in the space provided, the size of rooms, and the school's distance from students' homes (Appendix C, Form 5).

A request for school design is then submitted to the General Directorate of Projects and School Building, which determines the material requirements for the structure. If sufficient resources are available to undertake the project, this General Directorate works with the local district directorate's School Building section to determine specific site selection. According to the General Director, the standard catchment radius is 2 km for basic education; 3

³⁴ The organization of the notebook, arranged by subject area and level and with separate columns to register schools that have (a) shortage and (b) surplus of staff in that area, allows one to see at a glance from which schools staff transfers to needy schools could be solicited.

km for secondary education.³⁵ MOE engineers then undertake site study and design, and supervise the actual building process.

The General Director of Projects and School Building indicated that there is no set calendar or time frame for the above process, as it is constrained by the resources available: the amount accomplished and the speed of its accomplishment all depend on financing. As a general rule, MOE-funded construction is typically planned on an annual basis, while construction projects funded by private or international donor agencies are planned over longer-term (e.g., 5-year) periods, depending on the agency's funding cycle.

The rental of buildings (when resources and/or logistics do not permit construction or purchase) is governed by a similar process, with a view toward locating the most suitable available structure for the purpose. An Amman-1 official cited the recent example of a visit by district- and central-level MOE school buildings staff to 14 urban schools still housed in cramped and poorly equipped rented facilities not designed for teaching. The visit led to efforts to relocate the schools; when three much more suitable, government buildings were found, the schools were consolidated into three and moved to these quarters.

Preparation of the Statistical Yearbook. With its own form (Appendix C, Form 6), the Statistics division of the Planning Directorate collects school-level information in order to produce the Statistical Yearbook and related publications. A school statistics form is typically sent out from the central MOE to district directorates for distribution to schools by December. Once completed by schools, forms are collected again by the district-level Statistics section, which also checks for internal consistency of figures, and may compare figures with other information maintained by the district on each school.

The forms are returned to the central MOE Statistics Division by February, and then turned over to the General Directorate of Computer for computerization. Data entry, checking, and basic analysis and summarization runs are performed during February and March. The statistical yearbook and summary brochures are then published by the Educational Publications Division of the Documentation Directorate. The entire process from data collection to publication typically takes about a year, such that other units cannot depend on the Yearbook for most of their own information needs.

Ad hoc data analysis requests. The Computer Directorate also responds to ad hoc requests for data analysis on specific topics. According to the Director of Computer, all requests for analysis must first have approval from the directorate or agency in which the data to be accessed originated (e.g., Examinations, Personnel, or Statistics). A representative of this directorate

³⁵ The catchment radius appears to be open to some debate, especially in urban areas; one official in the Amman-1 directorate indicated a preference for a home-to-school distance of no more than 0.5 km for basic education students, and of 1.5 km for students at the secondary level.

or agency will then submit authorization for the release of data to the Director of Computer, who then assigns a relevant section to the programming task. The section head assigns specific staff member(s) to prepare the required program(s). At this stage, the computer staff typically meets with the party requesting the analysis, to discuss the problem and determine the optimal procedure to produce the analysis or provide the data in the desired format. While some requests are routine, using basic programs; others may require the preparation of specific programs.

Once completed, each program is reviewed and approved first by the responsible section head and then by the Director of Computer. The parent directorate or agency is then again contacted for last-minute data amendments or corrections (which, although infrequent, are kept on hard copy but not routinely transferred to the permanent database) before the program is run.

Long-term human resources planning. The principal responsibility for human resources planning falls upon the recently created Human Resources Department of the Ministry of Planning,³⁶ although such planning ideally incorporates the coordinated efforts of the Ministries of Education and Labor as well as Planning. One task of the new Department is the establishment of an information system which includes education, manpower, labor markets, training, health, and social aspects. Priority in the development of this information system is the demand side, or labor market, for which the database is currently being designed. Information being assembled to facilitate demand estimations includes economic growth rate, productivity by sector, and external market (principally Gulf States) demand. Development of the supply side (including education and training inputs) is the second priority, planned to begin in the next 2-3 months. Information from both MOE and MOHE will be used in the the construction of the database, although the MOP is most interested in higher education outputs, given (real or desired?) structure of educational background of the Jordanian labor force.

B. Administrative tasks

Among the principal administrative tasks of the educational system are the hiring and placement of teachers and other school staff, and ensuring the provision of services, equipment, and materials necessary for the day-to-day administrative functioning of educational institutions.

Hiring and posting of personnel. The bulk of hiring of new personnel occurs after the early spring enrollment projection meetings of the central and district-level Planning directorates described above. Thus by May of a given year, the Cadre division of the central Personnel Directorate receives the final estimates for numbers and specializations of teachers needed by all districts for the coming school year generated during these meetings. The estimates are combined with the information on current personnel supply prepared by Cadre and Leaves divisions of the Personnel Directorate (described

³⁶ The Human Resources Department, formerly a section of the General Planning Department of the Ministry of Planning, was established as a separate department in November, 1989.

above), to determine the exact number and types of new appointments required to fill the remaining staffing need.

The Cadre division then submits this specific request for personnel to the Appointments division, which executes the hiring of individuals. The pool of applicants emanates from the GOJ Department for Civil Service Employment (DCSE), which maintains files by specialization and by locality for all civil service jobs in the kingdom. Newly graduated teachers make applications for employment directly to the DCSE; all teaching and other education-related applications received by the DCSE are then made available to the MOE Personnel Directorate's Appointments division. When possible, teacher placements are made within the district in which the teacher claims residence. If a position for a particular specialization and gender of teacher cannot be filled by applications received from the district in which that position is open, applications from neighboring districts will be tapped. The results of all hiring efforts are reviewed by the Cadre division and the General Directorate of Education and Supervision, to check the adequacy and correctness of hiring decisions.

Purchase of equipment and materials. The authorization of purchases is governed by GOJ regulations followed in every ministry and department of the government. All procurements are classified into categories, and annual purchases in a given category that exceed a specific JD amount require higher-level authorization. Central General Directorates or district directorates wishing to purchase over JD 400 in a given category must receive authorization from the central MOE General Directorate of Financial Affairs; requests for purchases costing over 1000 JD are submitted for external audit and authorization from the Ministry of Finance. District directorates have the authority to approve all school purchases made out of school fees collected (beyond the 35 percent of these fees which must be given to the central Financial Affairs General Directorate); receipts of school purchases using school fees are submitted by schools to the district-level Accounting office.

In the central MOE, every purchase request must be invoiced and approved by the Director of Accounting. If over 200 JD, it will be documented for replacement by the requestor. The request is then submitted to the Disbursement division, where a computer check is made to determine if funds are available for the purchase from the relevant budget. If approved, the request returns to the Cash division for check cutting. The invoice and check are then sent on to the Supply Directorate for ordering, acquisition, storing, and eventual distribution of items requested.

Most procurement activity takes place between the time of budget approval and the beginning of the following school year. The annual Education budget is usually approved in January; due to this year's Parliamentary session it was delayed until March. In general, purchase requests which require Ministry of Finance authorization are processed first, since they may take two to three months before receiving final approval. Those requests requiring internal MOE authorization only may be processed as late as June-August.

The typical cycle of annual capital equipment procurement, for example,

begins in February, when the district-level Supply section receives requests from schools for specific equipment needed for the coming school year (e.g., lab equipment, workshop equipment, audiovisual needs; but excluding textbooks for which there is a different procedure). Each district-level Supply section then reviews and compiles the requests from all schools into a summary report request for the entire district. In March and April, summary requests for supplies are sent to the central MOE Supply Directorate for approval. The MOE sets aside one day per district for representatives to come to Amman and negotiate all capital equipment requests for the directorate. Once the equipment is ordered and procured, district-level Supply sections then attend to its distribution to schools.³⁷

Procurement and distribution of textbooks. The procurement of textbooks follows a procedure distinct from that described above, as textbooks are supplied directly from the General Directorate of Curriculum and Educational Technology rather than from external vendors through the General Directorate of Financial Affairs Supply and Equipment division. A district-level administrative director first described the process as a simple calculation of the number of textbooks in a given subject and level to be produced and sent out to the directorates each year, equal to the estimated number of students for that year plus a buffer of 10 percent. He subsequently revealed that the process is considerably more complex than this, as different books and school levels receive different treatments: Elementary-level books are typically free to the user and are used only once; most preparatory and some secondary-level books are expected to have a life of about three years, and are returned by students (with appropriate penalties for lost and damaged books); some secondary books are directly purchased (at cost) by students.

Thus, each school director must monitor the quality and number of still-usable textbooks at the end of a given year. Using a form prepared by the central Curriculum Directorate, the director or an assistant indicates the types and numbers of books available and those still needed for the next year, and submits this form to the district-level Supply section, which reviews the form. Upon review and approval of each school form by the district directorate, a summary request for the entire district is prepared and sent to the central General Directorate of Curriculum, using a separate form (Appendix C, Form 7). The process is typically completed by June of a given year, upon which the needed textbooks are usually delivered efficiently according to an Irbid district directorate official.

C. Educational tasks

The principal focus of educational tasks, as defined here, is on the qualitative content of the educational experience: determining the desired content through curriculum and textbook development, monitoring its delivery

³⁷ Materials to be purchased with student fees, cafeteria and student stores receipts, or Red Crescent funds may be approved at the district-level Accounting unit (which also supervises the collection of these monies); those provided by donor agencies may be delivered directly to schools without MOE central or even district-level intervention.

through teacher supervision and in-service training, evaluating students' achievement, and making decisions regarding their further education. The monitoring and evaluation of educational quality may be especially critical during times of reform, to monitor its implementation and qualitative impact.

Textbook and curriculum development. A major thrust of the current Educational Reform effort is a complete overhaul of all curricula and textbooks in use in Jordanian public schools. With the Reform, textbook authorship is now commissioned primarily to institutions rather than to ad hoc teams of authors as in the past. Requests are sent out to relevant institutions to convene teams for the preparation of textbook drafts. The proposed teams from within each institution are then reviewed and approved by the General Directorate of Curriculum and Educational Technology.³⁸

Once approved, each team of authors prepares drafts of students' textbooks, teachers' books, workbooks, and other supplementary educational materials. The work of each textbook team is supervised by a national review group from both within and outside the MOE, who supervise, review, evaluate, and approve the textbook drafts prior to submission to the Board of Education. Final approval of the drafts must be received from the Board of Education before the materials are published and distributed.

The publication of textbooks requires accurate information on the numbers of students to determine how many books to publish. The General Director of Curriculum and Educational Technology is aware that such information is collected by the Planning Directorate, but considers it to be of insufficient accuracy and detail. Thus Curriculum and Educational Technology distributes its own form to districts, requesting the titles and exact numbers of books needed (see above).

Once textbooks are distributed and in use in schools, teachers are encouraged to send feedback to their district directorates regarding the use of the textbooks in their classes. This feedback may be received in systematic and nonsystematic forms. Nonsystematic feedback from teachers can occur at any time of year, in the form of prose letters and comments; more systematic feedback is typically solicited within the first year of a new textbook's introduction, and may involve meetings of teachers and district subject-area supervisors to report on their experiences using the new textbooks in the classroom. The General Directorate has tried in the past to request that teachers and districts use structured forms to record their feedback on each textbook, but in practice the return rate of such forms has been very low, and open-ended reports are currently requested.

³⁸ The current schedule for Textbook Reform projects that texts for Grades 1, 5, and 9 be prepared by 1991-1992; Grades 2, 6, and 10 by 1992-1993; Grades 3, 7, and 11 by 1993-94; and Grades 4, 8, and 12 by 1994-95. The University of Jordan has been commissioned for social studies textbooks; the Arabic Language Center for Arabic; the Organization for Islamic Studies for Islamic studies; the Jordan Book Center for Math; Yarmouk University for physical education; and an independent team for sciences.

Curriculum development parallels the process of textbook development. National teams of subject specialists from within and outside the MOE convene to prepare drafts of new curricula, including objectives, teaching methodologies to be used, and activity specifications. The prepared drafts are then sent out to district directorates for review and comments from supervisors and teachers. District Directors subsequently meet with the supervisors to discuss these comments and prepare a summary commentary on the drafts. Feedback may include comments regarding the appropriateness or feasibility of the objectives, methodology, or content of a given curriculum for the age group intended. Curriculum drafts are also sent to the MOHE and to University Faculties of Education, Teacher Training Colleges for feedback.

It is noteworthy that textbook changes and curriculum reform in Jordan are seldom based on objective information or research on the effectiveness of existing textbooks or curriculum. While the feedback received from practitioners may be heeded in the development of new materials, this information is subjective and typically nonsystematic in its content coverage and representativeness. The development of curriculum and educational materials without the benefit of local empirical research is certainly not unique to Jordan but also evident in Egypt (Toronto, 1989, pp. 69-70) and elsewhere. For Jordan, at least, such research may become possible with the Educational Reform's professed attention to evaluative research and the establishment of the NCERD.

Teacher evaluation and pedagogical advising. District-level subject supervisors serve both as periodic evaluators of teachers' performance and as curriculum experts and advisors. Within the first week of the school year, each district directorate distributes to all schools a form requesting the class timetable for every teacher in every school in the district (Appendix C, Form 8). Returned by early October, copies of the form are retained at the district MOE level. While it is constantly amended during the school year, according to the Amman-2 District Director, this form provides a summary of information used by central and district-level educational supervisors and administrators to determine whether teachers with the right qualifications are teaching the appropriate subjects and have an adequate teaching load. The form also facilitates the scheduling of supervisors' visits, and provides an early determination of whether additional teachers are needed and in what subjects.

The school staff form emanating from the central MOE Personnel directorate, is also distributed by district offices to schools in early October (see above). This form requests information on all teachers' qualifications, salary grades, specialization, and number of class sessions taught per week by level (Basic or Secondary). It also requests information on the number of classrooms available and the number needed; the quality of school buildings; all school equipment present and needed; and the student-class ratio. The form is returned by schools to the district office for checking, and a copy submitted to the central Personnel Directorate by November.

Every teacher in Jordan, whether new or experienced, also receives a classroom visit by a subject supervisor three times a year; new teachers typically receive the most thorough observation. An evaluation is completed by

the supervisor after each visit, and filed at the school and district levels (Appendix C, Form 9). In addition, a register of all school visits of all types made is maintained by each district directorate, in which are recorded the type of visit made (technical or administrative), a summary of the outcome, and recommendations.

Student class examinations and promotion. In the course of each semester, schools conduct a series of school-wide examinations at all grade levels. The examination questions are prepared by teachers; schools must submit a sample of proposed questions in each subject to the district-level Examinations section for review and commentary by supervisors prior to exam administration. Examination results for every student are kept at the school level and at the district directorate. A technical director of Amman-2 district indicated that these results are employed by supervisors in manual analyses to identify strong and weak classrooms and schools.

Students' year-end average results in each subject are also submitted to the district-level Examination section for review and the determination of annual promotion criteria (Appendix C, Form 10). In Grades 1 to 3, passing is typically automatic unless Arabic or Math performance is particularly weak. In Grades 4 through 11, minimum passing averages are determined at the district level, by a committee of the district directorate's Examinations section head and selected principals. Each semester, students also receive individual student report cards which indicate their subject grades and overall average, as well as the year-end promotion decision (pass or fail) on the second report card (Appendix C, Form 11).

Placement of basic-education graduates into secondary specializations. Student placement into secondary specializations is carried out by the central MOE Planning Directorate with assistance from district-level Planning sections. In May of each year, a form is distributed by the central MOE Planning Directorate to the districts, destined for all schools with tenth grade classes. The form is filled out by each school, with a listing of all tenth grade students by name; their total, math, and science school grades over the previous three years; their rank-ordered choices for secondary specialization; and their place of residence (Appendix C, Form 12). Forms are typically returned to the central MOE by June.

Using this information, the central Planning Directorate and district sections determine the distribution of students into academic (science or letters), technical, and vocational secondary tracks and vocational training centers. Judgments are made according to (1) student grades (combined into a weighted average of total, math, and science grades across the 8th, 9th, and 10th grade levels); (2) student preference; (3) the availability of facilities and space in the desired specialization near the student's place of residence;³⁹ and (4), according to the Secretary General of the MOE, the recommendations of the general Five-Year Plan regarding estimated ratios and

³⁹ Student boarding facilities even at the secondary level are uncommon in Jordan, according to A. Kharouf, because students "prefer to stay with their families."

types of specialized manpower requirements for the future.

This process is completed manually, rendered somewhat simpler through the judicious initial entry of students on each school list in descending order of their school grade point average. Working down the list for each feeder school, as many students are admitted to their first choice of specialization as there are places available to graduates of that school.⁴⁰ When a given specialization is filled, remaining students for whom it was the first choice receive their second choice, and so on down the list. About 5 percent of students leave school after grade 10, some officials claim due to disgruntlement in their specialization placement; however most students remain in school or the VTC even though they may not receive their first choice of specialization.

The General Examination. Every year, in December and again in June, about 66,000 second-year secondary students sit for the General Examinations in as many as seven subjects. MOE administrative preparations for the exam typically begin in August or September, when the General Directorate of Examinations and Evaluation sends out examination registration forms to be filled out by schools (Appendix C, Form 13). Schools are requested to indicate on these forms the names of all students who will be taking the General Examination and in what subjects. By October the forms are returned to MOE/Examinations, which passes them along to the General Directorate of Computer. Students' names and schools are entered into the Examinations database during November.

In the first two weeks of December, all students intending to sit for the exam are assigned a pair of unique code numbers -- one "public" number and a second, "secret" number retained only by the Examinations Directorate and used for identity verification. Printed identification cards, indicating student name, public code number, and other information are produced for each student; one copy of each card is distributed to the student and must be presented for entry into the examination hall, while a second copy is filed at the Examinations Directorate with a recent photograph.

At the same time, district directorates send out convocations to teachers for examination supervision duty, and locate and reserve suitable examination halls (typically school assembly halls with 100- to 120-student capacity). For the annual average of 66,000 students, about 900 halls are needed. Meanwhile, examination questions are drafted by teachers according to Curriculum Directorate specifications; reviewed, selected, and revised by Curriculum Directorate subject specialists; and printed. Examinations in all subjects appear to follow a general format of 10 essay questions or multi-step problems, depending on the subject area.

⁴⁰ All feeder schools in a given neighborhood are entitled to an equivalent ratio of student placements in the secondary facilities available there. Thus, unlike many procedures carried out at the central MOE level, the feeder school rather than the district is the unit across which resources, in this case secondary school places, are distributed.

On the morning of a given examination session, district-level Examinations staff deliver the exact number of examinations and answer sheets required, pre-counted and sealed in heavy envelopes, to the appointed chief proctor at each examination hall. Law requires at least two proctors in every administration hall, and at least one proctor for every 18 students. All completed examinations from a given hall are collected and sealed on site into a single "box" for each subject and hall, and delivered by the proctors to district-level staff, who bring them to Amman for corrections.

All General Examination corrections take place in Amman; teachers convoked by their district for correction duty must come to Amman for this purpose. For every student and every question in every examination, there is one corrector and one reviewer, both of whom correct and score the response (using pens of different colors). Correctors and reviewers enter and initial the scores for each question on the cover of the answer sheet. If there is considerable discrepancy between corrector and reviewer scores on a given question, the two parties discuss the matter and seek a compromise. A third person then checks all correctors' and reviewers' scores on all questions, and also initials the form. The quality of work by all General Examination correctors is evaluated by Examinations staff; this evaluation is used to inform decisions on subsequent corrections convocations.

Once all examination papers in a given "box" have been corrected, Examinations staff complete a form summarizing the scores in the box (Appendix C, Form 14). Using one line per examination paper, final scores on each of the ten questions in the exam, as well as the total score, are entered on the form. No student names or numbers appear on this form; only the box and examination paper numbers are indicated, allowing identification only when combined with a separate data file containing a master list of student identification numbers. The information contained on this form is entered on one of four working computer terminals in the central MOE Examinations Directorate, connected to the CPU in the Computer Directorate. All computerized General Examinations data are stored in the CPU of the General Directorate of Computer; the data are then accessible through terminals located in the General Directorate of Examinations and Evaluation.

The data entry of all examination scores as well as absentee information should be completed by January 15. Manual and computer entries are cross-checked as data entry progresses, such that first-pass validation of data entry is completed by about January 20. The entry of the master list of secret code numbers takes place between mid-January and early February. The separate data files containing students' scores on different subject areas may then be merged with this key list, creating a single record per student which contains all subject scores. The printout of this file is checked against a second manually completed summary form which contains the student's name, number, seat number, and total scores in each subject (Appendix C, Form 15).

When all cross-checks are completed and corrections made, generally by February 10 or 15, the Committee of Education examines the score spread, determines passing scores in each subject for that year, and announces examination results. The results are sent to the district directorates, which distribute them to schools, where they are posted. A few weeks after

individual results are announced, national, district, and school-level subject score averages are provided to districts and schools for review and discussion. This computer-printout report includes the name of each school and the number of students in it, the average score achieved in each subject, and the number of passing students. District supervisors and headmasters may discuss the results and means of improving averages.

By March, the General Directorates of Examinations and Computers embark on a second cycle of preparation, for the June session of the General Examination.

D. Summary

The present section described a selection of the most important tasks in planning and development, administration, and education confronting units within the Jordanian Ministry of Education.

Planning and development tasks include annual estimations of the following year's student enrollments and school staffing needs, the initial design and technical steps in school construction, the preparation of the statistical year book, the handling of special requests for data analysis, and the long-term planning of human resources, still in its infancy in Jordan. Nearly all of these tasks require extensive collection of information and its vertical transfer from schools to district directorates and from districts to central Ministry offices. Joint consideration and processing of the information gathered may occur horizontally, as required by specific tasks. In this way the directorates of Planning and Education worked together with the districts to determine the numbers and mix of specializations and levels of teachers needed for the following school year. The adequacy of existing school facilities to accommodate growing student enrollments is also determined by these units, leading to directives to the General Directorate of Projects and School Building for the construction and rental of additional facilities when necessary. The preparation of the Statistical Yearbook and special data analysis requests involves the close coordination of Statistics and other MOE units and parties with the Directorate of Computer; the evolution of long-term human resources planning is envisioned to entail the sharing of information across Ministries of Planning, Labor, Education, and Higher Education. Apart from this last task (still in the early stages of development itself), the volume of vertical and horizontal coordination and cooperation appears to be extensive and generally quite effective in the accomplishment of each task, although in some cases it may be inefficient, burdened by bureaucracy, or not fully satisfactory to all parties involved (discussed in Section V. below).

Administrative tasks described here include the hiring and posting of personnel, the purchase of equipment and materials, and the process of textbook provision and distribution. Personnel hiring constitutes the implementation of the staffing needs determination formulated by Planning, Education, and Personnel Directorates, and requires cooperation with the GOJ Department for Civil Service Employment. The latter two tasks require the receipt and processing of material needs information from schools and districts by the General Directorates of Financial Affairs (for equipment and materials procurements) and Curriculum and Educational Technology (for

textbooks).

Principal educational tasks confronting the MOE include curriculum and textbook development, both currently under extensive revision as a part of the Educational Reform; teacher evaluation and advising; and student evaluation procedures including school-level year-end evaluations for the grade promotion decision, streaming of basic education graduates into secondary tracks, and the administration and results processing of the General Examination for entrance to higher education. Curriculum and textbook development appear to rely little on empirical, objective data from schools or districts, apart from the professional experience of the subject specialists (both MOE employees and external parties) who produce the new materials, and the critiques of existing texts and curricula received from teachers and district supervisors in the field. Teacher evaluation involves extensive school-district contact in the form of three annual visits to every classroom by district supervisors; student evaluations and promotion decisions entail both school-district and district-center transfer of information and, in reverse motion, the handing down of decisions.

The functional rather than structural organization of this section belies the fact that many of the tasks described involve and depend on cooperation across several organizational units and levels of the system. At the same time as such structural cooperation occurs, however, one notes a curious lack of coordination across functional domains. Much of the information gathered for administrative purposes, for example, could be employed in trend analysis, thereby making a valuable contribution in planning efforts. Similarly, information gathered for student and staff evaluation could potentially be used to inform administrative practices, and yet such a use was not apparent. Finally, there is considerable duplication of effort in the practice of gathering information without a view to its potential multiple functions: in many cases the same information is solicited several times a year, through several different forms emanating from different offices for different purposes. A full discussion of the strengths and weaknesses of current task approaches is reserved for the following section.

V. Critical issues in task accomplishment

In the course of interview discussions about major planning, decision-making, administrative, and educational tasks of the Ministry of Education, a number of critical factors affecting their accomplishment in timely and satisfactory manner were identified. Among these factors were the quality and sufficiency of data, coordination across and efficiency within MOE departments and other units, issues of staff expertise, motivation, and continuity, broad attitudinal and social frames within which planning tasks are currently performed, and concrete resource limitations. An examination of these factors reveals systemic as well as discrete problems in need of attention if real improvements in the system are to be designed and implemented.

A. Data quality considerations

To the extent that MOE policy and planning decisions are based on empirical information about the system, the quality of that information -- its accuracy and sufficiency for the task at hand -- has an important effect on the soundness of those decisions. Concerns in this area were expressed at several levels of the system, by district directorate division and section heads, central MOE heads and directors, and by the General Secretary himself.

Lack of adequate data validation. The principal method of determining the accuracy of data provided by schools and district directorates on the numerous forms and tables they are required to fill out every year currently involves consistency checking within and across forms. This method has the drawback that most data are typically provided by a single original source, namely the school administration; even information compiled at district offices is often based on the aggregation of data sent to the district by schools rather than on direct school visits. Checking data consistency by routinely asking schools for the same information several times each year, furthermore, has limited value as a validation procedure, since as one district-level Administrative director noted, "if the numbers are different there is usually a good reason," given that they were reported at different points in time and the school is an ever-changing community. The quality of data is also monitored in individual meetings held by district-level Planning section staff members with school principals, to discuss the sources of their figures and estimations prior to sending this information on to MOE-Central, but the method's subjective nature limits its utility as a means of validation.

Potential for bona fide external validation exists in the extended role of cooperative supervisors. All educational supervisors at the district level, in addition to their classroom observation and teacher-supervision duties that may cover a range of 60 to 70 schools, also have a "cooperative supervision" role in 6 or 7 schools. In this role they provide consultative assistance to the school principal on administrative matters and the preparation of statistical forms. According to a district-level administrative director, these supervisors also conduct independent surveys of equipment, supplies, and personnel needs of the school, reporting their findings independently to the district office, and completing twice-yearly administrative and technical performance reports on the principals in their jurisdiction. The reports

provided by these supervisors allow some external validation of estimates and figures provided by schools, but the systematic use of this information as a validation tool appears to be up to the discretion of the directorate and may not be fully exploited.⁴¹

Curiously, the mechanical checking of data accuracy may err on the side of overkill, becoming nearly obsessional in some units such as Examinations and Evaluation. Here the transfer of General Examination results information from examination papers to multiple manual forms and computer files is painstakingly verified at each step and for every single record, rather than using a systematic sampling for spot checking or relying on a single computerized cross-checking program.

Need for more data. A number of MOE officials raised the concern that a lack of certain types of data, notably up-to-date and community-specific information on population growth and movements, has led to an inordinate dependence on "intelligent guessing" in the estimation of school enrollments. The General Director of Education and Supervision expressed concern, for example, that little information on student transfers from other, especially private, schools is employed during the Spring meeting at the central Planning Directorate to determine annual teaching staff needs, and that there is no information at all on the number of students returning from abroad.

There is currently no school map with up-to-date information on population clusters in Jordan. Even on a small scale, staff members in the Amman-1 directorate reported that to their knowledge, no census of a neighborhood population had ever been attempted by a school principal or district official to determine the real number of school-age children in the community. The Director of Planning in the central Ministry indicated that the Planning Directorate, with support from UNESCO and the IIEP, has launched a project to develop a school map of the kingdom, beginning with training and demonstration of the process at the district level.⁴² He expressed the hope that with this map, more accurate estimations and projections could be made on the basis of specific population clusters, rather than by the current "five percent" method which assumes a constant population pattern across the country. The General Director of Projects and School Building suggested that the BRIDGES Project could also assist in this work.

⁴¹ Resource limitations may also hamper the implementation of validation and supervision efforts. As reported by an Irbid section head, the directorate has too few vehicles to keep up with the intended schedule of weekly school visits throughout the district.

⁴² The district of Jerash was the site of training and case study; 40 local and central Planner-trainees participated in the program, conducting a census of the district's school-age population by clusters coterminous with existing school catchment areas, and producing multi-year enrollment projections using real promotion, repetition, and dropout rates for the district and additional economic data.

Inaccuracies in estimation. The entire estimation process is done manually. As explained by an administrative director of the Irbid office, "estimation of the number of students in any one school depends on that of all other schools," and estimation for all schools begins with the assumption that the first grade class will be 5 percent larger than in previous years.

While views among district-level officials on the level of accuracy of estimations varied, frustration with the rigidity of the "five percent" formula was a common refrain. Some argued that schools possessed the knowledge and information required to make more accurate estimations, but were constrained by MOE procedure. The academic education section head at Irbid asserted, "We at the district level have the same information as the central Ministry. But our understanding is also based on experience, while central Ministry decisions are based on formal procedures only... Principals' estimates of school needs are never better than 80 percent accurate, because the Ministry requires them to use a fixed rate of 5 percent growth in grade 1, which does not capture all the factors. The principals would make closer estimates if they were allowed to use their experience and knowledge of transfers, migration, and dropout."

The central Planning Director observed that social as well as financial considerations are prime incentives for the MOE to "do it right the first time." Inaccurate estimations and poor planning may result in a school without enough teachers -- and that is bad for public relations. According to this director, the range of accuracy of the Spring estimations seldom varies by more than 5 percent in either direction, although others have claimed as much as 40% overestimation and more (see below) in some districts.⁴³ The problem is most acute in the large urban districts. In the city, students are assigned to specific schools according to space availability, residence, and complicated feeder school patterns. The process is somewhat more straightforward in villages, where typically all students leaving one level and entering the next come to the same school. Zarqa, while a very large urban directorate, does not have the estimation problems encountered in other cities, according to the General Secretary. His observation would seem to recommend a case study comparing estimation practices and population movements in this district with those of other urban centers.

In the view of the General Secretary, the current methods of collecting and "somehow" processing annual enrollment and staffing needs estimates "... have proved to be a complete failure. We are talking about 400 percent [overestimation]." In his view, slight overestimations factored annually into the figures have accumulated to the point that they now far exceed a

⁴³ An Irbid District Directorate Administrative head stated that final estimations are typically about 90% accurate; while the General Secretary of the MOE complained of gross overestimations especially in large urban areas.

reasonable "margin of safety" in certain districts, notably Amman 1, Amman 2, and Irbid.⁴⁴

An expression of frustration with the central Planning Directorate's "adjustments" to estimations coming from the field was voiced by district officials. According to one Irbid administrative director, "Whenever the [central] Ministry changes the figures, this creates problems for the district office, for principals, and for teachers. We spend three months working overtime preparing these figures... We are more familiar with the actual situation. We must negotiate hard with the Ministry to achieve the minimum acceptable solution whenever there is a difference of opinion."

The issues of data adequacy and enrollment estimation methods discussed here present specific problems in their own right. They also reflect broader, more systemic issues of organizational coordination and cooperation, level of expertise and understanding with regard to data integrity and utilization, and Jordanian conceptions of education and attitudes toward planning efforts generally. These topics are discussed in turn below.

B. Institutional efficiency and coordination of information management

Many departments within the Ministry of Education engage in system-wide data collection for their own purposes and needs, and often process massive amounts of data manually, by extremely time-consuming, painstaking, and potentially error-ridden means. These practices continue despite the recognition on the part of many that they involve considerable duplication of effort across departments, and might be admirably served by inter-unit cooperation and in some cases by computerization.

There are a number of explanations for the persistence of ostensibly inefficient practices. The front-end costs and organizational headaches involved in a large-scale move from manual to computerized methods of data processing may be perceived as overwhelming, even if their potential longer-term benefits are well appreciated. Individual departments may desire to retain data ownership and control, for pragmatic as much as political reasons. Third, existing institutional structures intended to permit horizontal coordination and cooperation across ministerial units, where they exist, are themselves often bureaucratically cumbersome and inefficient. These and other aspects of the efficiency problem are examined here.

⁴⁴ Another, related complaint voiced by the General Secretary and others is the miscalculation of true school capacity in estimation efforts. Given inefficient resource management, according to the General Secretary, school directors tend to underestimate the capacity of owned school properties; the typically smaller size (and therefore capacity and student-teacher ratio) of rented classrooms is reportedly also insufficiently considered in estimations (see Section V.D. on "Resource management" for further discussion of this point).

Manual versus computerized data processing. Most directorates in the MOE and in district offices still maintain and process manually the great quantities of information gathered. Examinations, Statistics, Financial Affairs, and Personnel in the Central MOE are the only directorates and divisions that routinely use computers or exploit the facilities of the Computer Center for often massive information management tasks.

Nonetheless, verbal advocates of computerization were plentiful in both central Ministry and district offices. The Director of Planning, for example, cited computerization of enrollment and staffing estimations as one of the greatest needs in the Planning Directorate. In his view, given constantly changing patterns of school enrollment in Jordan, the estimation function should ideally be readily adjustable; current manual methods of estimation are much more difficult to change than a computer program would be. One technical director in Amman-2 district also advocated computerization for the complicated task of distributing of students into academic, technical, and vocational tracks. The process, severely constrained by time (a few weeks in July), is often marred in his view by the inefficiency and inaccuracy of the current manual approach.

The General Director of Administrative Affairs considered his filing division to be in greatest need of computerization, due to the sheer magnitude of data routinely gathered, processed, and stored there. A tour through the file storage office confirmed the massive quantities involved: two long rooms each were filled with floor-to-ceiling shelves of vertical files that lined all four walls and stood in closely spaced rows in each room. The General Director cited human error, inefficiency, and misfiling of Personnel records as being much greater with manual methods, echoing a similar complaint of the Egyptian MOE Personnel Directorate described by Toronto (1989, p. 50).

Amman-1 and Amman-2 administrators voiced interest in computerization to facilitate the massive and complicated task of orchestrating the placement and especially the transfer of teachers. According to an Amman-1 division head, more than half of all teachers within his district annually request transfers to schools closer to home or to schools near the University because they are taking courses, or for other reasons. The job of weighing all the factors is very complicated to do manually, and accuracy is at a premium since one mistake could have serious repercussions. A teacher inadvertently overlooked for a transfer could raise a damaging argument if the individual hired in his place had "even 10 days less seniority." An Amman-2 director was also interested in the theoretical possibility of monitoring cross-district transfer requests by computer. Could he determine, for example, which teachers in which specializations had made requests to transfer TO his district?

In some cases, the manual methods may still be adequate, even preferable to computerization. The head of the documentation center, having attended a UNESCO-sponsored seminar in Paris on bibliographic techniques, returned dismayed with the emphasis on computerized systems during the seminar, which she found to be unrealistic for many developing countries. She also felt that the relatively small size of holdings in Jordan's MOE Documentation division did not warrant the massive effort computerization would involve, especially given more pressing and still unresolved problems of personnel and space that

continue to plague the division. Her assessment is probably accurate, though one could imagine a "gradual" effort that would introduce computerization of new acquisitions only.

Existing capacity for computerized data management. In the words of the General Director of Educational Planning, Research, and Development, "The World Bank has discovered, for example, that we have a great database but that it has not been organized in the most efficient way." This observation among others led to the creation of the NCERD so that one common database could be established, and diverse research efforts coordinated.

As noted earlier, the Statistics division of the central Planning Directorate of the MOE oversees the collection, processing, and dissemination of basic statistics on the educational system, in the form of the Annual Statistical Yearbook. In the process, the central MOE CPU is provided with an annually updated database on student enrollments. The entire cycle from the distribution of the statistical form to the publication of the statistical yearbook currently takes about one full year, however, such that the yearbook cannot be relied on to provide information to other Ministry departments in time for them to accomplish their own information-dependent tasks. Even a one-page summary flyer of the most basic current education statistics required several months to produce. It took one month alone, according to the General Director of Educational Planning, Research, and Development, simply to convince colleagues of the value of producing such flyers.

It is currently also possible to procure access to information stored in the central MOE CPU before it is available in published form. But the formal procedure for making such requests is itself a bureaucratically complex and time-consuming process (see section IV.A. above) in its present form. And while informal ways to sidestep some of the more time-consuming bureaucratic aspects of this procedure exist, typically through personal contacts, they are not routinely or universally available. In addition, the Computer Center has reached a virtual ceiling with regard to the capacity of its current manpower and material resources to accomplish routine, let alone special, data processing tasks in short order.⁴⁵

Control of information. Under the current organizational structure of the MOE, individual departmental control may be the best, perhaps the only, way to ensure that the right data will be available to the department at the right time, even if it requires frantic overtime efforts by department staff at certain times of year. Further, there was evidence that computerization is viewed by some senior administrators as the relinquishing of data control to junior technical staff.

The General Director of Administrative Affairs raised the importance of information control for reasons of confidentiality, taking the position that there should be a dedicated CPU within the Personnel Directorate itself.

⁴⁵ Plans for a large project to increase the capacity of the Computer Center are currently under consideration by the World Bank, according to the Director of Computer.

Because of the special nature of the information needs of the directorate, in his view, those working with personnel data should be personnel staff. He explained that the MOE has about 50,000 employees, 42,000 of them teachers, and each has two files: "one is confidential, and one is very confidential." Dr. Davis' suggestion of a special access code for Personnel database to avoid breach of confidentiality was received with some interest. Concern for confidentiality was also expressed, with good reason, by the General Director of Examinations and Evaluation, which maintains its own terminals for data entry and has an elaborate system of secret identifying code numbers.

Coordination and cooperation across units. At central MOE offices, horizontal communication and cooperation across directorates was typically described as poor. In the words of one director, "... coordination in the MOE is dead -- each director has his own empire." The General Director of Curriculum and Educational Technology cited the example of textbook distribution. Although the Supply Directorate of Financial Affairs in the Ministry routinely orchestrates the distribution of other educational materials, it will not assist in that of textbooks even at peak times of year. "We always ask for assistance from other directorates, but we don't find it," lamented the General Director. Even the General Secretary, while arguing that coordinated scheduling of data collection and other activities across directorates is improving, it is still far from optimal.

The General Director of Financial Affairs expressed a desire for a more complete, centralized database on educational finances. While the flow of information from other central units and district directorates is institutionalized for certain categories of financial data, routine bureaucracy makes the process less efficient than it should be, and excludes some categories of data to which Financial Affairs directors insist it should have direct access. Financial Affairs makes use, for example, of district-level information on capital and recurrent expenditures gathered annually by the Statistics Directorate. But it currently does not receive what the General Director considered to be timely or accurate information regarding certain types of school revenues such as school fees, school stores receipts, and Red Crescent donations. School fees alone can result in considerable revenue, ranging from JD 3 to JD 6 per student; these fees are collected in September and the amount received is conveyed by FAX to the Directorate of Finance (which is entitled to 35 percent of the total), but the General Director expressed doubts as to the accuracy of this information.

Some central directorates also have considerable autonomy in the management of their finances and financial information. Personnel salaries are managed within the General Directorate of Administration; the planning budget within Educational Planning, Research, and Development; donor-agency-funded school construction projects are the domain of Projects and School Buildings.⁴⁶ The General Director of Financial Affairs and the Director of Accounting expressed a preference for control over the management of the entire educational budget, including these portions.

⁴⁶ The General Directorate of Financial Affairs does, however, administer the financing of MOE-built schools.

Across ministries, coordination and cooperation is even more limited. The General Director of Curriculum and Educational Technology cited the example of pre-service teacher training course design. In his view, it would be logical for his unit to work directly with higher educational institutions and the MOHE to develop training courses that reflect the content and goals of the current curriculum. But typically the only input the Curriculum Directorate has in this effort is to supply the University system with curriculum documentation; university professors then design the pre-service training course syllabus in part on the basis of these documents. In the point of view of the General Director, this level of cooperation does not adequately convey the curriculum to pre-service teachers, but may be due to an elitist tendency in Jordanian universities.

Similarly, according to the Director of the Human Resources Directorate in the Ministry of Planning, the reportioning of secondary-school specializations as laid out in the Educational Reform involved no direct formal communication or cooperation between the Ministries of Labor and Planning and the MOE. It was shaped, rather, by Cabinet directives and the broad outlines of the general Development Plan.

District-center coordination. Within district directorates, administrative staff in Amman-1, Amman-2, and Irbid described a high degree of cooperation across units. Amman-1 administrative and technical division heads, even in the absence of the District Director, described a democratic, cooperative approach to the appointment of school principals and other decisions.⁴⁷ An administrative director in Irbid observed that while specific divisions and sections within the directorate are ultimately responsible for specific tasks, the accomplishment of many tasks is in practice often governed by timetable rather than organizational structure: "In this directorate, there is very good cooperation among the divisions and sections. We help each other out when there is an important deadline."

Coordination and cooperation between districts and central MOE units, however, despite joint periodic meetings on annual planning and other issues, was deemed to be much less satisfactory by district-level staffers. The mismatch or lack of coordination between the "unit" of planning at the central level (the district), and that of implementation at the district level (the school) was identified as an important source of many of the staffing problems

⁴⁷ The Director of Amman-1 District described his intentions and efforts to decentralize authority in his directorate, by giving subdirectors nearly full autonomy in their activities and decisions, and by taking a democratic approach to decision-making with the full participation of all five subdirectors. While he has authority to appoint a school headmaster, for example, the Director typically discusses the matter with his five subdirectors and together they reach a decision. Recently, when 26 individuals applied for a single headmaster's post, the Directorate designed and administered an examination, on the basis of which the four best candidates were identified. All 26 candidates, along with the Director and 5 subdirectors, then voted as to which of the four would be selected.

encountered by districts -- the volume of staff transfer requests, mismatches between teacher specializations and appointments, incomplete teacher courseloads, and courseloads requiring the preparation of several lesson plans for multiple levels.

In the view of an Irbid division head, district-level decision-making has the advantage of a closer perspective and understanding of day-to-day problems in the field. He posed the example of a teacher who for 15 years has been teaching outside of his original specialization. The central MOE still considers this individual to be a specialist only in his original area, even though by now he has greater expertise, experience and familiarity with teaching the second subject, and may even resist a posting in his formal specialization.

The problem of courseloads was also described in some detail. As one Irbid official explained, a secondary-level English teacher, for example, is legally expected to teach 22 sessions per week. The central MOE calculates the number of English teachers needed in a district by considering student enrollments across the entire district; a given school, however, may require only 15 English sessions per week. Current solutions to this "partial load" problem include requiring a teacher with a different specialty to take on the English hours, or requesting that one teacher divide his or her time across two or more -- hopefully adjacent -- schools; part-time or overtime appointments are not legally encouraged. In general, and with good reason, teachers and educational supervisors typically resist such "solutions." This problem is especially common in the less-numerous vocational schools and specialization areas.

A multitude of forms. A quick perusal of the annotated listing of MOE information-gathering forms (provided in Appendix C), while only a selection, gives some idea of the amount of form-filling school and district administrations engage in, and the extent of duplicated effort in the process. A variety of incidental forms are also distributed for specific purposes by subdirectorates, supervisors, and others, to collect on-the spot information that may or may not be collected in the standard MOE forms. Occasional forms are distributed by districts, for example, to canvass students on their preferences for particular student affairs activities, or to determine parents' interest in adult literacy courses.

A striking duplication of information is evident in several of the standard forms. Personnel, Planning, Statistics, and Education and Supervision, for example, each collect virtually identical data on the experience and qualifications of the teaching staff in every school. This phenomenon has prompted at least one school directress, mildly exasperated by the repeated requests for the same school staff data, to inquire why the MOE has not established a single central bank of such information.⁴⁸ Some

⁴⁸ The two other school directors interviewed, while they acknowledged the large number of forms, did not appear to share this frustration -- one, because her school had so few staff and students that most forms required only minutes to complete; the other, evidently, because he left the task to

directorates in which the nearly parallel forms originate explained the phenomenon with the argument that their information needs occur at different times of year. A few have also expressed the conviction that the effort involved in information collection, while great, may be smaller than that required under the current system simply to gain access to information gathered by another department.⁴⁹

Nonetheless, certain parties in the MOE appear to have embraced the idea of a more coordinated information collection procedure. The Education and Supervision General Directorate has recommended the institution of a single booklet of information on each school. The proposed school booklet, which exists in draft form, would include information on school facilities, administrative and teaching staff timetables, student enrollments, and other school-level data. This single booklet, it is argued, could be compiled every year and provide information to all central directorates. Also proposed is the maintenance of a single cumulative record on every student in the system; a draft of this record includes spaces for the recording of annual student achievement scores, health, attendance, comportment ratings, school transfers, and other material (Appendix C, Form 16).

C. Personnel factors

Many of the problems encountered in relation to the efficiency and accuracy of data collection and management, the use of information, and the quality of planning efforts can be traced to personnel factors. Insufficient or inappropriate technical expertise, limited appreciation and understanding of statistics, and often high turnover of MOE personnel were among the most pressing personnel problems cited by MOE directors and division heads.

Technical expertise of staff. Nearly all central MOE officials and directors interviewed expressed dissatisfaction with the level and appropriateness of the expertise of staff members. The General Director of Financial Affairs indicated that many of his staff were not sufficiently specialized, although he believed they would benefit from in-service training if it were available. The General Director of Educational Planning, Research, and Development described staff members in several divisions of his unit (especially Planning, Statistics, and Budget) as typically possessing either practical experience or formal training, but seldom both. The Planning Directorate does offer in-service training opportunities,⁵⁰ but staff who complete such training often leave soon afterward for the private sector.

administrative assistants who required only minimal supervision from him.

⁴⁹ Toronto has reported a similar phenomenon of parallel information gathering efforts in Egypt's MOE (1989, pp. 105-106).

⁵⁰ As indicated by the Director of Planning, the Planning Directorate has conducted annual short training seminars in particular specializations for several years. In addition, some staff have taken university courses and earned degrees while working.

In general the overall size of the MOE staff was described as sufficient, even excessive, although directorates with highly specialized professional staffing needs such as Examinations, Documentation, Planning, and Research have suffered severe staffing shortages. For the past 2 years the Directorate of Research, for example, has had only 2 professional staff members in each of its three divisions, although about 40 studies were requested during that time. According to the director, it is difficult to find and retain appropriate, qualified staff because there are few incentives for good work, and because many activities expected of staff members, such as keeping abreast of the literature through extensive reading, typically extend far beyond formal office hours. The head of Documentation, similarly, indicated that few staff members have such formal training in documentation or librarianship, but must develop their skills on the job.

Plans for the extension of computerization in MOE departments also carry with them important personnel considerations and problems. Planning and Budget staff, for example, are accustomed to manual rather than computerized work; computerization of these units would require a considerable effort in computer skills training, for which there are limited financial resources. In order to move to larger-scale computerization, the General Secretary of Administrative Affairs stated that the Personnel directorate would have to augment its staff; currently only one staff member has relevant technical training in computers.⁵¹

Staff turnover versus continuity. High rates of staff turnover in many MOE departments are often most acute among the best-trained, reflecting an "internal brain-drain" to the more lucrative private sector. High turnover rates can create severe problems of discontinuity in procedures and methods by which information, documents, and procurements are classified, stored, and used. The problem is compounded in contexts of little formal training, as new staff members typically develop their own idiosyncratic ways of accomplishing tasks, and where resource constraints may virtually require the development of creative, unconventional, and often nonsystematic solutions.⁵²

⁵¹ The Government of Jordan is consciously developing a next generation with computer skills. Computer classes, introduced in 1982, are now offered twice weekly to 10th grade academic in dozens of schools around the country; computer training is also offered within the commercial track in vocational secondary programs.

⁵² The MOE Documentation unit, comprised of a long central hall area and three small (10' by 10') rooms on either side for both work space and storage, exemplifies the often severe spatial and other resource limitations within which staff must operate. Almost every wall and windowsill was covered from floor to ceiling with shelves of books, periodicals, and documents in box files. In many cases recently procured books and documents were arranged out of order, due to the lack of shelf space, of available staff time to shift books and boxes, and of any procedure for the disposal of outdated materials. The resulting patchwork of multiple sections devoted to a single topic area, most severe in the documents storage room, made the retrieval of a particular document almost entirely dependent on the memory -- and the continuity -- of

Further, shifts in personnel, whether at higher or lower levels, may jeopardize the conduct and completion of long-term projects. New employees with a lower level of interest or investment in projects begun under previous staff may delay project completion out of simple neglect. Changes at the top of the Ministry, likewise, may result in changes in the types and format of information deemed worthy of collection, threatening the establishment of an historically comparable database.

On the other hand, too much staff continuity may have its own drawbacks, as old habits die hard. The General Director of Educational Planning, Research, and Development, for example, cited difficulties in encouraging people to change their methods or accept new practices. As he observed, if changes such as computerization are to be successful, people will need incentives to accept retraining and reorientation.

Level of understanding and appreciation of statistics. According to the head of the statistics division of the central MOE Planning Directorate, "over 80% of school principals do not understand the importance of statistics." This view was echoed by several district-level officials as well, and was of concern because school principals represent the source of most statistics about the entire system. If school administrators approach the task of providing information to the Ministry without a proper understanding of the importance of accuracy, it was argued, the quality of the data provided might suffer severely.⁵³

In response to this concern, MOE district-level Planning staff currently hold seminars on statistical procedures for school principals and other administrators, and cooperative supervisors are available in principle to assist school administrators in completing the numerous forms they receive. The central MOE Statistics head and an Irbid administrative head, among others, considered these supports still insufficient, however, and called for additional efforts to convince practitioners of the importance of statistics, and to provide more training and supervision in this domain.

D. Attitudinal and conceptual considerations

In addition to the relatively concrete concerns of data integrity, institutional structure, and personnel expertise that affect the accuracy and advance of educational planning and development efforts in Jordan, there are perhaps more subtle, but no less powerful influences of attitudes and conceptions about planning and the educational system held by MOE officials and the general public alike. Identifying the attitudes and conceptions that underlie practices and institutions is an essential step in understanding these practices and institutions; attempts to effect change are likely to fail if no attention to them is paid.

particular staff members rather than on any formal system.

⁵³ A similar concern among Egyptian MOE staff was reported by Toronto (1989, p. 98).

The "lack of trends" argument. Perhaps the most striking conception confronting educational planning efforts in Jordan, shared even among professional planners, is that Jordan's unique political and economic situation has resulted in a complete lack of discernible historical trends in population, public school enrollments, or labor markets. This situation in turn, it is argued, has rendered the entire planning enterprise extremely difficult if not futile. As expressed by the Director of Planning in the central MOE, "If you want to plan you must have fixed fundamentals" -- which in his view do not exist in Jordan. The General Secretary echoed this sentiment with the example of movements to and from private schools: "There is no discernible trend. If there were a trend we could use it. But this phenomenon is governed by a number of unforeseen external factors" -- the quality, availability, and price of private schooling; the larger economic situation; the capacity and readiness of particular families to send their children to private institutions even in periods of economic recession. Two years ago, the public school system was swamped unexpectedly by 9000 student transfers from private schools, due to a general economic slowdown. Even international economic changes can directly affect Jordan's internal educational system: slowdowns in Gulf State economies in recent years are believed to have been largely responsible for the abrupt and unexpected return to Jordan -- and to Jordanian public schools -- of 7000 children of Jordanians working in the Gulf.

The "lack of trends" perception extends even into the Ministry of Planning, where the next Development Plan may be itself in jeopardy. In the words of the MOP Director of Human Resources,

To be honest with you, for the next three or four years, nobody knows. We are giving priority to the private sector, but no one knows how this will work out. We are providing finance training to the private sector, and less and less to the public sector. There are human factors involved. We can develop expectations, but not more than that.

According to this MOP director, Jordan is currently in a situation of great economic instability; as a small country with an open economy, it is highly vulnerable to external political, economic, and labor market factors. This situation makes plan preparation a very difficult undertaking since, as he sees it, there are no valid historical trends on which to build a plan. Noting that the MOP is in the process of determining whether to produce a new development plan to follow upon the nearly expired 1986-1990 Plan, he listed the options being considered. These included: (1) producing a cautious three-year plan at the longest; (2) holding to the current development program outlined and sponsored by the World Bank and the IMF without producing a full plan per se; (3) developing short-term rolling plans to follow up the World Bank/IMF program; and (4) remaining with no plan at all. It is this last option that the MOP Director of Human Resources considered to be the most realistic option of all.

Even while insisting on a "no trends" argument, however, these same officials were able to make important, if nonsystematic, observations about contingencies influencing population migration patterns and other phenomena.

The MOE Director of Planning easily identified Amman, Irbid, and Zarga as districts most likely to have considerable population fluctuation, due to the in-migration of Palestinians and of rural populations during periods of poor agricultural production. The opening of a new housing project, similarly, may quickly increase the student population in a particular neighborhood. It is on the basis of such knowledge, the Director explained, that he has been compelled to slightly overestimate the educational resource needs for these regions from year to year. His decisions are guided, in other words, by intuitive sense and a general knowledge of current dynamics, rather than by empirically-based calculations.

Plans without planning. Even Plans that exist in Jordan often do not include an empirically-based, true "planning" component, but are rather administrative, implementation-oriented statements. As the General Secretary of Education insisted,

When you talk about 'planning' in a comprehensive way, you don't find it here. We have Plans, but not Planning. Once the general Five-Year Plan is laid out, a detailed plan for each sector is developed, but this is an executive and legislative plan. We are lucky now in education, with the Ten-Year Educational Reform Plan. We have plans now for everything. Fifteen or sixteen plans. You name it, there is a plan. Our weakness is in [empirical] planning activities, not the execution of actual plans. Our planning capabilities are very weak.

The "planning" of resource needs, for example, is typically taken on a yearly basis. The Amman-1 Director stated the opinion that planners should use current birth rates to estimate what educational needs will be six or seven years down the line. If such a projection could be made, the Director argued, the Government could purchase empty, privately owned lots well in advance of anticipated need, since it can take years to locate and procure suitable building sites, particularly in urban areas.

The results of plans conceived and implemented without sufficient planning -- some would argue, due to the impossibility of planning -- are well-illustrated in urban Jordan. The spanking new and spacious Amman-1 District Directorate building is a perfect example. It was built to serve as a public school, as the wide blackboard and built-in shelves and cupboards in every office readily reveal. But the school could not attract enough students, so the argument goes, because it is located in an affluent neighborhood in which most children attend private schools.

The current surplus of teacher training graduates, approaching 22,000 female and 500 male would-be teachers, is in part the result of another plan without (sufficient) planning, in this case the expansion and development of teacher-training colleges. A rather patch-like "solution" to this problem has been found, deliberately or fortuitously, in the Educational Reform's raising of the credentials required of teachers at every level; newly-graduated would-be teachers are thereby compelled to enter other professions, or return to the University.

Resource management. Creative management of existing resources, or the lack of it, was one factor cited in the success or failure of annual staffing estimation efforts. When rented school facilities are replaced with purpose-built facilities, for example, the increase in the student-teacher ratio that this change usually permits may not be adequately reflected in parallel changes in the process of annual staffing needs estimations. According to the General Secretary of Education,

Every year in Jordan there is an increase of about 25,000 to 30,000 students in the school system. [Because of this increase,] ... all schools assume they need more teachers every year. ... [But] student enrollment growth does not necessarily require more teachers... [because] appropriate school buildings can result in higher student-teacher ratios and fewer teachers and administrative staff... We build 100 new schools each year -- 140 in the last year [alone]. This year, the Planning Directorate requested 1800 new teachers, but the real need was negative.

The General Secretary also cited a lack of creativity in the utilization of existing school space. He suggested that older schools with small classrooms might be renovated with the removal of internal walls, for example, to create larger classrooms and allow a higher student-teacher ratio.⁵⁴ He also noted the typically conservative calculation of school capacity and the practice of dedicated classrooms. "If you ask a principal about the number of students or classes his school will accommodate, he will count the number of classrooms only. The other facilities, such as the library, laboratories, activities hall, and playground, are not counted, even though in many new schools there are six to eight such areas. Rotating classes [from room to room] could make better use of existing school buildings."

Others have argued that current estimation practices overestimate the capacity of schools. The General Director of Education and Supervision, for example, stated that annual estimations insufficiently considered the often lower student capacity of rented classrooms. Currently about 25 percent of all schools in Jordan are still housed in rented facilities, most commonly in urban areas due to the greater annual enrollment fluctuations in cities and to the relative lack of available and reasonably priced sites for new buildings. The General Director of Projects and School Building explained the Educational Reform's intention to replace rented facilities with owned, purpose-built schools as one of quality more than economics. While the cost of renting is not that great ("only 1.2 million JD per year", according to the General Director), rented facilities are typically unsuitable for educational purposes

⁵⁴ Culliyat Hussein is one such older school with relatively small classrooms. While educational quality may be served by such efforts, the student capacity of the school would be likely to decrease, as classrooms already average 40 to 50 students per room.

-- they are principally residential, and lack libraries, laboratories, and other special facilities.⁵⁵

Social factors. Perhaps more than many systems at a similar stage of development, the Jordanian educational system prides itself on providing an accessible school system that responds to public demand -- sometimes at considerable economic and pragmatic expense. The idea of increasing the school catchment radius in school building plans, for example, has been discussed in the MOE from time to time as a means of optimizing costs. But implementing such a change has been rejected in the past because of negative public reaction. As the General Secretary explained, "Jordanian students and parents are spoiled. They expect to have a convenient school in their own neighborhood. Two things are sacred in Jordan: freedom of labor movement, and education." The teacher surplus may also be explained in part as a function of social factors, according to the Director of Human Resources in the MOP. While job openings exist in relatively remote rural areas, female teachers tend to be reluctant to accept such posts.

As in many countries, the Jordanian public has also manifested considerable resistance to Government intentions to increase participation in vocational education. The Director of Planning at the MOE expressed the view that Palestinian immigration has increased desire for academic qualifications among Jordanians. Well-educated Palestinians are seen to be equipped with the "international passport" -- a university degree: if the need arises, they can go abroad and find work.

The Irbid Technical and Vocational Education section head cited a lack of incentive as a central obstacle to increasing vocational education participation. He stated, "We are a very ambitious society. But ... although we want to become a highly technical society, there is no incentive for technical training." For one thing, vocational students are not usually accepted into the University. Public perceptions were also implicated; vocational students are typically considered lower class. Further, families prefer to see their children in civil service desk jobs rather than the manual occupations in which vocational training typically results, even though such training has led many graduates into lucrative entrepreneurial endeavors, jobs in private enterprises, or work in the Gulf states.

⁵⁵ Madrasat Arjaan is one such rented school. Since 1965, Madrasat Arjaan has been located in rented facilities in a poor residential neighborhood of Amman. The school consists of four poorly-lit, 10' square rooms arranged in a row. A narrow terrace runs across the length of the school, giving on to a steeply-graded, rocky school yard enclosed by a 6' high concrete wall. Each classroom, housing 12 to 15 children, is equipped with one small window, a 3' square blackboard, a few printed and hand-made teaching aids on the walls, and low double desks with attached benches, some seating three children. The directress' office contains a rough wooden table, three chairs, and an armoire for storage. All rooms show signs of considerable water seepage in the ceiling and walls. A new school building about a block away, still under construction, is expected to house grades 1-10 when opened in Fall 1990, at which time this little school will be closed.

Despite such public opinion, Jordan has managed to increase vocational education participation from 5.3 percent in 1983, to a current level of about 28 percent. Part of this increase is clearly the result of deliberate policy, which now requires the streaming of 20 to 40 percent of all tenth-grade graduates into technical and vocational secondary tracks. But a considerable amount of effort is also being given to social marketing techniques which encourage positive public opinion toward non-academic options, a phenomenon attesting to the importance placed on public acceptance of educational policy in Jordan. A national redistribution of vocational education facilities is under discussion, in order to give students a greater choice of vocational tracks in accessible proximity to their homes. District-level vocational education units distribute flyers regularly to supervisors, teachers, and students to encourage the selection of vocational secondary education tracks; TV, newspaper, and radio spots are purchased nationally to advertise and encourage vocational education. Social marketing campaigns are also being conducted to encourage high school seniors to consider labor market entry and self-employment options, rather than higher education or the expectation of a civil service job.

E. Summary

This section has considered factors affecting the accomplishment of MOE planning, administrative, and educational tasks as observed by the author and as identified by directors and practitioners within the system. These factors included the quality of data and the means of data processing; the efficiency of task accomplishment and coordination across units; the expertise and task understanding of personnel; and some key attitudes and conceptions underlying the actions of individuals and units.

Data quality problems included inadequate validation of the accuracy of data supplied by schools and districts, lack of certain types of critical data such as regional population growth rates, and a rather primitive and arbitrary means of growth estimation. These factors appear to have allowed the continuation of unsystematic practices of enrollment figure-padding by certain school directors eager to secure sufficient resources for their schools, followed by extensive figure-trimming on the part of the central Ministry in an effort to correct. The result has been sometimes jarringly inaccurate final estimations, based largely on guesswork.

Issues of task efficiency and the coordination and cooperation within and across MOE units were discussed. Within units, the topic of efficiency elicited considerations of manual and computerized data processing. Many units still use manual methods which may or may not be viewed as satisfactory or efficient; those depending on the Computer Unit already have to face the fact that existing computer processing capacity has reached a virtual ceiling. Regarding the efficiency and quality of coordination and cooperation across units, considerable duplication of effort was noted. In partial explanation, data control concerns were expressed by directors and others for reasons of pragmatics, as when a given unit requires direct and timely access to given information in order to accomplish its task. In such cases, a unit may often prefer to "harvest its own," even if that effort involves a duplication of

effort already expended by another unit, rather than to risk delays and bureaucratic snags in securing the data from the other unit. A second reason behind data control was that of confidentiality, raised by Personnel and Examinations directorates. One gross indicator of coordination -- or lack of it -- in the information-gathering effort is simply the substantial number of forms distributed every year by different MOE departments, requesting highly similar if not identical information.

For these reasons and others, horizontal cooperation in the central MOE, except where required to perform clearly delineated, routine multi-unit tasks such as those identified in Section IV, was often described as poor. Similarly, district-center links were also regular and institutionalized, but characterized by district directors and division heads as a special variety of one-way street. While information flowed up to the central offices well enough, what came back down in the form of implementation directives, although formally "negotiated" with the districts, was invariably weighted in favor of the central MOE perspective, and according to district-level officials, often out of balance with the realities and challenges of implementation in the field.

Personnel problem areas raised by MOE directors included an inadequate level of technical expertise in many staff members. This problem is being addressed in some units by in-service training, but resources for such training do not exist in all units that could benefit from it. High rates of staff turnover were also identified as a problem, jeopardizing continuity in long-term projects and given the importance of on-the-job skill evolution in contexts of low or inappropriate initial expertise. The typically low level of statistical understanding or appreciation on the part of school directors and others responsible for the provision of most school-level data, further, has implications for the accuracy and comprehensiveness of the data provided.

Another broad area with implications for the progress of planning efforts was that of certain attitudes and conceptions held by MOE officials and the public. These included a notion evident even among top educational planners that Jordan's unique political and economic situation precluded the possibility of discerning any historical trends that might be of use to planning in the current period. This attitude may be in part responsible for a phenomenon, pointed out by the General Secretary for Education, of plenty of sophisticated and ambitious action plans produced without the benefit of bona fide empirical analysis or planning. The management of school facilities and other resources, moreover, was described as governed by outmoded and inefficient practices such as "dedicated" classrooms for given groups of students, even at the preparatory and secondary levels. The power of social and public pressures may be sensed in MOE reluctance to extend the relatively small school catchment radius used in decisions about school construction, and the apparent need for aggressive social marketing campaigns to "sweeten the pill" of increased vocational and technical secondary participation.

The problems facing EMIS development in Jordan may be formidable but for the most part they are not insurmountable. For one thing, MOE directors and division heads themselves identified many of the above issues, and would be likely to support actions for change in areas such as increasing opportunities

for in-service training at all levels of the Ministry. The most stubborn issues, on the other hand, are likely to include those involving the redistribution of control or power, such as decentralization of planning decisions and the notion of a single coordinated database, which raises concerns regarding confidentiality of information despite the assurance that there are means of limiting data access. Attitudinal reorientation among the most influential individuals in MOE planning operations toward greater reliance on systematic data, and among those who would design a strictly quantitative data-driven EMIS toward a full appreciation and use of the extensive qualitative knowledge and experience of these same individuals, may well be the first, and perhaps most critical, step.

VI. Recommendations in the spirit and context of the Educational Reform

The preceding pages have attempted to provide a description of the structure of the Jordanian public education system and the organization of its governing body, the MOE; the principal planning, administrative, and educational tasks and responsibilities of central and district-level MOE units; and some of the major problems impeding the accomplishment of these tasks. Placing special emphasis on the nature of information quality, flow, and utilization in the course of this study, we have seen that the Jordanian MOE collects a wealth of useful information on a regular basis and across a variety of topics from schools and district directorates of education, expending great efforts and resources in the process.

A number of serious problems, however, impede the usefulness of the information gathered to accomplish many of the tasks that depend on it. Among the most critical problems described or observed were data and estimation inaccuracies, a continued reliance on manual methods for the management of now huge amounts of data in many units, a computer center currently operating at capacity, and personnel with often insufficient training, expertise, or understanding to use empirical data efficiently and effectively for planning and decision-making tasks. In addition, there are lacunae of certain essential information in the MOE database (such as demographic information on population growth and migration by region), duplications of effort, and other signs of insufficient coordination across units. These problems have contributed to a data management process that is becoming increasingly cumbersome and inefficient, virtually overwhelming the capacity of several units on a regular basis. Compounded by a high overall population growth rate for the region, and complex and seemingly unpredictable migration and student transfer patterns, the situation has led to a number of economically and socially costly errors for the Jordanian educational system: overcrowded and nearly empty schools in the same district; teacher surpluses in certain fields and districts, and shortages in others.

Clearly an overhaul of the Jordanian MOE's current system of information management, if not long overdue, is a timely undertaking. The present section turns to the articulation of some of the first broad steps that will be necessary for the successful introduction, development, and sustainability of a more efficient and effective EMIS for Jordan. The effort will require attention to organizational structure, human issues, and the strategic selection of initial substantive problems to be tackled by the new EMIS.

A. Modifications in organizational structure

Capitalize on existing structures. The word "reform" (rather than "revolution") indicates an intention to build, whenever possible, upon the existing strengths of the system in need of change, and there is much of value to retain and develop in the current MOE. The nascent role of Assistant General Secretaries to facilitate cross-directorate coordination, for example, is to be encouraged. The regular meetings between school administrations and district directorates, and between districts and central MOE units, should

likewise be maintained, and developed further to allow more opportunities for true participatory decision-making.

The MOE's new capacity for in-house publication by the Educational Publications division of the central MOE Research and Documentation Directorate should also be fully exploited. This capacity should facilitate more timely and efficient dissemination of education statistics and other information than has been possible in the past, through practices such as the publishing and distribution of most-requested summary data in individual brochures before the full Yearbook becomes available.

Develop horizontal linkages within and across institutions.

Institutionalizing the opportunity for horizontal dialogue and exchange is an essential goal for efficient and effective decision-making and information management in a complex institution such as Jordan's MOE. The evolving role of Assistant General Secretaries as facilitators of such dialogue within the central MOE, described with enthusiasm by the General Secretary, is an important and positive step in this direction.

It will also be important for a new EMIS to strengthen and facilitate the MOE's potential for information transfer with other institutions external to the MOE. These include the Ministry of Finance (for transactions with the MOE General Directorate of Financial Affairs), the GOJ Department of Civil Service (for transactions with the central MOE Personnel Directorate), and the Ministries of Planning and Labor (for transactions with the MOE General Directorate of Educational Planning, Research, and Development, and the central MOE Personnel Directorate), and the National Center for Educational Research and Development (for transactions with the central MOE Planning and Research Directorates and the General Directorate of Curriculum and Educational Technology, among others). (see Davis, 1990, p. 4).

Coordinate data collection. Some organizational modifications will be required for an efficient and effective EMIS that features a single, central computerized database. If parallel data collection is to be reduced or obliterated, it may be advisable to establish in the central MOE a data coordination and collection department not affiliated with a specific General Directorate. Conversely, a committee with members from multiple units could be appointed to perform the role of data collection coordinators. This group could review the principal data forms, with a view to producing a single catch-all form such as that proposed in Education and Supervision, and would orchestrate periodic data collection activities. Likely units to be involved are Planning, Personnel, Education and Supervision, Textbooks, Examinations, Statistics, District Directorates, and Computer.

Decentralize data entry, access, and analysis. The establishment of regional capacities for computerization could reduce considerably the vast data processing burden of the central unit. This undertaking will require a large front-end effort, however, including organizational development, extensive training, and equipment provision at the district level. It will also require the institutionalization of regular advisory and technical support and supervision from the central Ministry, and a mechanism for the

routine periodic collection and processing of regionally computerized databases at the central level.

With the expansion of the computerized database envisioned in an integrated EMIS, routinizing access to and analysis of particular data sets by means more streamlined than the existing bureaucratically cumbersome procedure is also advised. In the development of a new procedure, the use of remote terminals for data access and analysis as well as data entry should be considered.

B. The human factor

At best, a management information system is only as good as the interest and capacity of its users to integrate its strengths and outputs in their administrative and decision-making activities. If not fully integrated into mainstream organizational routines and processes, and if not perceived by its intended users to respond to their needs or to provide real benefits to their work, the most elegant MIS risks becoming a white elephant. As stressed by Toronto (1989) and others, the surest way to promote such integration is to promote a sense of system ownership among its users, through their direct participation in all phases of system design, installation, and utilization. This approach also happily tends to result in better-designed and more responsive systems.

Identify key experts and influential figures. "The first step in change will be convincing people to accept it," as aptly stated by the General Director of Educational Planning, Research, and Development. As recommended by Warwick (1980, p. 398; cited in Toronto, 1989, pp. 144-145), it is useful to start with the identification of principal figures in the reform process whose support and cooperation are critical to the success of this process. In the case of Jordan, the climate for developing EMIS and planning capabilities in the MOE would seem to be right, given the Educational Reform now in progress, Crown Prince Hassan's dedication to planning generally, and his professed commitment to the Educational Reform. Jordan's Minister of Education, likewise, has expressed interest in a new EMIS that would facilitate the comparison of regional differences, improve financial and cost data monitoring, and allow decentralized data entry (Cassidy, 1990, p. 2).

Strong human resources abound in Jordan's Ministry of Education. Most Ministry directors and unit heads have extensive experience at several levels of the educational system, and several possess an impressive breadth of knowledge of Jordanian social, political, and economic phenomena in recent history. These individuals should be active participants in the construction of relational databases and other features of the EMIS, and the identification of critical additional data to be sought (e.g., factors affecting migration in Jordan).

Among influential individuals closest to the actual implementation of EMIS-supported planning and decision-making efforts, central MOE General Directors of Administrative Affairs; Financial Affairs; and Educational Planning, Research, and Development, as well as Directors of Planning and

Personnel are certainly key. EMIS presentations and demonstrations by BRIDGES team members to date have gone a long way in encouraging interest and familiarity with the concepts and technical aspects of such systems among these individuals.

Promote participatory decision-making. Jordan's relatively small size, the valuable knowledge that exists in many units and levels of the MOE, and the presence of formal vehicles for participation already in place, recommend this measure as a means of improving the quality of certain MOE decisions, and of encouraging a sense of ownership of these decisions among those called on to implement them. Clearly achieving this goal will require a shift in attitudes, staff training, organizational change, and a system of accountability for decisions reached, of "participation with responsibility."

Support computerization with training. Expanding and upgrading in-service training for non-teaching MOE staff is not expressly planned as part of the Educational Reform, however the importance of this activity cannot be overstated. In the words of Russell Davis, "There is a large training chore ahead, far beyond the mechanics of database management" (Davis, 1990, p. 18).

While the advantages of a computerized database over a manually maintained one are likely to be obvious to the average EMIS designer, this level of appreciation cannot be assumed in an institution with a staff of limited computer experience that still relies on manual methods for the bulk of its daily data management. In addition, the Jordanian MOE's computer experience has not been without its problems, despite a well-trained and energetic Computer staff. Currently the Statistics Division of the MOE, one of the few computerized, is also notorious for being late on delivery. For these reasons, efforts at expanded computerization must be sympathetic to the conclusion reached by some, even if flawed, that computerization may be more bane than benefit.

Thus, extensive computerization of Jordan's MOE will require substantial resources for in-service training in both conceptual and technical aspects of EMIS. Upgrading the computer capabilities of MOE staff is also likely to require the recruitment of additional staff members in many units. And for computerized information to be integrated as a fundamental component of decision-making, planning, and implementation processes, moreover, those outside the computer lab who are expected to use information in their professional tasks must also be shown, guided through, and oriented to its advantages.

Foster attitudinal change. Attention must also be paid to dismantling a few nonconstructive attitudes such as the "lack of trends" perspective shared by several key individuals, and undue concerns over information control. Demonstrations of historical trend analysis which makes use of both empirical data and expert knowledge to produce regionalized and realistic growth estimations may go a long way in promoting renewed faith in the value of such analysis, and to move planning from an essentially administrative task to a truly scientific, analytic one. With regard to the reluctance on the part of some to relinquish information control, clear demonstrations of the relative

efficiency, pragmatics, and other advantages of decentralized data entry and analysis, and of the capacity for establishing protected and limited-access fields in the database, are worth conducting to reduce if not dispel such concerns.

C. Strategic prioritization of substantive tasks

Once the essential equipment has been put in place, training efforts launched, and the database construction process begun, a judicious selection of the first substantive tasks to be tackled with the new EMIS should be made. As mentioned above, the integration of an MIS into the routine tasks and responsibilities of the institution it is designed to serve is essential to its success; this integration depends to a large extent on the perceived value, efficiency, and responsiveness of the new system by its intended users. Early substantive tasks to be tackled should therefore be strategically chosen and prioritized according to necessity and short-term feasibility, so as to provide an important service early on and to demonstrate the new system's applications for both routine tasks and special uses, and its potential for enhanced efficiency and responsiveness.

Demonstrate improved efficiency in information management. The often overwhelming burden of information management in its current state in the MOE may be a blessing in disguise for the acceptance of a new EMIS. Many unit heads interviewed appeared to have reached a threshold of exasperation and are likely to be receptive to a fresh approach, as long as it can be demonstrated to be feasible and effective in the relatively short run. Tackling the administrative nightmare of teacher placements for a single district, for example, could be an early project for the new EMIS that, if successful, would both alleviate a chronic problem and illustrate effectively the value of the new system to other potential takers.

Improve estimation methods and capacity for long-term planning. The short-sightedness of many planning efforts in Jordan is epitomized by a district-level division head's comment that textbook distribution will be easier once the new textbooks are introduced. He seemed unaware or unconcerned that this benefit would only last for a year or two. A capacity for longer term planning, one may argue, might have averted the current female teacher surplus, last-minute scrambles for school building and rental sites, and the phenomenon of overcrowded and empty classrooms existing together in the same neighborhood. With more complete, historical data on regional population growth and migration, student flow and transfer patterns (perhaps beginning on a sample or case-study basis such as the IIEP effort at Jerash), the capacity and value of an integrated EMIS for developing more accurate enrollment estimation procedures and longer term planning should be tested and demonstrated.

Demonstrate EMIS capacity to monitor Reform process and progress. Monitoring the implementation of the Educational Reform is a major concern at the highest levels of the Ministry of Education, evident in the fact that the Minister himself presides over weekly meetings to discuss Reform

developments.⁵⁶ By becoming a critical part of the monitoring effort early on in the Reform process, the new EMIS will gain visibility at the top of the Ministry, thereby securing political support necessary if not sufficient for its sustainability. Reform monitoring efforts that could be facilitated using computerized EMIS features include (1) the comparative analysis of Personnel Directorate data over several years, to determine advances in teaching qualifications and to trace expansion and coverage of teacher training efforts; and (2) tracking of progress in the replacement of rented school space with purpose-built structures.

Conduct scientific research on Reform outcomes. As yet unstated, scientific research on the qualitative and quantitative impacts and outcomes of the Reform will be carried out by the National Center for Educational Research and Development. The NCERD is expected to conduct research that is scientifically more rigorous and outcome-oriented than has been possible in internal Ministry units.⁵⁷

A number of useful studies to evaluate Reform impacts may be suggested: (1) Conduct a review of MOE staffing recruitment procedures. What are the causes of understaffing and mis-employment? (2) Examine data on past, current, and future secondary student streaming forms with regard to students' desired stream choice and school grades to determine if student choice is moving toward vocational education and/or becoming more realistic. Have social

⁵⁶ The monitoring of implementation of Reform objectives is carried out in weekly meetings of the Development Committee, chaired by the Minister of Education, every Monday morning. The Development Committee, composed of the members of the Education Committee and rotating participants depending on which aspect or subproject of the Reform is under discussion that week, reviews the progress and problems in the undertaking of each project, and discusses and decides on adjustments to the original Reform objectives as warranted. These meetings follow the Programming, Evaluating, Reporting Technique (PERT), which is posted on a wall in the MOE and includes the consideration of reform objectives, specific programs and their components, steps in implementation, and regularly updated accounts of progress achieved. In addition, progress reports are prepared every six months by each department in charge of a project; the Committee monitors the cumulative record of progress, comparing each incoming report with previous reports.

⁵⁷ While the Research and Development Directorate of the MOE has the capacity to produce high-quality field studies, evaluation efforts by this unit have been hampered, according to the Division Head of Follow-Up, by the fact that many Directorates resist critical evaluation by another internal unit. Moreover, evaluations carried out in the past have typically had resources available for end-of-project assessment only, with no opportunity for ongoing analysis or for the remediation of problems in project implementation encountered mid-stream. The NCERD, as an external body, is expected to meet less resistance in its evaluative task, and should have greater resources and flexibility to carry out methodologically sound and comprehensive studies.

marketing efforts had their desired effect? Has observed vocational and technical educational participation increased simply by Ministerial fiat or through a real change in attitude among students? (3) Conduct an in-depth examination of the "margin of safety" in enrollment estimations. Which districts are most often off the mark, by how much, and why? (Recommended by Davis, 1990, p.18.) (4) Incorporate systematic, empirical, external evaluation into the current plan for Curriculum and Textbook reform. (5) Conduct case study of current data validation procedures and their effectiveness, and introduce and pilot test methods used successfully elsewhere.

REFERENCES

- Billeh, Victor and Jaradat, Izzat (1989). Plan of Action for Educational Reform, 1989-1998. Amman: Ministry of Education and the National Center for Educational Research and Development.
- Cassidy, Thomas (1990). January 1990 Jordan trip report (manuscript).
- Coombs, Philip (1985). The world crisis in education: The view from the eighties. New York: Oxford University Press.
- Davis, Russell G. (1990). March 1990 Jordan trip report (manuscript).
- Ministry of Education (1989a). Yearbook 1988 [Al-Kitaab As-Sanawii 1988]. Amman: Ministry of Education, General Directorate of Educational Planning, Research, and Development.
- Ministry of Education (1989b). Progress of Education in the Hashemite Kingdom of Jordan, 1986-1988. Amman: Ministry of Education, General Directorate of Educational Planning, Research, and Development.
- Ministry of Education (1989c). The Statistical Educational Yearbook 1987-1988 [At-Taqriir Al-IhSaa'ii At-Tarbawii 1987-1988]. Amman: Ministry of Education, General Directorate of Educational Planning, Research, and Development, Directorate of Planning, Division of Statistics.
- Ministry of Planning (1986). Five-Year Plan for Economic and Social Development, 1986-1990. Amman: Ministry of Planning.
- Toronto, James A. (1989). An organizational analysis of the Ministry of Education, Arab Republic of Egypt, Volume 1: The production, flow, and use of information in the decision-making process. Cambridge, MA: Project BRIDGES.

APPENDICES

Appendix A. List of Ministry officials and other persons interviewed

Appendix B. Interview format

Appendix C. Summary listing of selected forms employed in information collection by MOE departments and directorates

Appendix D. MOE organizational chart

Appendix E. Educational enrollments and schools by district directorate, 1989-1990

APPENDIX A: Ministry officials and other persons interviewed

1. Ministry of Education - Central Office

General Secretary

Mr. Munther Masri, General Secretary

General Directors

- Dr. Izzat Jaradat, General Director, Department of Planning, Research, and Documentation
- Mr. Mohammed Sayed al Obeidat, General Director, Department of Examinations
- Mr. Barakat Tarawneh, General Director, Department of Projects and School Buildings
- Mr. Khaled Shaykh, General Director, Department of Education and Supervision
- Dr. Ahmed Hiyasat, General Director, Department of Curriculum and Educational Technology
- Mr. Abdelwahab Tarawneh, General Director, Department of Administrative Affairs
- Mr. Ahmed Akel, General Director, Department of Financial Affairs

Directors

- Mr. Issa Shaban, Director of Planning, Department of Planning, Research, and Documentation
- Mr. Wajih Farah, Director of Research and Development, Department of Planning, Research, and Documentation
- Mr. Mohammed Ceder, Director of Accounting, Department of Financial Affairs
- Mr. Walid Azhari, Director of Computer

Division Heads

- Dr. Mohamed Rashed, Head of Follow-up Division, Research Directorate, Department of Educational Planning, Research, and Development
- Ms. --- Tahani, Head of Documentation Division, Documentation and Educational Publications Directorate, Directorate of Educational Planning, Research, and Development

2. Ministry of Education - District Directorates

Amman-1 Directorate

- Mr. Muhammad Beni Hani, Director
- Mr. Muhammad Ahmed Rashid, Head of Administrative Division 1 (planning and school buildings)
- Mr. Mashhour Kharabsheh, Head of Administrative Division 2 (personnel, accounting, internal audit)

Mr. Abdellatif Shaykh, Head of Technical Division 1 (supervision and examinations)
Mr. Khalid Nabtiti, Head of Technical Division 2 (academic education, vocational education, student affairs)
Dr. Ali Shomali, Head of Educational Technology Resources and Guidance Division
Mr. ---, Headmaster, Culliyat Hussein (boys' scientific high school)
Ms. ---, Headmistress, 'Arjaan Elementary School
Mrs. Khawleh Tazi, Headmistress, Girls' Comprehensive School

Amman-2 Directorate

Mr. Hussayn Kawkash, Director
Mr. ---, Head of Administrative Division 1 (personnel; planning and statistics; school building and materials)
Mr. ---, Head of Administrative Division 2 (finance; instructional materials; internal audit)
Mr. ---, Head of Technical Division 1 (academic education; examinations; guidance; student affairs)
Mr. ---, Head of Technical Division 2 (academic supervision; vocational education and supervision; technology)

Irbid Directorate

Mr. Abu Ein, Director
Mr. Ahmed Obeidat, Head of Administrative Division 2 (Accounting and Supplies)
Mr. Ahmed Omari, Section Head for compulsory and secondary education, Technical Division
Mr. Mohammed Beni Hani, Section Head for vocational education, Technical Division

3. National Center for Educational Research and Development professional staff

Ms. Amal Kharouf (Demographer and Planner, NCERD; formerly with central MOE Planning Directorate)
Dr. Anmar Kaylani (Professor at Faculty of Education, University of Jordan)
Dr. Kayed Salameh (Professor at Faculty of Education, Yarmouk University)
Dr. Anwar Said (Professor at Faculty of Education, University of Jordan)
Dr. Kapur Ahlawat (Professor at Faculty of Education, Yarmouk University)

4. Other

Dr. Kamel Farhan Shahatit, Director of Department of Human Resources, Ministry of Planning

65-

APPENDIX B: Interview format

I. Introductions

a. Individual introductions

b. Informational goals of BRIDGES and NCERD:

To improve the production, dissemination, coordination, and utilization of statistical and research-based information for educational planning and decision-making.

c. Purposes of interview:

To discuss the principal functions and responsibilities of your unit; informational needs of the unit to perform these functions and responsibilities; information provided by the unit; and other aspects of the flow and utilization of information in the educational system.

To produce a report which describes the existing flow and utilization of information in the MOE; identifies problems in this information system experienced by those working in the Ministry and school district; and makes recommendations for the improvement of the system

II. Unit structure, functions, and responsibilities

a. Interviewee's title, qualifications, years of service

b. Number of personnel and structural organization of unit (obtain organizational chart if available)

c. Chain of responsibility (obtain written documentation on rules and regulations of the unit if available)

d. What are the most important tasks performed by this unit? (collect written products if available)

- Do any tasks involve decision-making or planning? Such as?

- Do any tasks involve the provision of information to other units?
Such as?

III. Select a task involving planning or decision-making and ask:

a. What specific steps are taken to accomplish it?

b. What is the time frame for each step? (use calendar)

c. What information is needed to perform the task?

d. Is this information available? From where?

66

- e. Problems of information provision: Is it:
Available? -- In the appropriate form? -- Timely? -- Accurate?
Sufficient? -- Other problems?
- f. What other units, departments, or agencies cooperate with you in this task? How?

IV. Select a task involving information provision and ask:

- a. What kinds of information do you provide? To whom?
- b. (if appropriate:) How are the data collected?
 - What are the steps taken in data collection?
 - What is the time frame for each step? (use calendar)
 - Are there problems with data collection? Such as?
(obtain copies of forms, other materials used, if possible)
- c. (if appropriate:) How are the data processed? Problems?
- d. In what form are the data presented? (Obtain examples)
- e. How are the data distributed/disseminated? Problems?
- f. What obstacles or difficulties, if any, does your unit typically encounter in the completion of this task?
- g. What other units, departments, or agencies cooperate with you in this task? How?

V. Regarding the Educational Reform

- a. What aspects of the reform concern your unit?
- b. How would you recommend that the implementation of these aspects be evaluated? What information should be collected for such an evaluation?

APPENDIX C: Summary listing of selected forms employed in information collection by MOE units

1. School Planning Chart

Use: Recording of current and following-year estimates of student enrollments for determination of new personnel, facilities, and equipment needs for the following school year.

Distributed by: Central MOE Planning Directorate through district offices

Filled out by: School administration

Returned to: District and central Planning offices

Date distributed: January and September

Date returned: February, October (to district for checking); March, November (to central MOE)

Unit: School

Description: Sections on students by gender and grade levels (current and estimated), grade levels and classrooms; educational, administrative, and service personnel; feeder school grades and enrollment information; current and additional required educational personnel by grade level and subject matter; size and ownership (owned or rented) of all classrooms and other rooms in the school.

2. Summary tables of distribution of students, classrooms, personnel, schools by academic and technical education

Use: District-level general summarization of individual school data

Distributed by: Central MOE Planning Directorate

Filled out by: District directorates

Returned to: Central MOE Planning Directorate

Date returned: March, November (with individual School Planning Charts)

Unit: District

Description: Tables of: (1) total numbers of students in the District by gender, grade levels, secondary specializations; (2) total numbers of classrooms in District by gender, grade levels, secondary specializations; (3) numbers of teachers in District by qualifications level, gender, level taught; (4) numbers of schools in district by level, gender, ownership. Separate Academic and Vocational tables.

3. School staff record

Use: Compilation of information on school teaching and administrative staff

Distributed by: Central MOE Personnel Directorate through district offices

Filled out by: School

Returned to: District Office, central MOE Personnel Directorate, Cadre Division

Date distributed: September

Date returned: October-November

Unit: Staff member; school

Description: All school staff listed by name, district and central MOE number, civil status, position, date of entry, grade, date of current grade, degree, specialization, college or university, date of graduation, training programs attended, subjects taught, number of sessions per week by level (elementary, preparatory, secondary), address and telephone

number, bank name and account number. Form also includes summary tables indicating number and type of staff needed or in excess; number of staff by position; and number of classrooms for each grade level.

4. Personnel transfer registry

Use: Record of teaching staff movements

Distributed by: Central MOE Personnel Directorate, Cadre Division

Filled out by: District directorate, Administration division

Returned to: Central Cadre Division

Date returned: Continuous entries

Unit: Teacher

Description: Separate forms maintained for each district, for male and female teachers, and for teachers leaving and entering the district. Form includes teacher's name, official identification number, degree, specialization, college or university attended, date of degree, teaching certificate number and date, reason for entering ("new" or "transfer") or leaving (open-ended) the district.

5. School general information form

Use: Compilation of information for Education and Supervision files

Distributed by: General Directorate of Education and Supervision through district offices

Filled out by: School

Returned to: District directorate; General Directorate of Education and Supervision

Date returned: October

Unit: School; director; teacher

Description: Includes six tables: (1) Name, address and type of school; (2) number of rooms by use; (3) grade levels in school, with number of classrooms and students at each level; (4) number of teachers and other staff present by type, number required, number in excess of need, number still needed; (5) information about school director, including training, certifications, specializations; (6) information on each teacher, including qualifications, principal and secondary subjects taught, with number of sessions per week in each subject and total.

6. School Statistical Base

Use: Basic annual record keeping for production of Educational Statistical Yearbook

Distributed by: Central MOE Statistics Division through district offices

Filled out by: School administration

Returned to: District and central MOE Statistics offices

Date distributed: December

Date returned: January (to district for checking); February (to central MOE)

Unit: School; teacher

Description: Maintains basic annual school-level information on type of school, ownership, authority, grade levels, location; enrollments by grade, gender, single-sex or mixed classrooms, rented or owned classrooms; promotees and repeaters by grade and gender; students by religion, grade, and gender; enrollments by grade level and age; number of classrooms by

69

gender, level, shifts; recurrent and capital expenditures in several categories; classrooms by size, ownership, and usage; non-Jordanian students by level, gender, language group (Arab or other); type, size, and ownership of playing fields; school staff names, numbers, personal data, qualifications, current post, years of service.

7. Registration of textbook requirements

Use: Determination of numbers of textbooks to be produced

Distributed by: General Directorate of Curriculum and Educational Technology

Filled out by: District directorates on the basis of individual school submissions

Returned to: General Directorate of Curriculum and Educational Technology

Date returned: June

Unit: District

Description: Form includes space for listing of book titles, number of students, number of copies in supply and copies needed for each title, notes.

8. Table of lesson schedules

Use: Monitoring of teaching schedules by school

Distributed by: General Directorate of Education and Supervision through district directorates

Filled out by: School

Returned to: District directorate; General Directorate of Education and Supervision

Date returned: October; with revisions as necessary

Description: For each class, weekday, and session (1-7), subject and teacher are entered on the form.

9. Summary report of classroom visit

Use: Record of supervisor's visit and teacher evaluation

Distributed by: GD Education and Supervision

Filled out by: Subject supervisor

Returned to: District directorate and GD of Education and Supervision

Date returned: Year-round; after every classroom visit

Unit: Teacher

Description: Includes teacher's name, degrees, training courses taken, training courses desired, location, school, class, subject matter, subject of the lesson, date of visit, rating (5-point scale) and notes on each of 27 aspects of teaching, general notes and overall evaluation.

10. Registry of student grades

Distributed by: District directorate

Filled out by: School

Returned to: District directorate

Date returned: January; June

Unit: Student

Description: Separate tables for each grade level. Students listed by name, nationality, place and date of birth, average grades (by subject, for each

semester and total); overall year total and average, punctuality; number of days absent, year result (pass or fail).

11. Student report card

Use: Report to student, family of school grades

Distributed by: General Directorate of Examinations and Evaluation through district offices

Filled out by: Teacher, school administration

Returned to: School administration; student; district directorate

Date returned: January, June

Unit: Student

Description: Includes student's name, number, gender, place and date of birth, grade level and classroom, school, district, first and second semester grades by subject, total and average grade points, result (pass, fail); notes on hygiene, comportment, attendance; principal's notes.

12. Student secondary specialization form

Use: Distribution of students at first year secondary into specializations

Distributed by: Central MOE Planning Directorate through district offices

Filled out by: School administration; with final decision for streaming by district-level Committee of Education filled out by district office

Returned to: District directorate; central MOE Planning Directorate

Date distributed: May

Date returned: June

Unit: Student

Description: For each student completing basic education, includes student number, name, total GPA and science/math subject averages, student's rank-ordered preferences for specializations, district directorate streaming decision.

13. Summary registration form for General Examination registrants

Use: Preparation for General Examination administration

Distributed by: GD Examinations; General Examination Division

Filled out by: School

Returned to: DDE, GD Examinations

Date distributed: September and February

Date returned: October and March

Unit: Student; school

Description: Separate forms for each academic and vocational stream. Includes student name, code numbers, place and year of birth, religion, new vs. repeating student, subject areas to be taken this year, place in which student intends to take examination. Summary tables around edges indicate first and last Examination seat numbers for the school, total number of students in the school and by religion (non-Muslims not required to sit for Islamic Studies subject); total number of students sitting for each subject.

14. Registry of General Examination marks by subject and student folder

Use: Confidential summary of student examination paper marks

Distributed by: General Directorate of Examinations and Evaluation

Filled out by: General Examinations staff from corrected examination papers
Returned to: General Directorate of Examinations and Evaluation
Date distributed: Prior to General Examination session
Date returned: January; June
Unit: Student
Description: One form completed for each "box" of examination papers (containing at most 150 papers in a single subject). Marks for each question and total score are entered for each student, identified only by folder number on this form.

15. Table of General Examination total scores for all subjects identified by student name (separate table completed for each district)

Use: Formal notification to districts of students' General Examination scores
Distributed by: General Directorate of Examinations and Evaluation
Filled out by: General Examinations staff
Returned to: District directorates
Date returned: January, June
Unit: Student
Description: Form includes student name, code number, place and year of birth, school, religion; first session, second session, and total examination scores by subject, overall total and average score, rank, result (pass or fail), notes.

16. Draft of proposed student cumulative record

Use: Maintenance of cumulative student records
Proposed by: General directorate of Education and Supervision through district offices
Filled out by: School
Unit: Student
Description: Proposed form includes family information, school(s) in which student has enrolled; average annual school grades by subject; general notes on every year; number and types of absences each year; participation in activities; health status; general comportment and personality ratings; participation of family in school activities.

c 12

APPENDIX E: Educational enrollments and schools by District Directorate, 1989-1990

DIRECTORATE	COMPULSORY EDUCATION		SECONDARY EDUCATION	
	<u>Schools</u>	<u>Enrollments</u>	<u>Schools</u>	<u>Enrollments</u>
1 Amman-1	254	160652	63	17624
2 Amman-2	160	81057	51	11475
3 Amman-private	211	43299	43	4126
4 Amman-environs	154	40915	34	3016
5 Madaba	100	26158	29	2395
6 Zarqa	280	139761	68	15775
7 Balqa	129	43909	31	5409
8 Deir Alla	41	7609	5	628
9 S. Shounah	16	6220	8	454
10 Irbid	260	106348	70	11351
11 Al-Kourah	45	18365	14	1443
12 Bani Kananah	65	15928	14	1629
13 N. Ghour	49	17182	15	1181
14 Ramtha	31	18902	14	1426
15 Jerash	105	30821	24	2549
16 Ajloun	73	24043	23	2256
17 Mafraq	219	383	40	2891
18 Karak	93	22121	26	2205
19 S. Mazar	38	9823	13	1026
20 Al-Qasr	36	6625	8	734
21 Tafila	57	15079	16	1024
22 Ma'an	98	12306	26	1285
23 Aqaba	47	14771	9	1040

Source: "Education Statistics 1989-1990" (pamphlet). General Directorate for Educational Planning, Research, and Development, Directorate of Planning, Division of Statistics (1990).