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A NATIONAL CENTER

FOR

CURRICULUM AND MATERIALS DEVELOPMENT

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The views expressed herein do not represent the views or opinions of USAID/Cairo or any of the agency's staff.

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I. ORGANIZING TO IMPROVE THE QUALITY OF EDUCATION

There are several factors that contribute to the quality of education, including the selection and preparation of teachers, the system for their continuing education, the quality of facilities, the availability of instructional materials and the training that supports them. The National Center deals directly with the instructional program--the curriculum, instructional materials and the training of trainers for their use in the nation's schools, kindergarten through grade twelve.

Thus, the Center is designed to improve the quality of education directly by developing high-quality, validated curriculum and instructional materials and by training others to train teachers and supervisors to implement them.

Quality is brought about:

A. By the development of clear frameworks of objectives for all curriculum areas, based on an analysis of social needs and the educational priorities of the nation, particularly with regard to the projected labor market needs of the economy, and where appropriate, on the most recent scholarly analysis of the structure and sequencing of the content.

B. By using the instructional models most appropriate to the objectives and content of the lesson sequences under development rather than relying solely on the one model of teaching and learning altogether too prevalent in today's schools, the rote memorization of facts presented by the teachers. Memorization is important, as are facts, but such an instructional model does not foster creativity, problem solving, nor technological or scientific literacy.

   Additionally, the relationship between what students are taught in school and what they need to be able to do to function in the real world must be strengthened. In order to be technologically and scientifically literate, students need an educational system that stresses both inductive and deductive reasoning, problem solving, and applications through a hands-on approach to learning.

C. By the vertical and horizontal integration of learning experience so that one experience builds on another, both vertically within a subject and horizontally across the subjects, and the integration of the practical and academic sides of education is strengthened.

D. By the development of a wide range of instructional and curriculum materials to lessen the teachers' and students' dependence on textbooks as the sole source of content. These would include modules for the gifted and talented, demonstration models, workbooks, tests, drill and practice materials, learning posters, student dictionaries, teaching resource units, self-instructional materials, maps, charts, videotapes, and kits, among others.

E. By using a rigorous system of quality control of the materials during development to ensure that their content is accurate, up-to-date, and relevant; that the instructional methods used are appropriate to the content and learning objectives sought; that the materials are suitable to the learning, vocabulary, readability, and developmental levels of the students for whom they are intended; and that the materials are validated in practice through trial use and revision when under development, and through a rigorous field test before they are disseminated for regular classroom use.

F. By the design, development, and use of orientation and training programs for in-service teachers and supervisors to insure they are thoroughly prepared to teach the materials as intended. This large-scale training will require the use of multiple media, including videotape and broadcast television to explain the new instructional materials and demonstrate their use in the classroom. The quality control process for the materials will include the evaluation both of the training materials designed to implement the curriculum and instructional process and of the training itself.

G. By including in each appropriate segment of the instructional materials diagnostic and criterion-referenced review or mastery tests that are self-administering. These tests are not for purposes of evaluating the student but are arranged to help match instruction to the student's current learning needs. The student can test himself at the beginning of the segment to diagnose whether he has all the prerequisites (is ready to begin the unit or must review or learn other things first) and after completing the unit to see if he has mastered the material or must go back and study certain parts again. This process is followed to ensure that the student masters the materials (often called mastery learning, therefore, or outcome based education).

H. The use of the latest and best of the technologies for the development of instructional materials.

The Center not only represents an investment in the development of textbooks and other instructional materials, but very importantly, in teachers and supervisors and their training, as well. It will, therefore, be tightly coupled to the operating units of the ministry responsible for educational policy, planning, research, administration, instructional media, and in-service education, in order to respond to the needs of the system. It will also maintain liaison and close articulation between its programs and those of other relevant agencies and institutions in the Egyptian educational system, in particular with the faculties of education responsible for preparing the nation's teachers. (See Annex E for an organizational chart of the ministry).

The Center will draw on the wisdom of public officials, scholars, and citizens in the design of the curriculum and will keep the general public, especially parents and teachers, informed of its purposes, its plans, its products, and of new developments in education.

It will engage in a continuous staff development program for its staff of curriculum designers, developers, trainers, technicians, evaluators, and its leadership, as well as providing orientation to supervisors, and through them to teachers. It will keep current with the latest research on curriculum and instruction, on curriculum development technologies, on test item bank development, and on other aspects of formative evaluation. It is the intention of the Centers' planners and its leadership that its staff will function as a highly-trained curriculum development organization able to draw on and use the best scholarship available in Egypt and other nation's that have relevant experience in educational reform.

In addition, working in concert with appropriate officials of the faculties of education, the Center will ensure that the newly-developed materials and training procedures are incorporated into the teacher-preparation programs of the nation, particularly in the practice-teaching schools.

Initially, the Center will decide upon a set of priorities upon which to direct a major portion of its activities. Even before those are established, however, the Center staff will begin to pay attention to ensuring that the curriculum and teaching materials of the initial stages of learning promote the acquisition of the basic skills of literacy and numeracy upon which most subsequent academic and social learning depends and to the teaching of languages.

Learning to learn is as important as learning particular content and will receive direct attention, therefore. Whether in the form of textbooks or learning modules, the teaching materials will be designed and developed so that their content and learning processes will increase the power and ability of the students to learn.

The Center will operate as an autonomous agency of the Ministry of Education, responsible to the Minister and its Board. To ensure that its products and the training for their use flow smoothly into the nation's classrooms and are used effectively, it will be closely linked to other relevant units of the Ministry. These will be those elements most closely associated with the preparation of learning materials, the supervision of classrom teaching, and teacher in-service training. (See Annex D)

The Center will develop and maintain a working relationship:

- with the Ministry's audiovisual center so that duplication and overlap of functions and responsibilities are avoided;

- with the Ministry's in-service training system and the Governorates' training departments so they may proceed in a timely manner with the large-scale teacher and supervisor training programs that will be needed to ensure widespread and effective use of the Center's newly-developed materials;

- with appropriate officials in the governorates in the selection of field-test schools, the training of field-test teachers and data gatherers, in the conduct of the field tests themselves, and in the interpretation and reporting of the results;

- with appropriate Governorate and central Ministry officials in the supervisory system for feedback on how effectively teachers are making use of the materials once they have been widely disseminated and put into practice in the nation's schools;

- with the colleges of education to ensure that the Center's development efforts incorporate the most advanced techniques and make use of the nation's best research in teaching and learning;

- with appropriate faculty members of the colleges of education to ensure that the nation's future teachers have training and adequate practice in using the new curriculum and instructional materials, whether they be textbooks, teaching units, resource or inquiry learning materials, manipulatives, or other learning aids, before they begin their teaching careers;

- with the international education and educational research community to ensure that the inputs upon which the Center must ultimately depend in the creation of its materials represent the latest advances in the international community in the knowledge and practice of teaching and learning. This will also link it into that community of scholars, intellectuals, and researchers who are working at the forefront of advances in teaching and learning;

- with the National Educational Planning office, the Center for the Study of Higher education, and the Higher Council for Evaluation and Examinations;

- with the other institutions in Egypt's educational system that have developed teaching materials, looking always to find excellent adequately-tested teaching materials that meet a clear need in the schools, are superior to what is in use, and are within reasonable cost ranges to produce and to train teachers to use; and

- with the nation's radio and television authority, since the Center will make use of videotape and broadcast television to help ensure widespread use of its teaching and learning materials, to keep the general public well informed about the changes to take place in their schools, and as economical tools in teacher training.

II. FUNCTIONS AND OPERATIONS OF THE CENTER

The primary operating functions of the Center are the development of the overall curriculum design from kindergarten to grade twelve and the design, development, field testing and dissemination of curriculum units and instructional materials, including those needed for implementation training and for use in teacher education.

To accomplish these functions the Center leadership will:

A. Prepare the operational design of curriculum and instruction, including specific objectives, identification of scope and sequence, principles for ensuring horizontal and vertical integration, and the instructional models to be used;

B. Establish liaison with policymakers, teams of scholars, and other relevant units in the ministry to assess educational needs and directions and to help in establishing priorities;

C. Organize development teams, assign curriculum units to be developed, and establish procedures for quality control through content reviews, informal trials during development and field trials;

D. Provide for the continuing education of all Center personnel to ensure that the latest technologies and knowledge about curriculum and instruction are employed during development.

Leadership roles in the Center will reflect these functions. The Director and Assistant Director for Development are responsible for overall management of the development process, for liaison with relevant external organizations, scholars, and experts in the curriculum content areas, and with those in the forefont of research in teaching and learning.

The development team leaders and their team members are responsible for the development of the teaching materials, teachers' guides, supervisors guides, auxilliary learning materials, tests, A-V aids, etc. and for the teacher in-service training materials. They will work with the counsel and guidance of the assistant Director for Development and the Coordinator of subject matter. (See Chapter III, Center Organizational Structure, for a fuller description of the organizational structure of the Center and Annex B for the details of the Centers' organization, functions, key staff, and their qualifications).

The Design Function

The Center must systematically seek information about the needs and desires of the society and the economy for education in the schools and translate these broad goals into a coherent overall plan, a master scope and sequence chart or curriculum matrix for education. Three sources of information, in particular, will be of great importance in this regard.

The Higher Council of Pre-university Education is one of these. The Center needs to be informed of the policy statements of the Council and to use these as guidelines for the overall plan for education. In return the Council will want to be informed of the overall plans of the Center as they are developed and of the progress in the development and implementation of curriculum and instructional units. The Center may also be asked to make recommendations from time to time to the Council, based on its knowledge about the state of the curriculum and educational needs.

The second source are relevant sectors and departments of the Ministry of Education. The sector of basic education, the department of in-service training, and the departments of general secondary and technical education are of particular importance. The heads of each of these need to transmit to the Center the perceptions of their departments about student needs and to perform liaison functions as curriculum units are developed and disseminated.

The third of these sources are the scholars, educational specialists, the general public, especially parents, business and industry leaders and others with knowledge and experience relevant to specific curriculum areas. For example, in the area of mathematics, mathematics educators will be asked to address the question "what mathematics knowledge is of most worth in general education, technical education, etc.?" Their answers will help guide the development teams in the construction of the mathematics portion of the master scope and sequence chart and in the selection of appropriate instructional models to incorporate in the teaching materials.

The design and developmental activities of the Center will be guided by the curriculum design expressed in the master scope and sequence chart which:

- specifies the curriculum areas (subjects);
- defines the scope and sequence of each area;
- defines the overall objectives for each area;
- indicates the instructional models that will guide instruction in the area;
- identifies the principles that will be used to achieve continuity and sequence in each area; and
- specifies the principles that will be used to achieve horizontal integration across the curriculum.

On the basis of this framework and information about areas deserving priority, the sequence of curriculum development will be established. In operational terms, instructional materials units will be identified for development and development teams will be assembled and assigned to them. The size of the instructional units will vary greatly, ranging from a section of a course at a particular grade level, such as a module or a learning kit, or a self-instructional unit, to a course, to the entire set of curriculum areas for a grade level or the sequence of courses through the grades for a curriculum area. Thus the term "instructional unit," as used in this report, refers to an assignment for development and does not imply size.

Similarly, although the instructional and teacher training materials will be the most concrete products of the Center, the curriculum is much more than those concrete materials. The teaching strategies, the major content objectives, and the principles for achieving continuity and sequence are of equal importance.

The development of a complete and comprehensive curriculum framework is a difficult and time-consuming process. Therefore, initial development should not wait on its completion but should begin during the initial staff training period, thus ensuring early productivity.

Initially, while the master scope and sequence chart is under development, the staff will also examine current teaching materials in use in the schools or planned for immediate development. Some may only require relatively minor re-organization or the addition of teacher and supervisor guides to enhance their effectiveness. These and those planned for immediate development may be developed and tested as part of the Centers' first set of products while work is proceeding on the difficult task of completing the master scope and sequence chart. In addition the Center will develop sets of resource materials, self-instructional materials, and/or teacher resource materials which can be developed relatively quickly.

These materials will be of particular importance since they will foreshadow the new instructional techniques and design features that will be used in textbooks and other sets of materials that will follow. They will serve to familiarize teachers with such new teaching strategies as the use of diagnostic, review and mastery tests in instruction, with the use of teacher guides, with the design, management and use of hands-on instructional materials and techniques, and such other teaching strategies as peer tutoring, for example.

In the beginning of its work the Center will work within the context of the current major curriculum areas, beginning with the curriculum areas as they now exist (mathematics, science, and so on). In the later stages Center staff may suggest other organization of the curriculum areas and combine some, eliminate others, and suggest new ones.

Three questions will be asked in relation to each curriculum area in order to develop the master schope and sequence chart (the curriculum matrix):

- What educational objectives should the curriculum areas seek to obtain?

- What experiences should be provided to attain those objectives?

- How should the educational experiences be organized to provide continuity, sequence, and integration with the other experiences in the overall curriculum? (See Annex C for a discussion of how the objectives in the curriculum matrix are translated into specific, measurable objectives in the subject matter areas, and how the selection of learning experiences and the organization of teaching is accomplished.

DEVELOPMENT FUNCTIONS

The professional development staff will be assembled into teams headed by a subject-matter expert, the team leader, and, generally speaking, may consist of four or five members. The team will be responsible for the development of one or more instructional units within the overall scope and sequence chart. Technicians will be attached as needed during design and development. Thus the Center wqill be capable of having from six to ten instructional units in development of any given time. (An organization of this size will be able to generate about as much educational change as the system can possibly tolerate or train teachers to use.)

Once a development team has been assembled and assigned a curricular unit to develop, that team will carry through the design and development tasks until the materials are in the hands of the field-test trainers, the materials are in production, and are headed for implementation.

The tasks are straightforward.

- The unit, whether a course in a subject at one level, an integrated course at a level, or a vertical sequence in a subject, or any portion thereof, rests within the scope and sequence plan that constitutes the overall curricular and instructional design. The first task is to generate the specific objectives that will drive the unit within the design and to ensure that the instructional unit will integrate both horizontally with other instructional materials that may be contemplated and vertically within its own sequencing.

- The second task is to design the unit, organizing the content and selecting the instructional strategies that will define its processes.

- The third task is to transform samples of the design into instructional materials and appropriate diagnostic and criterion-referenced testing materials that support the content and instructional strategies and to try out the materials and processes informally with students.

- The fourth task is the preparation of prototype materials and the testing thereof.

- The fifth task is the revision of the materials and the preparation of the entire set, the instructional manuals that will acompany them, and outlining the instructional program for teachers.

- The sixth task is the development of the teacher training materials, including videotapes demonstrating sample lessons and explaining the unit.

- The seventh task is the field testing of the instructional and teacher-training materials with respect to the degrees of implementation achieved and any indicated revision of the materials. The field-test and training staff participate in this task and prepare themselves to offer training to supervisors preparatory to full-scale implementation.

- The eighth task is liaison with the production unit responsible for printing, the duplication of other media, and the distribution of the materials to schools.

- The ninth task is the assembly, orientation, and training of those governorate education personnel responsible for the training needed for implementation.

THE DISSEMINATION FUNCTION

Though the Center is not responsible for dissemination, it will be responsible for developing teacher and supervisor training programs, including videotapes for teaching those materials and programs, and its training unit will be responsible for training teacher trainers to train field-test teachers and supervisors for the rigorous field-testing of each set of teaching/learning materials under development.

The Center will also involve its development teams in the field-tests of the teacher-training materials and will provide the actual orientation and training of governorate trainers needed to disseminate the products of the Center through in-service training. It is important to note that the Centers' trainers orient and train others, largely supervisors, for dissemination, rather than being, themselves, responsible for the training of teachers, except during pilot tests and as demonstrations for the supervisors.

The key to whether the Centers' products will accomplish their purpose in the schools lies squarely with the quality, quantity, and timeliness of the in-service training that is provided teachers and supervisors to use the materials effectively. Since the material's effectiveness will have been tested and demonstrated in rigorous field tests in which they are taught by teachers prepared to use them as intended, the in-service training system will bear the responsibitlity for ensuring that the remainder of the nations' teachers can also use them as intended.

This is a non-trivial task. A change in a first-grade subject will require training of some 35,000 teachers. If new materials are to be introduced for the start up of a school year in first-grade Arabic, second-grade mathematics and seventh-grade foreign language, for example, slightly over 90,000 teachers will require in-service training. The the training required could range in length from one week to a month and in all cases will require follow-up, coaching, and classroom supervision.

In short, the capability of the in-service training system whose services are needed to install and implement the newly-developed instructional materials adequately in all the governorate, while not the Center's responsibility, is of great concern to the Center. The instructional materials development, testing, and revision, the development and testing of teacher training and classroom supervisory materials, and the training of in-service teacher trainers are all elements which feed into a larger system whose full, efficient functioning is required if the expenditure of time, energy, and money for reforming the curriculum, the textbooks and other instructional materials and strategies is to bring about the desired results. (See Annex D for a discussion of the in-service system in Egypt).

At present, the in-service mechanism used for teacher and supervisor training can be through the In-Service Training Centers and their outreach into the governorates or through the governorates' training departments directly, or through a system such as that being used currently by the Ministry to train teachers and others in equipment-use for the practical courses.

No matter which of these are used, the in-service system itself needs attention and rationalization if it is to function as efficiently and effectively as the curriculum and instruction reform will require. It is clear that the Center needs the in-service training system as a channel for dissemination and will have a large impact on it by providing instructional materials for teachers and by enabling supervisors to use them.

The in-service system will need to be strengthened to accomplish the tasks at hand. Because supervisors at the zone level are the ultimate vehicle for the training of teachers, it is necessary that the system somehow provides the most direct link possible between the Center, the zones' operations, and through them to the supervisors.

Through the appropriate agencies of the Ministry, the Center will communicate to either the head of In-service Training Centers or directly to the zone leadership when new materials are ready for large-scale use to arrange for the training of trainers who in turn will prepare other trainers in the zones. It will then be the responsibility of the In-service Training Centers or the zone leadership to develop the opportunities for those trainers to offer training to the supervisors, and subsequently, for training of teachers.

RELATIONSHIP WITH PRESERVICE TEACHER EDUCATION

Because teacher training procedures are developed concurrently with each of the curriculum and instruction products, the creation of the Center has great potential for the improvement of teacher education.

The present courses in the teacher preparation program are natural places for the implementation of the teacher training procedures and materials developed at the Center. For example, there are courses in mathematics education in which the newly developed mathematics products can easily be used.

The Center and appropriate members of the faculties of education will sponsor an annual Educational Academy of about two weeks duration during which relevant teacher education faculty members will be brought together to examine the products of the Center and study how those products can be employed in the courses and field experiences of the teacher education programs. The first meeting of the Academy will be at the end of the second year of the Center's operation, when there will be sufficient product to warrant such a meeting and when teacher candidates, during their student-practice teaching experience, will begin encountering schools in which the new curriculums are being implemented.

III. CENTER ORGANIZATIONAL STRUCTURE AND FUNCTIONS

The structure and functions of the Curriculum Development Center are organized to permit high quality output of the entire K-12 curriculum in basic, general and technical education on a five-year cycle. The table of organization (following) portrays the structure and summarizes the functions. The Center is governed by a Board chaired by the Minister of Education. Under the Director are two major sections of the organization. The first is responsible for the design of the curriculum and the development of the materials. The second provides administrative support and information services to the Center. The Office of the Director is also responsible for planning, for liaison with other institutions and agencies, and for public information.

The Assistant Director for Development, who reports to the Director, is assisted by expert consultants in various disciplines in the design and development of the curriculum. The group of units under his direction consists of the following:

- A Content Coordination Unit comprised of subject-matter experts who are trained in curriculum design and instructional technology as well as in such foundation topics as developmental psychology and individual differences.

Typically, these staff members are assembled into teams, each headed by a team leader, who is a senior subject-matter education expert. They are assisted as needed by artists, media technicians, and such specialists as a psycho-linguist, speech pathologist and copy editors. Such a team can develop, test, and devise the equivalent of 1000 pages of finished text in one year.

When fully staffed the unit will contain about 40 curriculum developers and some 17 Team Leaders. The teams work under the direction of a Head Coordinator and two Assistant Coordinators. They assemble teams as needed to fulfill the requirements established by the Director and the Assistant Director for Development with the advice and guidance of the senior staff and the Technical Advisory Committee. In addition to developing such materials as textbooks and instructional modules, teams develop radio scripts, TV cassettes, kits, tests, teacher guides or manuals and other teacher resource materials. Staff members also participate in the field testing of instructional materials, field studies in the schools and in training others to train teachers to use the materials.

- A second unit, the Individual Instructional Materials Unit, develops special materials for gifted and talented pupils, for the speech impaired, for those with learning disabilities, and other specialized materials that are used by teachers and students but are not necessarily

developed in connection with the development of instructional materials in a given discipline, as for example, student dictionaries, reference materials atlases, etc. It is staffed by specialists in the preparation of these materials.

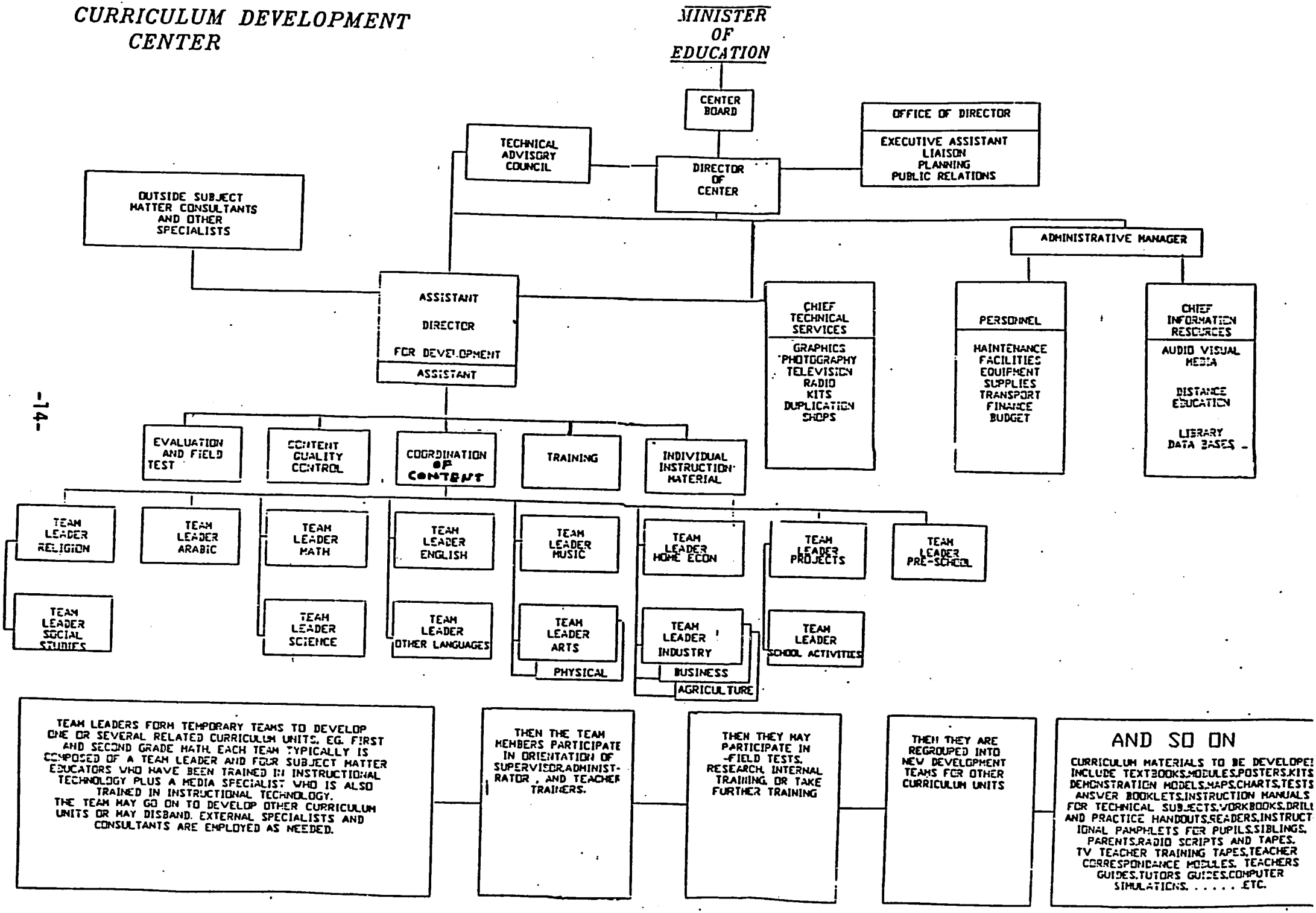
- A third, the Evaluation and Field Test Unit, evaluates the instructional materials through designing and conducting field tests in carefully selected sample schools. Its staff is expert in research design, measurement and evaluation. They develop the test item bank, design formative evaluation procedures, design field tryouts, help train data gathers for field trials and supervise data gathering, perform statistical analyses of the results, and qualitative evaluations of student and teacher performance and student achievement. They also help the development team members design and conduct such field studies as may be needed from time to time to help determine the need for new instructional techniques, or to evaluate the need for new materials.

- Another, the Content Quality Control Unit, which operates indepedently of the Team Leaders, is devoted solely to quality control of the teams' products. It provides advice and guidance on developing materials, reviews such matters as readability, page design, integration of theory and practice, vertical and horizontal integration, as well as the suitability of the instruction for the students, whether their design will help achieve the objectives for which they are intended and so on. In addition to two copy editors, it is staffed by a psycholinguist, an instructional technologist, and materials designers under the supervision of a Unit Head who is expert in content quality control. The unit also has the resources and the authority to bring in panels of outside experts as needed to review materials under development.

- A Training Unit, of four trainers, one of whom is the Unit Head. They are responsible for the design and coordination of the continuing in-house staff development program, for training field-test teacher and supervisors, and for training teacher trainers who will train other trainers so that teachers inservice are prepared to teach the materials once they are ready for widespread use following the field test.

- A Technical Services Unit that provides assistance to the development teams. On its staff are graphics illustrators, a photographer, a calligrapher and electrical and mechanical shop technicians who construct demonstration models, prototype kits, etc.

CURRICULUM DEVELOPMENT CENTER



The second section of the Center provides administrative support and information services to the Center staff. It is headed by an Administrative Manager who oversees two units.

- An Administrative Office, which conducts cost analysis, is responsible for budgeting, bookkeeping, accounting, finances, payroll, personnel, purchasing, inventory control and maintenance of facilities and equipment. Its staff consists of a Financial Head, who is an accountant and cost analyst, a bookkeeper, a payroll officer, a personnel officer, an inventory and purchasing officer, maintenance technicians and drivers.

- An Information Office, which provides full specialized library services. It acquires, catalogues, stores and provides controlled access to books, periodicals, pamphlets, tape and cassette collections, kit collections and other specialized curriculum materials such as computer software, model tests, instructional modules, etc. The library has modern acquisition, storage, and retrieval capability, such as ERIC and CD ROM and electronic data-transfer capability. Its staff consists of a Head Information Specialist, an Assistant Librarian and a Data-Base Specialist.

The organization of the Center is governed by the following management principles:

- A Management hierarchy that permits each leader from the Director down to exercise a realistic span of control.

- An institutional hierarchy that will permit juniors to pursue careers of increasingly greater responsibility.

- A modularized system that permits expansion to meet increased or changed output requirements by adding (or disbanding) development teams.

- A system of governance that encourages participatory contribution by all senior professional staff to the policy and decision process, but still maintains strong supervisory control of the development process since the Center must maintain a steady output of materials. The participatory process will enable the Center's staff to achieve the vertical integration within grades and the horizontal integration across subjects that will aid in making learning both maximally effective and efficient.

- Quality control mechanisms that are independent of those who develop the materials and are en fin grounded in how well the materials developed and the instructional strategies they embody actually achieve the objectives for which they were intended in actual practice.

The structure and functions of the Curriculum Development Center are governed by the following management considerations:

- Intellectual Productivity. The Centers' staff will participate actively in determining the learning objectives from goal statements that reflect the needs and desires in education of the Egyptian society and economy. They will also be encouraged to participate in decisions about curriculum models and the design of learning strategies that will directly control teaching and learning through the design of teaching methods and materials. These features will contribute to their commitment to high quality.

  However, since the Center must develop its output on an inflexible, fast-paced schedule governed by the school year schedule, it will also have a system of strong hierarchial leadership which can initiate structure and maintain output discipline.

  All development teams will work under leaders who themselves will work under unit heads. General policy direction and supervision will be provided by the Director and Assistant Director for Development.

Although the hierarchy is not vertically deep it has enough echelons to permit able junior people to aspire to career development within the Center.

- Span of Control. The hierarchy is structured so that each manager has no more than 7 or 8 subordinate managers or workers within his or her span of control. This small ratio (which also coincides with the substantive distribution of labor, e.g., development, support, administration) will permit the strong, humane leadership required for dealing with highly intelligent, and creative personalities.

- Models Flexibility. Since the Centers' scope of work can be modified as curriculum requirements change with economic development, its structure is modular and flexible. The curriculum development teams can be formed and disbanded as needed. They may have fewer or more than the typical four-person team and team leader. Further, more teams can readily be added together with a proportionate number of the appropriate support persons, as demand changes.

- Quality Control. Quality control is built into the structure and function of the Center by means of:

  - The review process during development. Each team leader's principle function is to review and edit substantively the output of his or her team in

conjunction with the feedback from the school try-outs. Leaders accompany team members to schools for tryouts so that both are attending to the pupils' and teachers' realities.

- The Content Quality Unit specialists advise the teams on psychological and pedagogical requirements during the initial planning and design process, during the course of development (also in response to school tryouts) and after completion of a unit.

- Feedback from the field tests also dictates quality control. In this case, as the materials move through teacher trainers into uncontrolled school environments, implementation failure or material's inadequacy to meet certain goals are compensated for by modifying the materials and teaching techniques to work more with individual or pupil-controlled learning, if that proves to be the problem needing attention.

- Realism-empiricism. The teaching and student materials will suit the psychological realities of various types of pupils and teachers and the varieties of school conditions that obtain in rural and urban communities. Development will be based on scientific knowledge of child development, individual differences, human perception, and learning and memory as well as on the recent discoveries about teaching strategies, tactics, and newly-developed systems methods for optimising efficiency and cost-effectiveness.

  Much of this will be accomplished through the program of staff training. Furthermore, standard procedures will require routine tryouts in schools, field tests, and systematic early feedback to pupils, teachers, other education officials and to parents in general.

  Beyond this, the curriculum developers will be provided with technical support specialists who also have the know-how to transform scientific knowledge into perceptual reality in the form of illustrations, photos, demonstration models, etc.

  Finally, the Center will have on staff assessment and evaluation specialists who can efficiently and pragmatically determine whether its output is cost-effective early enough for corrections to be made inexpensively and in a timely manner.

  To repeat, there are mechanisms built into the Center's design to encourage, facilitate, and insure that the Center's output will be governed by empiricism.

These are:

1. An internal evaluation and test unit charged with the responsibility to insure that the formative evaluation and field testing occur in a well-planned systematic and timely manner. The unit also has the technical capability to insure that these functions are done well.

2. A participatory organizational development process led by the Director which will develop collective understanding and commitment to the scientific outlook and the empirical processes that are necessary to make the materials suited to the diverse pupils, teachers, and conditions found in the Egyptian educationed system.

3. A staff development program that will develop the staff's capability to engage in an empirically-based development process effectively.

   This staff development program will include their acquiring the knowledge, ability, and specific skills for:

   - task analyses;
   - content analyses;
   - the design of an empirically-based study project;
   - statistical analyses;
   - contruction and administration of tests, and the analysis and interpretation of test results;
   - systems analysis supported by systematic decision processes; competence to use knowledge of human development, of individual differences, and of the principles of human learning; and
   - competence to use the varieties of and interactions among instructional strategies and techniques.

There also are mechanisms to facilitate the use of the various technologies that have been found to contribute to quality learning, in addition to textbooks, e. , modules, posters, casettes, games, simulations, instructional posters, etc. These consist of:

- resources such as illustrators, media experts, instructional design experts, model and kit builders;
- a team-development process that includes the resource persons from the planning and design stage through the prototype output stage; and

- a temporary development team structure that enables reassignments as needed and which will facilitate cross-fertilization of approaches, knowledge; and skills among the development staff.

The Center's Initial Development Process

The following sequence of operations list in detail the start-up activities and those needed to develop the organization into a viable and productive operating organization. It portrays the sequence of events needed to train the staff and to complete one cycle of curriculum development activities. (The time line keyed to the development cycle which estimates the time required for each major activity can be found in Annex F.)

THE DEVELOPMENT CYCLE

1.0 Gaining Authorization

1.1 Issuing decree to establish the Center;

1.2 Forming the Board and appoint the Director;

1.3 Recruiting and appointing key personnel for Center.

2.0 Organizing the Center

2.2 Setting output priorities;

2.3 Defining types, numbers, and qualifications of personnel needed to meet output requirements;

2.4 Defining the search, recruitment, selection, training and assignment practices needed to fulfill personnel needs;

2.5 Defining operational practices and performing a final review of the implied equipment, furniture and space needed;

2.6 Planning the final configurations of space for offices, department, training, other services, etc.;

2.7 Specifying equipment, furniture, supplies, electrical fixtures, outlets, starting up library;

2.8 Purchasing and installing of fixtures, equipment, furniture;

2.9 Planning systematic personnel start up operations: the search campaign and recruitment procedures (for example specifying methods, e.g., personal recommendations, advertising, telephone campaign, etc.)--selection procedures (including criteria to be met for each type of position, interview procedure, information needed about background, information needed about performance capability and procedures required for determining it, e.g., performance testing,

knowledge testing);--assignment procedure (e.g., immediate vs. delayed, pending observation during training and organizing period);

2.10 Final planning of the core, special, group, and individualized training programs in light of capabilities needed and individuals selected;

2.11 Final planning of the methods needed to determine individual starting expections, goals, approaches to group and individual work, learning skills, organizational preferences, etc.;

2.12 Carrying out team building operations: -group discussions in light of the institutiaonal purposes and goals: -operating possibilities, organizational plans, standard operating procedures: -relationships between units, hierarchial and collegial relationships among individuals: -work output standards; relationship of individual performance to organizational and national goals: -relationship of personal values to institutional values, of professional outlook to institution's empirical orientation: -personnel evaluation procedures;

2.13 All professional participate in survey of rural and urban schools, including data gathering from teachers, parents, students, headmasters, supervisors, and others;

2.14 Mutual development of standard operating procedures, including quality control procedures, and the drafting of an operations manuals;

2.15 Development of forms to be used for work orders, work outputs, quality control, empirical testing of outputs, evaluation, etc.;

2.16 Detailed preparation for staff development program including specification of training strategies, e.g., lecture, discussion, practicum, etc., selection and preparation of readings, classroom equipment and supplies, training aids, handouts, specifications of the integration of instruction and of staff development instructors activities and presentations;

2.17 Arrangements with external consultants and the instructors who will teach in the core and specialized programs;

2.18 Arrangements for external internships for selected staff members;

2.19. Conduct core, specialized group, and individualized training programs.

3.0 <u>Initial Curriculum Design Operations</u>

3.1 Preparation for development of master scope and sequence chart;

3.2 Assembling curriculum documents, including legislation, national curriculum publication, official planning documents, presidential and ministerial decrees, scholarly essays, expressions of leadership, citizens' opinions, and currently used textbooks;

3.3 The systematic content analysis and categorization into lists of all relevant statements concerning curriculum goals and purposes, desirable attitudes, knowledge and skills, societal objectives, and aspirations, eliminating overlap and duplication, and sequencing the goal statements within the list, as much as possible;

3.4 Transforming the goal statements into specific measurable objectives, i.e., knowledge, skills, work habits, values, attitudes, comportment, interpersonal relations, ethical behaviour, social specificatiaons of conceptual content, responsibilities, religious actions, etc.;

3.5 Ordering these objectives into psychologically sound sequences: -that suit the maturation levels of the pupils: -that set prerequisites for subsequent learnings: -that elaborate on prior learning: -that reinforce earlier learning, strengthen habit patterns, facilitate more complete problem solving, and minimize learning inhibitions of all types. (Note: This needs to be done comprehensively for the entire curriculum. It can be done in stages, to some extent, in order to permit the concurrent development of curriculum materials with the highest priority);

3.6 The formation of a daily and hourly matrix or master operational scope and sequence chart showing the objectives to be attained in each session from the first kindergarten session of the first day to the last session of the twelfth grade;

3.7 Preparation for an educational survey, including the development and try out of questionnaires, observational check lists and protocols, forms, data analysis design, sampling design. The training of interviewers, logistical arrangements to get to schools, for lodging, per diem payments, etc.;

3.8 Survey of samples of teachers, supervisors, headmasters, parents, and students to determine their conceptions of the objectives of education and their typical patterns of achievement and classroom performance in attempting to achieve the objectives, including the identification and use patterns of typical teaching procedures, materials such as textbooks, etc.;

3.9 The selection of instructional models for individual objectives and groups of objectives;

3.10 The design or selection of specific instructional strategies to attain objectives;

3.11 The analysis of the cost and scheduling implications of the materials design, length, color, format, etc., needed to embody the instructional strategies designed or selected;

3.12 The specification of measures that will be used to assess the attainment of objectives by pupils and the formation of the test item bank for use in regular school testing;

3.13 The creation, selection or adaptation of specific stimulus information to be presented to pupils and procedures to be used in their presentation: -teaching aids to be employed, responses desired from the pupils: -diagnostic tests indicating to teachers and students what pupils need to learn and have learned, the teacher behaviors needed to remedy various types of learning failures, e.g., confusion in problem solving, lack of acquisition of content, formation of wrong habits, concepts or skills, feedback and practice techniques;

3.14 The specification, creation, selection of supplemental learning materials, e.g., maps, reference books, etc. needed to supplement the teachers' presentations;

3.15 Having external specialists review developing materials to make suggestions for revisions before prototype printing and testing;

3.16 The specification, creation, selection of teacher-training materials pertinent to each lesson;

3.17 The specification of the behavior needed by supervisors to assess and improve teachers' specific performance in relation to attaining the objectives of the lessons, and the creation of an operating manual, forms, and orientation and training materials for supervisors of classroom teaching;

3.18 The specification of class and school management procedures needed to support the new materials and the creation of the materials needed to insure effective classroom supervision of the use of the new materials;

3.19 Making arrangements with schools to cooperate in try outs of segments of newly-developed curriculum materials;

3.20 The prepartion of formative evaluation procedures and forms;

3.21 Establishing systematic criteria for deciding when revision is necessary;

3.22 Training developers to conduct tryouts and obtain useful feedback about pupils' learning and teacher's ability to teach the materials;

3.23 Conducting tryouts;

3.24 Reviewing feedback information;

3.25 Deciding on whether revision is needed, what type of revision to do, etc.;

3.26 Carrying out revisions, and if necessary trying out revised materials in schools again;

3.27 Producing enough copies for pilot testing.

4.0 Pilot Testing

4.1 Preparing for pilot test of major curriculum unit, e.g., first-grade math;

4.2 Selection of pilot schools;

4.3 Arrangements with school authorities to participate in test;

4.4 Design of data analysis procedures, including types of measures to be used (e.g. performance tests, written tests) assuring the integrity of raw data, reducing data to computer inputs, designing or deciding on computer program, etc.;

4.5 Design of teacher and supervisor orientation and training programs, including training of trainers, preparation and distribution of materials to inform others about the pilot test, and of teacher training materials so they may learn how to use the new instructional materials;

4.6 Production of evaluation forms for measuring implementation, e.g. classroom observation protocols, check lists, etc.;

4.7 Distribution of new curriculum segments to schools;

4.8 Training teacher trainers and evaluating their training of teachers;

4.9 Conducting and evaluating supervisor training;

4.10 Conducting and evaluating pilot tests. Making final revisions in materials;

4.11 Obtaining official approval of materials;

4.12 Turning over prototype materials to production agency;

4.13 Together with those responsible for teacher, supervisor and administrator training, planning the national dissemination strategy. Deciding, for example, on whether to disseminate to the whole nation at once or in stages, and if in stages, how many stages, how many schools are to be included in each and in which governorates and zones;

Note: The Curriculum Development Center will be involved in dissemination to the extent that it will develop final versions of training materials, manuals, and forms that will be used in the dissemination process;

4.14 Preparation for dissemination:

4.15 Planning teacher training strategy including use of mass media, live training, correspondence, tutorial assistance, and so on;

4.16 Preparing training plans for teacher trainers, and developing necessary materials;

4.17 Conducting teacher, supervisor, administrator training of trainers and evaluating the degree and quality of implementation of training of trainers;

4.17a Dissemination (the distribution of materials) is done by those responsible in the MOE (not done by the Center);

4. 18 Conducting periodic classroom observations of implementation of new curriculum using previously prepared forms and procedures tested in field test;

4.19 If the periodic observations indicate substantial need, revising teacher manuals, teaching aids, etc. or preparing for a revision in the next cycle of development;

4.20 Carring out periodic staff development seminars to maintain state-of-the-art training;

4.21 Attending international conferences on curriculum development;

4.22 Revising materials in accordance with analysis of the results of regular school examinations and pupil performance feedback.

5.0 <u>Center's Second Development Stage</u>

5.1 Repeat and refine development and testing cycle;

5.2 Train selected staff members to conduct staff training;

5.3 Recruit and select replacement group of staff members, as needed;

5.4 Prepare facilities and equipment for second group;

5.5 Conduct second cycle of staff development, including practicum on developing the rest of the master scope and sequence chart of objectives;

5.6 Engage second group of staff members in curriculum development activities;

5.7 Carry out full-scale review and content analysis of documents, interviews with leaders, scholars, citizens to determine need for new and revised curriculum materials.

6.0 Begin Center's Third Development Stage

Plan strategy for updating curriculum, i.e., decide whether whole curriculum or parts need updating, establish priorities.

7.0 Model Curriculum Development Cycles

Following are two model development cycles. One portrays the amount of time and effort required to produce basic subject matter materials that are part of the K-12 sequence. The second portrays the activity required to produce non-sequenced special materials such as resouce units, stand-alone short learning sequences, eg. brief low-cost science experiments that can be completed in one or two teaching periods, teaching aids, instructional posters, and so on.

The Center should develop these two types of materials in parallel. This will enable it to develop and produce usable products early in its life (within a few months of its inception) while laying the firm foundation of a master scope and sequence for the whole curriculum and developing the basic sequence of materials such as 1st, 2nd and 3rd grade math, language and other subjects in yearly batches.

Model, Curriculum Development Cycle 1: Basic Subject-Matter, eg Mathematics, Requiring Sequencing (Within the Subject) and Integration with other Related Subjects, eg Reading, Science: Time and Development Sequencing Needed to Complete Materials for One Grade Level.

Mathematics

Months

0 1 2 3 4 5 6 7 8 9 10 11 12

Grade One

1. Prepare learning materials
2. Try learning materials/revise/try again
3. Prepare teaching materials
4. Try teaching materials/revise/try again
5. Orient/train trainers of trainers
6. Make preparations for field test
7. Prepare prototype materials
8. Train field test teachers
9. Conduct field test, analyze data, report
10. Make revisions as needed
11. Prepare camera ready copy/video tapes, etc
12. Production

m. Materials ready for full-scale use/teaching materials ready for large-scale teacher training

n. Begin training trainers for large-scale use

o. Train teachers

p. Teachers begin use

Model Curriculum Development Cycle 2: Non-sequenced Stand-Alone Special Learning Materials such as Resource Units in Science or Social Studies, or Teaching Aids, such as Instructional Posters, or Self-Instructional materials: Time and Development Sequer Needed to Complete Each Learning Unit.

Science

Months

	0	1	2	3	4	5	6	7	8	9	10	11	12
a. Prepare learning unit	!----------!												
b. Try learning unit/revise/try again	!--!	!---!	!---!										
c. Prepare teacher's instructions		!-------!											
d. Try teacher materials			!----!										
e. Orient/train trainers of trainers			!----!										
f. Make preparations for small field test			!----!										
g. Prepare protype materials			!---!										
h. Train field test teachers			!---!										
i. Conduct field test, analyze data, report			!----!										
j. Make revisions, as needed				!-----!									
k. Prepare camera-ready copy/ video tapes, etc.				!----									

m. Materials ready for full-scale use

n. Begin training trainers for large-scale use

o. Train teachers

P. Begin use

IV. STAFF DEVELOPMENT

The Center will succeed or fail on the strength of its internal staff development program. In addition to the skills and knowledge they bring with them, all staff members will be engaged in a program to further develop their professional knowledge and skills. Their capacity to learn is as important as the curriculum development knowledge and skill they bring with them to their tasks. They will need to learn academic material quickly and to understand and learn to apply advanced research and knowlege in technical areas.

Because the tasks of development itself are very concrete -- ideas are translated into instructional materials and training procedures -- and because the technologies of development have advanced rapidly during the last few years, staff members need to be willing to learn a variety of technical skills, ranging from word processing, graphics design, and television design, scripting and editing of training video tapes to the design of formative evaluation studies and field tests.

Thus, all candidates for positions need to be aware that they will be sharpening their own and acquiring new intellectual and technical skills needed in creating materials designs and developing them into the concrete realities of instructional materials, training procedures, and materials for teachers.

Experience in teaching is also essential. The center will be engaged in intensive development of curriculum design and instructional materials. The activities cannot wait while staff acquire experience with schooling and children.

Hence, the professional and technical staff of the Center will be involved in a continuing staff development program. During the first two years of operation, a large portion of the staff time--from one quarter to one half--will be study. Thereafter from 10 to 20 percent of their time will be devoted to this purpose. After start-up new staff will receive training for approximately three months before assuming full operational duties and thereafter will participate in the ongoing program. The first round will be conducted concurrently with and will support the development of Center's first curriculum units so that a satisfactory level of productivity will occur from the Centers' inception.

A general requirement is that all professional staff be thoroughly conversant with the scope and sequence of the curricular/instructional plan the Center has designed and is implementing and be able to explain it to others -- essentially able to provide a "guided tour" to other personnel. This will help to ensure that the units are related to others both vertically and horizontally, in reality as well as in theory.

Because of the nature of curriculum and instruction, the design and the development functions should be integrated. The developers need to be able to develop print and other materials, design training and training materials for education personnel, and train trainers who will be responsible for implementation through the training of supervisors and teachers.

Modern development technologies, especially computer and television editing facilities, enable individuals to participate in more aspects of development than was previously possible. For example, computer programs enable writers to develop many graphics that previously required the services of artists. This does not eliminate the need for the services of graphics artists but it enables designers to keep much greater conceptual control during production. Similarly, the design of training is now easier because all personnel can participate in the development of television tapes and other training materials, thus keeping design personnel much more closely linked to actual production.

The staff development program will be competency based, designed to enhance the staff's current skills and knowledge, to develop new knowledge and skills and to develop them further in actual practice to an acceptable level of competence. The theoretical and conceptual subjects in all cases will be accompanied by practical activities that utilize learnings immediately.

In general, the academic training will be carried out during mornings and the practicum during afternoons. The practicum will involve the Centers' actual practical work requirements, as for example, the development of the master scope and sequence chart and the development of usable curriculum materials. The collection of formative evaluation data feedback later from regular use of the materials in schools, as well as the training of teachers for the field tests, are all practicum experiences, as well.

All staff members will participate in core training. Because some position incumbents need only be familiar with certain topics rather than have in-depth knowledge or to develop performance -level skills they will receive only overview training in those topics. Others who have the need will receive general training (to a level of full competence in performance) in those same topics, and still others will receive professional training in those same areas, to the extent they will not only be able fully to utilize the habits, knowledge, and skills acquired in their daily work but to teach others to do so, as well.

The training matrix (see following pages) illustrates the type and level of training required for each staff position.

Most of the formal training will be completed within six months. After the initial formal-training period, on-the-job training will continue, as will short, periodic specialized training for groups and individuals, as for example, training in the latest state of the art in science education, or the use of new desk-top publishing equipment and software.

The letters at the top of the columns in the training matrix represent training subjects and are labelled in the legend at the top and bottom of the matrix. The numbers in the cells represent the level of training required. Level 1 is an overview of the topic; it usually can be completed in short time. Level 2 represents the full general knowledge of the topic that a professional working in the curriculum development field needs to know in order to think about tasks and problems that are the specialities of his

colleagues, superiors or subordinates. The time required to learn to this level of competence will vary from approximately one week to two months depending upon the staff members prior knowledge, experience and learning abilities.

Level 3 represents full specialized professional or technical knowlege of and competence in a topic. It enables one to use, create, develop, make judgments and decisions, review, evaluate and teach the topic. Training time generally is longer than two months, but for the present program should require no more than three to five months for the most demanding topics, approximately as much time as a college semester, again depending of course on the knowledge, skill, and prior experience the staff bring with them to the Center.

TRAINING MATRIX

Levels: 1 = Overview

2 = General

3 = Specialized

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
Director	3	3	3	2	3	3	3	3	3	2	2	3	3	2	3	3	3	3	3	2	3	2	2
Exec.Assistant to Dir.	2	2	2	2	2	2	2	2	2	2	1	1	1	1	2	2	3	3	1	2	2	1	2
Public Inform. Spec.	2	2	2	2	2	2	1	2	2	2	1	1	3	3	2	2	2	1	3	2	1		2
o Admin. Manager	1	1	1	1									2	1	2	3	3	3	3	1			
Personnel Spec.	1	1	1	1											2		1						
Accountant/Cost Anal.	1	1	1	1	1	1			1		1		1	1	3	3	1	3	3	1	1		
Inventory/Purchasing	1	1	1	1											2			2					
Bookkeeper	1	1	1	1											2								
Payroll Officer	1	1	1	1											2								
o Head Inform.Resour.	2	2	2	2	1	1	1	1	1	1	1		2	1	2	1	2	1	3	1	1		
A-V Spec.	2	2	2	2	1	1	1	2	2	2	2		3	3	2	1		1	1				
Distance Ed. Spec.	2	2	2	2	1	1	1	3	3	3	3	3	3	2	3	2	1	2	2	2	3	1	3
Librar./Resour.Spec.	2	2	2	2	1	1		1	1				1	2		1	3						
Database Spec.	2	2	2	2	1	1		1	1				1		3	1		1	3				
o Asst.Dir.Dev.	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Asst. to Dir.Dev.	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

o Head Tech. Ser.	3	3	3	3	2	2	2	2	2	2	3	2	3	3	3	2	3	2	2	1	2	1	1
Graphics Spec.	2	2	2	2	1	1		2	2	2	2		1	1	2					1			
Photographer	2	2	2	2	1	1		2	2	2	2		1	1	1					1			
TV-Radio Spec.	2	2	2	2	1	1		2	2	2	2		1	1	1					1			
Duplication Clerk	1	1	1	1									1	2									
Mech. Shop Tech.	1	1	1	1				2	2						1			1		1			
Elect. Shop Tech.	1	1	1	1				2	2						1			1		1			
Calligrapher	2	2	2	2	1	1		1	1	1	2		1		1					1			
o Head Measurement	3	3	2	3	3	3	3	3	3	2	1	2	1	1	3	3	3	3	3	2	3	3	1
Evaluation Spec.	3	3	2	3	3	3	3	3	3	2	1	2	1	1	3	3	3	3	3	2	3	3	1
Test Assistants	3	3	2	3	3	3	3	3	3	1	1	2	1	1	3	2	1	3	3	2	3	3	1
o Head Qual.Control	3	3	3	3	3	3	3	3	3	2	3	3	3	2	3	3	3	3	3	2	3	2	1
Materials Dsgn. Spec.	3	3	3	3	3	3	2	3	3	3	3	3	3	2	3	1	1	2	2	2	2	1	1
Psycholinguist	3	3	2	3	2	2	1	3	3	2	1	1	1	1	2	1			1	2	2		1
Instr. Tech. Spec.	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	2	1	1	2	3	3	1	2
Copy Editors	2	3	2	2	1	1		2	2	1	3		2	1	2				1	1			1
o Head Training	3	3	3	3	3	3	2	3	3	3	1	2	2	1	3	1	3	2	2	2	3	1	1
Training Spec.	3	3	3	3	3	3	1	3	3	3	1	1	1		2				1	2	2		1
o Head Indv.Instr.Matr.	3	3	3	3	3	3	3	3	3	3	3	3	3	1	3	3	3	2	3	3	3	2	2
Learn Disabl.Spec.	3	3	2	3	3	3	1	3	3	3	2	1	3	2	3	2	1	1	2	3	3		
Gifted & Tlnt. Spec.	3	3	2	3	3	3	1	3	3	3	2	1	3	2	3	2	1	1	2	3	3		

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
Speech Pathol.	3	3	2	2	1	1	3	3	1			1		1				1	3	1			
Specl.Matrl.Dev.	3	3	3	3	3	3	1	3	3	3	3	2	3	2	3	1	1	1	3	3	3	1	2
a Head Coordinator	3	3	3	3	3	3	3	3	3	3	2	3	3	1	3	3	3	3	2	1	3	2	1
Team Leaders	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	2	3	2	2	2	3	2	1
Materials Developers	3	3	3	2	3	3	3	3	3	3	3	2	3	2	3	2	3	2	2	2	3	2	1
a Head Coord. Unit	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3	2	2	3	2	1
Coord. Assist.	3	3	2	2	2	1	2	3	3	2	2	2	2	1	3	3	3	3	1	1	1	1	1

A=Instructional Models
B=Instructional Strategies Practices
C=Curriculum Design
D=Instructional Design
E=Formative Trial&Feedback
V=Statistics&Measurement
F=Field Testing

G=Basic Research concepts
H=Principles of Learning

I=Individual Psychology
J=Design of Adult Training
K=Formatting

L=Review & Revision

M=Varieties and Features of Media

N=Basic Media Production
O=Computer

P=systems Concepts
Q=Org.+Mgt. Concepts

R=Cost Analysis
S=Information

T=Special Ed Concepts
U=Task Analysis

W=Distance Teaching

As can be seen from the training matrix the level of training for each topic is directly related to the functions for which the personnel are responsible. Because the Center leadership and the team leaders must develop the overall curriculum framework and oversee the development, quality control, and limited dissemination process for which the Center is responsible, they will need the highest levels of competence across the entire spectrum of skills and knowlege. These levels of training are also correlated with the job qualifications of the personnel, as seen in Annex B.

Quality-Control of the Staff Development Program

The evaluation will be continuous and will be embedded in each dimension and unit of the program and be in terms of the levels of competence that are sought.

For all levels: Applications (Practicums). Evaluation of the practicums will be performance-based through the analysis of development tasks assigned all personnel. For example, after word-processing has been dealt with all personnel will be given tasks requiring the use of the word-processing. After instructional models have been dealt with the personnel will be given curriculum-design tasks in which they are to rationalize the selection of instructional models from the variety of alternatives and their ability to conduct the rationalization will be examined.

For Level 2: General

After any unit of the training, those trained to this level should prepare a work sample using the skills and knowledge of the training unit under study that experts judge to be adequate. In example, if the unit was on instructional models, the successful trainee will demonstrate competence by submitting a work sample showing the appropriate choice, use, and development of a model for a specific unit of content and a specific set of learning objectives.

For Level 3: Specialized

After finishing segments of the training, those trained to this level will teach new staff members, ministry, or school staff what they have just learned, as for example, the use of one or more instructional models. Their competence will then be judged by the degree to which their trainees have learned the materials and can apply it in the same fashion and to the same degree as one trained to the generalist level. (See above paragraph).

The training in the staff development programs will be designed so as to exhibit the same general characteristics as the curriculum and instructional materials the trainees will be responsible for developing. It should make use of diagnostic measures, of review and mastery tests that are self administering, and of a variety of instructional models suiting the use of each to the objectives sought for that segment of training.

The objectives of the training should flow from the general goals statements of the program and should be embedded in a staff development and training master scope and sequence chart.

V. PRODUCT OUTPUT CYCLE

Once fully trained the typical development team of four to six curriculum developers and their team leader, and a full-time illustrator/photographer/model builder can complete the amount of tested materials listed in Figure A in one year. They will also use members of the training staff, the field-test and evaluation staff, external resource experts, and other resource personnel, on an as-needed basis of course.

FIGURE A: MATHEMATICS DEVELOPMENT SCHEDULE

YEAR	PRIMARY	PREP.	GEN. SEC.
1	k 1a 4a b b	7a b	10a b
2	2a 5a b b	8a b	11a b
3	3a 6a b b	9a b	12a b

YEAR	TECHNICAL SECONDARY		
	Agric.	Ind.	Commerce
4	10a b	10a b	10a b
5	11a b	11a b	11a b
6	12a b	12a b	12a b

a = materials for the first half of a grade
b = materials for the second half of a grade

Thus, the operational plant to have from 6 to 10 teams developing materials in any given year will allow the revision cycle of all subject areas K-12 in each six-year period.

(See Figure B, following for a possible Center materials development schedule. Note, Figure B is most ambitious and will change once the Center staff has assessed current materials, the state of teaching/learning in the schools, the amount of revision needed for each subject, and has set priorities).

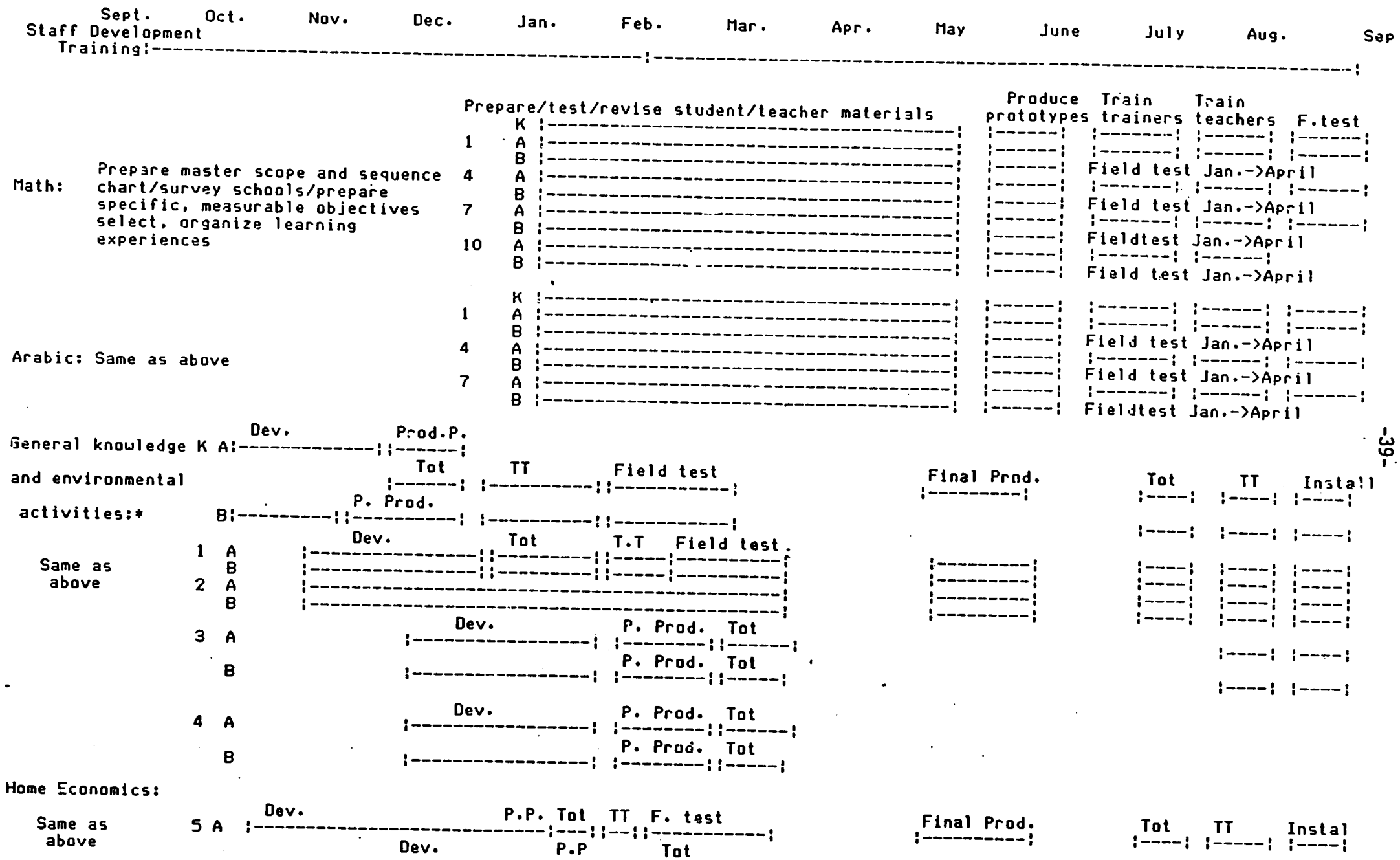
Figure B: Possible Center Materials Development Schedule
(illustrative only)

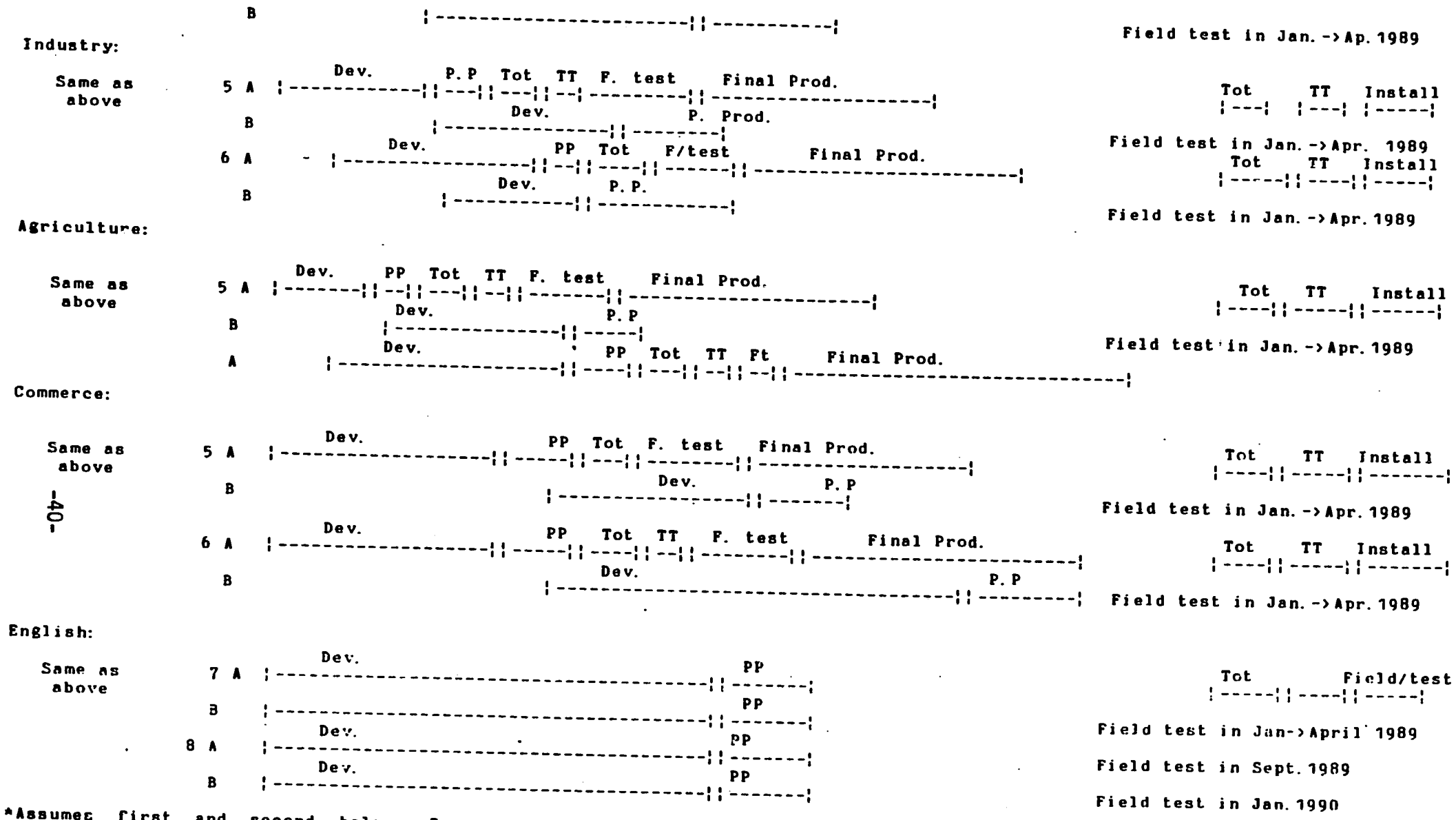
Subject	Years of Centers' Operation (by grade level of materials) 1	2	3	4	5	6
Mathematics	K,1 4 7,10 gen	2,5,8 11 gen	3,6,9 12 gen	10ag,10ind 10 com	11 ag,11 ind 11 com	12 ag,12ind 12 com
Arabic	K,1,7	2,3,8	4,5,9	6,10,11	12	
General Knowledge and Environment	k,1,2,3,4					
Home Economics	5,6	7,8,9	10 gen	11 gen	12 gen	
Industry	5,6	7,8,9	10 gen			
Agriculture	5,6	7,8,9	10 gen			
Commerce	5,6	7,8,9	10 gen			
English	7,8,9,10	11,12				
French		7,8,9,10	11,12			
German		7,8,9,10	11,12			
Italian			7,8,9,10	11,12		
Science and Health	4,5,6	7,8,9				
Biology	10	11				
Chemiatry		10	11			
Physics			11 12			
Social Studies	4,5	6,7	8,9			
History	10	11	12			
Geography		11	12			
Arts	K,1,2,3,4	5,6,7,	8,9,10	11,12		
Music	K,1,2,3,4	5,6,7	8,9,10	11,12		

Note: Since this is illustrative only it does not contain all the subjects offered.
(Note that Figure B assumes the mathematics team is divided into three subteams, one for primary, one for preparatory, and one for secondary. Note also that development of math prugrams for technical secondary doesn't start until year 4).

Figure C, following, which is illustrative only, was drawn to show one work progression system from devélopment through field test and final installation. It follows the principle that students who begin a new sequence of installed materials (not field tests of materials) should be able to proceed through the full sequence of new materials. Thus if students begin grade 1 with a new math program, the new grade 2 should be tested and ready for them the following year, grade 3 the following and so forth.

Figure C: Possible Center Work Progression Schedule, Year One, 1988/89 for a sample of subjects
(Illustrate only)





*Assumes first and second halves of years' materials can be field tested simultaneously because bridge materials can be built into beginning of each sequence, if necessary.

Dev. = development
P.P. = prototype materials production
Tot = training of trainers
K = kindergarten
1, etc= grade level

1a = First half, grade one
b = Second half, grade one
TT = training teachers
F/test = field test
install= regualar classroom of use newly-developed and tested materials by teachers who have received specific training to use them.

The output cycle in Figure A (page) gives the impression that the materials shown for year 1 can be developed and tested in one year. This is true if the development cycle starts in May or June so that the materials will be ready for field test during the school year when no final exams are scheduled - from approximately September 20 to April 15 or so. They could then go to CAUSB for production at least six months prior to the need for them in the schools -- six months is the production lead time CAUSB needs. This means that materials starting development in May 1989, for example, can be implemented in the schools beginning in September 1990, some 17 months later.

Hence, in order to fit field testing into a manageable cycle the staff may have to test smaller units of materials on a sampling basis. This can be accomplished satisfactorily if the informal trials during development yield the data needed for revisions so that they field tests are confirmatory in the main and are primarily tests of the teacher-training materials. This puts a premium on the curriculum developers' skills and knowledge of the developmental stages and learning levels and abilities of the students for whom the materials are intended. The rule is simple - the better the fit the first time, the less subsequent trial and revision are required.

If the Center is to ensure a steady flow of materials into the schools on a regular bases, therefore, scheduling the start of development and keeping to a development, trial use, revision, field test and training schedule is of the utmost importance. The staff shouud break the materials for a full year of teaching into two segments -- one for the first half of the year, the next, for the second, as in Figure C, and should have a stockpile of at least a year's worth of tested materials for installation and large-scale use at a later time, so they can reduce the pressure of keeping to a production schedule that is only a few weeks ahead of the schools' teaching schedules.

As has been mentioned before, it would also be wise to start a parallel development of learning resource materials, short-teaching units, and other learning materials that can be produced relatively quickly, are of high interest to students, are supplementary to the other course materials, complement the major course objectives, and lessen dependence on the textbook. These will not require extensive field testing nor a great deal of teacher training, and if properly designed, can be linked by transition or bridging materials so as to eventually make up an entire year's course of study.

An unknown factor the Center will have to learn more about that will affect their scheduling of materials development and installation is the teachers's and the schools' absorptive capacities. That is, how much change can they handle well and on what schedule? Overloading the schools and teachers with large quantities of materials requiring changes in their teaching practices may well results in creating a situation worse than the one the Center is designed to correct.

For example, since grades one, two, three, and four are self-contained, the introduction of new sequenced-teaching materials that require changes in the teachers' behavior and knowledge is limited in Figure C to no more than two academic subjects per year.

Figure C also is built on the assumption, however, that since the subject "General Knowledge and Environmental Education" is taught only three periods a week and is not burdened by heavy pre-requisites for sequencing, it can also be introduced in grade one in the same year as a new math and new reading (Arabic) program. Should this prove to be untrue, it should be rescheduled for installation in year 2.

The sequence used in Figure C for the "General Knowledge and Environmental Education" course can also be used for those subjects like art, music, social studies, and religion which do not require a full one hundred fifty or more instructional periods per year, as does mathematics, for example. They are not illustrated in Figure C since they do not require so much schedule management nor as much development and field testing time.

Though only about five months actual writing time is required to finisn a year's lessons of sequenced materials (100 working days at a production rate of one tested page per day), it will take abut eleven or twelve months to complete the full set of fully-tested sequenced teaching/learning materials for one grade level and have them ready for installation. This is usually enough teaching material to cover a teaching year of 150-170 days, when time is included in teaching for diagnostic, review and mastery testing; for re-teaching the slower student and providing enrichment for the faster students; and for drills and practice applications.

The combination of arranging for field testing, training teachers, supervisors, data gathers, and analyzing the results, making needed revisions, preparing final camera-ready copy, printing and distributing the materials, and training teacher trainers who will in turn train teachers for installation and large-scale use consumes the remainder of the time after the initial development is completed. (See Annex E for the schedule of school subjects currently taught in grades 1 through 12).

Again, please note that the development schedules shown here in Figure B and C are for illustrative purpose only. One of the Center staff's first tasks will be to determine priorities and layout their materials development, testing and training schedules for each subject matter area to fit the results of their analysis of the current situation in the schools, the need for revisions in currently-used materials, their training schedule, and the time required to develop the master scope and sequence chart.

The output cycle in Figure A (page 36) gives the impression that the materials shown for year 1 can be developed and tested in one year. This is true if the development cycle starts in May or June so that the materials will be ready for field test during the school year when no final exams are scheduled - from approximately September 20 to April 15 or so. They could then go to CAUSB for production at least six months prior to the need for them in the schools -- six months is the production lead time CAUSB needs. This means that materials starting development in May 1989, for example, can be implemented in the schools beginning in September 1990, some 17 months later.

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VI. TECHNICAL ASSISTANCE REQUIRED

It is recommended that three technical assistance contracts be issued. One will be concerned with providing training and consultation and advice on subject-matter content, learning technology, and the latest in research knowledge to the Center's staff development program during the first five years of the Center's life. The second will be for formative evaluation. The third will be for summative evaluation. In addition we recommend that USAID/Egypt use as IQC or other quick-response mechanism to contract for the service of one full-time person and four part-time consultants for a period of from four to six months to provide staff training to the Center and evaluation and advice to the Center and USAID during the Centers' start-up period, prior to the time the longer-term technical assistance contract can be awarded.

The long-term Technical Assistance Contractor will provide:

- Advice and consultation on call to the Centers' Director and staff as they carry out the initial organizational development and team building.

- Advice and consultation to the team leaders and others on ways to optimize their activities, schedules, adjust work loads, etc., to follow-up on the Center's decision-making about materials development, testing, post-test analytic work, and materials revision. They will also help in ensuring that the technical support, review and information functions relate efficiently to the development function.

- Help in organizing and conducting staff development training including core, specialized group training and specialized individual training. The contractor will also provide on-the-job training and help to plan and arrange for participant training.

- Staff development training, to help the Center staff with the methodology to use in converting general goal statements into specific learning concepts and measurable objectives and in ordering the objectives into a comprehensive scope and sequence matrix.

- State-of-the-art advice on subject matter education and on curriculum design and instructional technology.

- Staff development training, to help the staff tailor curriculum models and materials to the characteristics of Egyptian pupils and teachers, and to the variety of school conditions in which the materials and methods will be used.

- Advice on school tryouts and feedback techniques, on design and implementation of field tests and on the analysis and interpretation of data consistent with

efficient, practical revision, labor requirements and schedules.

- Advice and training on the complete range of tests and test items used in modern learning modes, including self-administered diagnostic, review, and mastery tests, teacher-administered tests, materials-tryout tests and observation check lists; field-test measures of pupil's achievement, attitudes and work habits, training effectiveness, teacher performance and the relevance, validity and reliability of measurement and assessment instruments.

- Advice and training on the design and conduct of effective short-term preliminary studies needed to determine optional, practical teaching techniques, formatting, designs, media uses, materials, packaging designs, and teacher training and orientation materials, methods and programs packages.

- Advice and training on all aspects of training of the trainers and teacher in-service training, including special training considerations for adults; concept and task analysis techniques; the uses of computers, media, and modern text and graphics designs; as well as participatory, exprienced-based learning modes, performance-based skills development, and performance-based training designs and assessment.

- Advice and training on standard operating procedures, regularization of operations to maximize efficiency, and related organizational and operational matters as the Center matures.

- Advice on and training for forward planning.

The contractor will assign a five person team initially. It should consist of:

- A Chief of Party with a knowledge of organizational development and experience in developing similar institutions, (those characterized by intense intellectual activity depending on mutual support and interaction among specialized groups and individuals and committed to high productivity output that must meet inflexible schedules, such as the annual school cycle.) The COP should be a senior person who has demonstrated successful institution-building capability and who has expert knowledge of curriculum development.

- A specialist in instructional design and technology for the life of project.

- A specialist in assessment, evaluation, practical empirical studies, testing, field-test design, conduct and data analysis and related matters for the first four years.

- A specialist in training with a knowledge of such foundation topics as individual development, individual differences, and the psychology of human-learning for the intial two years.

In addition, the Contractor will provide the assistance of short-term specialists in subject matter and pedagogic areas and will facilitate logistics requirements for equipment and supplies.

The contractor should begin as close to the inception of the Curriculum Development Center as possible, in order to assist it to adopt an empirical orientation and mode of operation as well as to provide know-how and additional training to staff on scientifically-based curriculum and materials development.

The formative evaluation contract should also begin at the inception of the project. The evaluators should help both the Technical Assistance Contractor and the Center's staff to identify goals, processes, bench marks, and expected outcomes, and the techniques by which they can be realistically assessed throughout the life of the project. The evaluators will periodically visit the Center and schools in which it tries out methods and materials in order to provide fresh, objective looks at the Center's processes and outcomes and at the technical quality of their work.

The evaluation contractor will provide advice to the Center staff, to assist them, the MOE, and USAID to make adjustments that will also increase the effectiveness and efficiency of the project. During the third year the evaluators will visit more frequently to assist in a mid-term evaluation of the Center designed to help determine its future course.

The second evaluation contractor will conduct a summative evaluation during the Centers' fifth year of operation to assess the Centers' accomplishments and the degree to which it has solve the problems for whose solution it was created. The focii of inquiry should be on the sustainability of the Center as an autonomouse operating unit of the Ministry, the quantity and quality of the Center's products, its productivity, the impact of its products on the quality of Egyptian schools, and its relationships to other elements of the Egyptian educational system.

The pre-project technical assistance specialists should not be assigned as a substitute for the longer-term technical assistance team. If the Center gets underway substantially before the TA contract is awarded, the short-term assistance provided during start-up while of great help to the Center should not give the illusion that long-term assistance is not necessary. This would be most unfortunate, for no matter how expert, the short-term nature of the experts work will not allow them to provide the sustained expertise, training, consultation, and advise required for the type of Center that has been envisioned.

- Evaluation

  This equipment will be used for statistical analysis and test-item data bank development, as well for as the generation of reports.

- CD Roms

  Included in the specifications are the basic software packages needed. There are numerous additional software application packages available to expand the capabilities of the computers, depending upon specific needs.

- Video Taping and Editing

  This includes video cameras, editing, and sound equipment sufficient to make training tapes of teachers and students in actual classrooms, teachers using different models of instruction, teaching the new materials, etc.

- Vehicles

  For transport of field test personnel, trainers, and other staff to schools.

- Maintenance Equipment

  Hand tools for minor carpentry and electrical repairs.

No janitorial equipment has been included since janitorial services will be purchased on a contract basis.

The equipment list has been calculated based on specific computers known to be widely available in Egypt and for which repair and maintenance services can be and are regularly provided. The Design Team would prefer computers from a different manufacturer for use by the curriculum developers -- computers that are easy to learn to use, are user friendly, and provide immediately perceptible information, graphics, page layouts, etc. rather than those that require intermediate abstract transformations to arrive at page spreads and layouts.

Hence, we suggest that before any bid specifications for computers are made final a modest inquiry be made of whether the vendors for those computers which in our opinion are the most desirable for the developers can and do supply adequate maintenance, parts, and repair services. If so, we urge they be bought for the developers. The other users in the Center, the Evaluation and Administrative departments, are better off with those computers for whom the specifications were drawn.

VII. EQUIPMENT AND FACILITIES

An equipment specifications list will be found in Annex F. It lists the equipment needed for:

- Graphics Production Center, including a dark room and camera equipment.

  The materials listed in this section cover the basic graphic artist's tools. This represents the minimum basic equipment to prepare, design and produce graphics and artwork not generated through the computer. A good portion of artwork is assembled by hand and will require the production of photo-ready final copy, which is done in this area. Photographs can also be screened in preparation for printing. All developing, copying and process graphics are controlled through this area.

- Materials Production Center, for copying, trimming and binding.

  This section covers the equipment needed to bind printed materials into book or pamphlet form and produce fairly large quantities of manuals and other in-service materials for distribution. Two systems are listed; the comb binding system for materials that may need revision and the unbind system that produces more durable finished books and manuals. Also included in this section are such items as large paper shears, staplers heavy duty punches (paper drills), and production-type copy machines. This is the area that produces the finished product.

- Computers, related hardware, protective equipment and software. This equipment will be the basic word processing and printing equipment that the staff will use to produce the raw copy which will then be turned over to the computer-aided graphics design.

- Graphic Design

  This is the equipment that will be used to produce the computer-assisted graphics. It incorporates equipment for accessing CD Rom materials, manually prepared graphics materials, and computer generated text for inclusion in the final product.

- Administration and Accounting

  Administrative operations including accounting, payroll, budgetting, and scheduling among other applications. The equipment in this area will be used for administrative output such as reports, correspondence, and MIS applications.

Facilities

The Curriculum Development Center will need to house as many as 120 persons in order to develop a K-12 curriculum including teacher materials within a 6-10 year period. The scope of its work will required approximately 40 full-time curriculum developers led by from 15 to 17 subject matter specialists. They will also need the services of approximately 20 technical specialists such as graphic artists, media technicians, shop technicians, and test and training specialists. Additionally the Center will need a staff of 6 persons to develop special materials for the gifted and the learning disabled. It will also need an administrative staff of 10 persons for such functions as accounting, purchasing and inventory control as well as some 12 secretaries and clerks to process the flow of work. Finally the Center will require some 10 Unit Heads in addition to a Director and Assistant Director.

In addition to offices and secretarial work stations the Center will need space for the following activities.

- An 80 Sq. meter mechanical shop for prototype model and kit-construction
- A 15 Sq. meter electrical shop
- A 25 Sq. meter graphics and media room
- A 10 Sq. meter photography shop
- A 25 Sq. meter duplicating, assembly and paper supply space
- A 20 Sq. meter library information Center
- A 30 Sq. meter board room which can also serve for small work meetings
- A 12 Sq. meter supply room
- a 16 Sq. meter storage room for materials awaiting field tests

If one calculates that the minimal space normally required for a professional worker is 6 square meters it can be seen from these figures that the space allocation design for one floor, (ca 650-700 square meters) allocated to the Center in the current plan for housing is inadequate. For proper functioning without being wasteful of space or profligate in its use, an additional one-half floor is required.

PN-AEF 208

A NATIONAL CENTER

FOR

CURRICULUM AND MATERIALS DEVELOPMENT

A N N E X E S

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A NATIONAL CENTER

FOR

CURRICULUM AND MATERIALS DEVELOPMENT

A N N E X E S

LIST OF ANNEXES

A. THE MISSION

B. ORGANIZATIONAL FUNCTIONS BY UNIT, PERSONNEL, JOB DESCRIPTIONS AND QUALIFICATIONS

C. FORMULATING OBJECTIVES, SELECTING, AND ORGANIZING LEARNING EXPERIENCES

D. THE INSERVICE EDUCATION SYSTEM IN EGYPT

E. ORGANIZATION OF THE MINISTRY OF EDUCATION SCHOOL SUBJECTS AND TIME TABLES

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G. BUDGET

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ANNEX A

THE MISSION

This paper was written before the counterpart American team arrived in Egypt. Its purpose was to guide the team by making clear the Egyptian Government's intentions and to forecast the structure of the center.

lucational curricula are among the most important inputs in the educational process. The curriculum represents the substance and method of education. Any educational reform policy has to give special attention to curriculum development and design, preparation, and production of educational materials that respond to the needs of society and students and that equip students to keep up with scientific and technical developments.

An examination of the status of the curriculum development process at the MOE reveals many drawbacks and shortcomings:

1. The lack of integrated agencies or organizations for carrying out curriculum and educational materials development functions. These functions are dispersed among many organizations, agencies, and general directorates belonging to different central agencies and sectors. This has lead to diffusion and overlap of functions and reduced the capability of the system to exercise any quality control over the products or hold various participants in the system responsible for their performance. This confusing structure has also made the interaction between the elements of the system impossible. Thus necessary interaction between the planning, implementing, and follow-up elements of the curriculum system have disappeared. The system also lacks adequate coordination with educational research.

Overlap of functions and responsibilities of the different offices and directorates that are currently involved in curriculum development has led to difficulties in coordination of work between them and in evaluating their performance in order to penalize weak performance. The dependence on a committee system has weakened the functions of control, supervision, and follow-up. This has happened because in many cases a single committee is given the roles of curriculum design, production, review, and approval. Such committees have thus became the judge and the defendant at

the same time whereas their role should have been confined to setting curriculum specifications and supervising the production of the resulting educational materials at the different stages of writing and production. The committees are now playing a self-conflicting role of evaluating their own production.

The formation of separate committees for each subject has weakened the cohesiveness and integration between the different subjects of the curriculum and the coordination between the various educational activities and experiences. As a result each part of the curriculum is being taught in a manner that is completely unrelated to the other parts. This has led to considerable vertical and horizontal duplication between subjects (i.e., in the same year and in different years) and has also led to an enormous expansion of the sizes of syllabi and curricula.

One of the most important principles in modern education is the use of an integrated curriculum in which the contents of the different subjects and years contribute towards common objectives and strengthen each other in a manner which helps in building the knowledge, spiritual, and skill aspects of the personality.

The writing of school textbooks has been monopolized by a number of authors whose names recurrently appear on the books of the different stages either as authors or reviewers. Most of these authors exercise textbook writing by virtue of their positions in the MOE and not because they have the necessary technical background or skill for this process. Their role in this process represents a conflict of interest situation because they have the responsibility of supervision over the textbook writing process, a task which they are at the same time performing.

Curriculum development is an established technical branch which has its own basis, methodology, approach and subspecializations. The process of curriculum development needs the curriculum planner, author/writer,

educational problem specialist, editor, language reviewer, illustrator, testing specialist (aptitude and achievement), and the educational technologies specialist. All these need to coordinate their activities and work as an integrated team (i.e., under the same administrative structure) to reach common educational goals.

5. The current system uses only one type of educational material, i.e., the textbook and neglects many other important instructional materials, e.g., remedial materials for retarded children and/or those with learning disabilities, accelerated materials for fast learners and advanced students, reference materials, diagnostic tests, accompanying materials to the main syllabus or curriculum which could be used to strengthen its objectives, additional external references especially children's dictionaries, self-instruction materials such as educational kits and packages. All these reinforcing and assisting materials are completely absent from the curriculum development process in Egypt.

6. The current system does not test or evaluate new textbooks in a limited sample of schools before extending its use to the whole system. No such experimental check is made on the suitability of the new books to the target age group or its readability and hence no refinement or revision is made prior to the wider utilization of the new materials. This process of experimentation and validation of the new books is a necessary process for assuring the adequacy of the new material, the value of its contents, its compatability with materials taught under different subjects, and non-duplication of other subjects.

7. The current system does not include any provision for training teachers (in-service) on new developed curricula. Accordingly teachers are not enthusiastic about the new materials and do not react favorably with its philosophy or alter their teaching methods to fit and accommodate the new curriculum. In-service training aims at raising the professional level and efficiency of teachers and enriching their skills. The ability to deal with new developed curricula is one of the most important such

skills. Any curriculum development or reform effort which is not coupled with a teacher training effort to train teachers on the use of the new materials, is likely to be completely unsuccessful.

8. The current system depends on part-time committees. The members of these committees have other jobs and devote only a limited fraction of their time to this function. In most cases this has led to a low efficiency in the utilization of the available human resources and to delays in the delivery of new books to schools. The work of these committees is not coordinated. The organizational relations between the committees is linear (sequential) rather than circular (?) This leads to delays in communications and actions and a distribution of responsibilities and decision making between several acting directorates or administrative bodies. The resulting system is not cost-effective and does not have any quality control mechanisms.

To avoid all the above ailments and shortcomings of the current system it was essential to propose the formation of an integrated organization that has the mandate of handling the whole curriculum development process for all branches and stages of general and technical education. Its scope of work would nclude all functions related to curriculum design, preparation, field esting, refinement, production, field evaluation, and further review and evelopment. The scope of this agency would also include teacher training on ew curricula as well as the development of other curriculum tools and ducational aids and not just textbooks. It is suggested that this :ganization be called the Center for Curriculum Development and lucational/Instructional Materials. It is our view that a careful iplementation of this project by the MOE would enable the educational reform olicy to achieve its goals in helping students acquire better education and arning, in a shorter time, at a lower cost, and helping students to learn w to learn more and continue learning all their lives according to the two vernment supported and declared goals of continued education and self struction.

In our view, most of the problems facing the system are due to the lack of coordination and cooperation between the different administrative units performing related and common functions and the lack of sufficient control mechanisms and units that are responsible for quality control. This has led to quantitative developments that were not necessarily accompanied by proportionate qualitative developments or improvements. Thus the outputs of the educational system became disproportionately lower than its inputs, i.e., the rate of return of the system became very low. This low efficiency of the educational system necessitates, among other things, quick attention to curriculum development (CD) and the integration of all activities related to such development in one agency or center that will assure functional coordination and quality control by including the various administrative and technical units that will control the quality of system inputs like curriculum developments, in-service teacher training on new curricula, technical advisory and directory services, evaluation, and educational research.

Principal objectives

In the light of the above-mentioned shortcomings and problems in the system, the proposed center will have the following main objectives:

1. Adoption of modern educational technologies for curriculum development in the general comprehensive sense and not just for books and printed materials.

2. Achieving full coordination and harmony between the different elements of the CD process (i.e., planning, design, production, field testing and experimentation, generalization, and evaluation) in such a way as to produce a positive and regenerative effect on system outputs.

3. Translating the current social, political and developmental goals and philosophies to educational programs that would be instrumental in effecting the required behavioral changes in students to acquire the

desired coupling and relation between education and development and the satisfaction of labor market demands for skilled manpower by supplying that market with the right mix of educated graduates of the different stages (external system efficiency).

4. Complete supervision of all the stages of the "Curriculum Production Process", its formative evaluation (before approval and generalization), and summative evaluation (after generalization) to assure its effectiveness and adequacy. Rationalizing expenditures in this sub-sector by optimizing the use of the available resources.

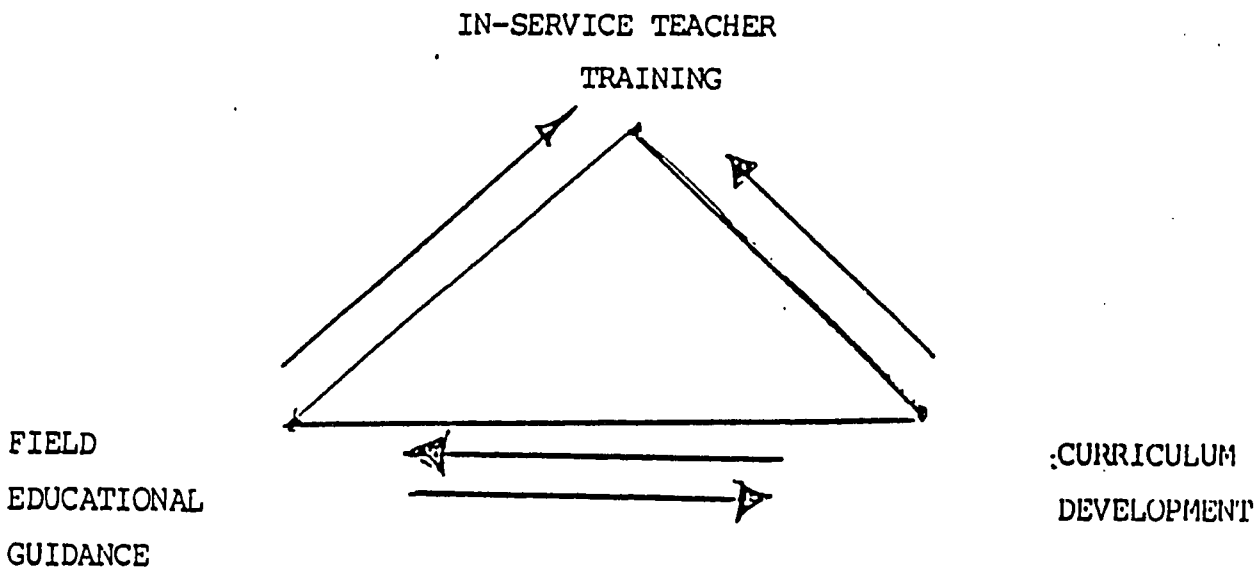
5. Researching and introducing alternate educational means and technologies suitable for the high-density student system especially such alternate materials that will reduce the negative effects of school crowding and increase the likelihood of the persistence of students in the system and thus the reduction of dropout rates. Examples of such alternate assisting materials might be the production of educational kits and packages, tape cassettes and/or video cassettes, correspondence learning. Such methods might relieve part of the congestion in the system.

For this center to achieve its goals necessary technically qualified human resources have to be made available. Other necessary ingredients or features that will make the center effective are: (a) A cohesive organizational structure; (b) A high degree of flexibility and creativity have to be authorized and exercised; (c) A dynamic, informed educational leadership that combines administrative skills and capabilities with technical experience and a comprehensive and thorough understanding of the problems of the Egyptian educational sector.

Elements & Components of the Center

As previously mentioned the center attempts to achieve coordination and integration between curriculum development, in-service teacher training, and

educational guidance. Without this coordination the gap will keep increasing between planning and implementation, and the supervisory, control, evaluation, and follow-up functions will deteriorate. The interaction between the main elements could be depicted by the following schematic diagram



The integration of these three elements under one agency or organization is essential to ensure uniformity in the standards and measures of development and reform and smoothness in implementation and integration in evaluation and follow-up activities. When curricula are developed or improved, teachers have to be trained on the use of the new curricula in order to enable them to modify their teaching methods to fit the new materials, and consequently educational guidance becomes necessary to: (a) judge and measure the efficiency of the educational process and the success of the new curricula in achieving its goals; (b) determine and record the problems facing teachers and students through guidance field trips; and (c) analyze the results of achievement tests and action (performance) research. Consequently the educational guidance specialist would then transmit this information to the curriculum specialist to help in forming a scientifically and empirically founded information base for further curriculum reviews and reconsiderations. This demonstrates the close interactions between the elements of the proposed

center and their relations to the quality of the inputs of the educational system.

Needed Human Resources:

1. Curriculum Development

1.1 Experts in curriculum development that hold M.SC's and Ph.D's in this field and who have the necessary practical experience in the various aspects of curriculum development, i.e., curriculum planning, writing, review, testing, and evaluation. In case of shortage of qualified personnel it is possible to use assistant instructors of faculties of education (curriculum section) and place them on internal missions in the center to be trained and collect data for their theses.

1.2 Experts in education design, technologies and the preparation and production of instructional materials and aids.

1.3 Experts in personality development psychology and the problems of student achievements, psychological testing, design of personal testing devices, and remedial instructional materials.

1.4 Drafters, calligraphers, and illustrators for production of demonstration, charts, etc.

1.5 Language editors and reviewers.

2. Technical Guidance

2.1 Leaders in technical educational guidance to be chosen from those who have a demonstrated excellent performance especially in monitoring, supervising, and evaluating the instructional process.

2.2 Experts in instructional methods and psychology especially those who are experienced in the analysis of educational situations, the identification of problems, the analysis of the results and achievements of the learning process, and the analysis of student-educational problems at the different stages.

2.3 Field researchers in the surveying and curriculum fields. Their function will be to analyze the contents of curricula and syllabi to determine: (a) their responsiveness to social needs and student talents and goals; and (b) their conformity with modern scientific and technical developments. Such researchers could be prepared by training selective elements of the existing technical guidance section.

3. <u>In-Service Training</u>

3.1 Experts in determining in-service training needs.

3.2 Experts in planning and designing in-service training programs.

3.3 Experts in programming in-service teacher training programs and needed materials.

3.4 Experts in evaluating the impact of training programs (follow-up and studies).

3.5 Experts in training teacher trainers.

4. <u>Technical Staff</u>

4.1 Educational System Analyst.

4.2 Economics of Education Researcher.

4.3 Educational Information System Specialist.

4.4 Computer Specialist.

4.5 Translator; Arabic/English and vice versa.

4.6 Maintenance Specialist specialized in instructional equipment and aids.

5. Support Staff

5.1 Administrative employees.

5.2 Accountants.

5.3 Secretaries.

5.4 Janitors and other workers.

Needed Equipment

1. A separate integrated building to be equipped and furnished in a functionally suitable manner.

2. Mainframe computers to be connected to an educational information network.

3. Printing and photocopying machines (pre-production phases).

4. Vehicles for facilitating field work.

5. Supplies and materials related to center's functions.

The actual production of instructional materials will remain the responsibility of CAUSE.

Organizational Structure

The establishment of the center will require some reorganization of existing units to configure the curriculum development system in a more suitable and flexible manner.

1. Reconsideration of some of the existing units and directorates. The continuation of some such units would imply conflicting and overlapping responsibilities.

2. Freeing the technical guidance staff at the central level (i.e., consultant and general guide level) from the burden of field supervisory work to allow them to devote more time to the more important tasks of curriculum development and training. This also lead to the centralization of technical guidance.

. Changing some job titles to make them comply with the modified proposed functions.

4. Preparation of administrative bylaws that would organize and govern the work of the center and specify precisely its functions, responsibilities, and organizational and institutional relations with other sectors of the MOE.

Estimate of Needed Resources

- A detailed estimate will be made in the near future after considering the existing staff and the needed equipment.

- This project will be incorporated in the five year plan of the education sector.

3. Initial funding (staffing and refurbishing) will be covered from a $6 million grant from USAID. This amount has been allocated from the technical assistance program with USAID. Further assistance will be supplied in following years to complete the establishment of the center.

4. Establishment of the Center and training of staff is expected to occur between June and Dec. of 1988.

9I

ANNEX B

ORGANIZATIONAL FUNCTIONS BY UNIT, PERSONNEL, JOB DESCRIPTIONS, AND QUALIFICATIONS

Center for Curriculum and Instructional Materials Development

1. Center Governance and Administration

a. Goals of Center Governance

(1) Determination of the need for curriculum, instructional and materials development.

(2). Maintain systematic awareness of innovations in curricular development theory and applications in Egypt and other nations.

(3). Plan, test and disseminate curriculum changes instructional models, and materials development which respond to the needs and possibilities of Egyptian schools.

(4). Plan, test and prepare inservice trainers, training programs, and training materials, for national dissemination of curriculum and instructional development.

(5). Cooperate with the Colleges of Education to incorporate in teacher education curriculum, instructional and materials developments engendered by the Center.

(6). Cooperate with agencies of the Ministry of Education which are related to the developments being designed and tested by the Center.

(7). Provide information about curriculum and instructional developments to parents and communities throughout the nation in order to gain their understanding of such changes and to encourage their cooperation in the education of the young.

(8) Establish and contiuously improve a communications network which facilitates the flow of information and resolutions of problems among the national center, regional training centers, and agencies of the Ministry of Education.

(9). Provide curriculum and instructional materials and technical assistance to other Arabic nations.

(10). Establish national, regional, and international linkages with institutions and associations committed to curriculum and instruction development.

b. Governance and administration.

(1) Minister of Education: The Minister is the Chairman of the Center Board.

(2). Center Board: The Center will be governed by a Board comprised of members appointed by the Minister of Education.and representing educators, industrial and business leaders, and parents' organizations.

(3). Director: The Center will be administered by a Director appointed by the Minister of Education and responsible to the Center Board.

The Director is the chief executive officer of the Center and a regular member of the Center Board. It is the Director's responsibility to guide the activity of the Center to achieve its objectives in accord with policies and planning approved by the Board.

The Director with the aid of the Assistant Director for Development, and the external consulting specialists, will plan the goals and matrix of objectives of the educational system. They will also choose the priority curriculum and material developments to be pursued.

The Director will call upon the Center units to prepare and recommend choices of objectives and plans for curriculum and materials development.

The responsibility for planning is primarily within the scope of the Director's charge. In addition, the Director sets the standards of excellence and leadership in the entire complex of the Center, its activities and achievement.

Public Information Specialist will ensure the continuing public understanding and support of major curriculum changes, instructional improvements and new materials engendered by the Center. The incumbent will also systematically gain the

understanding, commitment, and participation of educators throughout the nation, especially school teachers. The professional work of the Center leadership will in this way be enhanced and supported. The endeavors of this office may include public education by means of print, video and radio media, public meetings, open radio and television discussions which afford the opportunities of questions by telephone, and parent-teacher discussion meetings at schools. The Director's position description contains a complete list of responsibilities.

The Center Director will be assisted in realizing curricular and instructional developments and administering the program by respectively the Assistant Director for Development and the Administrative Manager. The former, *the Assistant Director for Development,* will guide the regular units and the teams, responsible for the specific processes of development ranging from instructional model design to field testing and training. More specific delineation of responsibilites is provided in the position descripton.

The Administrative Manager of the Center will provide the essential administrative support services including personnel, financial ,facilities management and public information services. The position description of the Assistant Director for Administration includes a total listing of responsibilities.

(4). Technical Advisory Committee: The Committee will be comprised of scholars in relevant disciplines such as philosophy, psychology, and sociology and in curriculum development. It will assist the Director and other regular Center specialists in developing the goals of the Egyptian educational system, the matrix of system objectives, and the definition of priority developments. Individual specialists may also be asked to join in planning particular curricular and instructional developments.

2. Organization

a. Center Units and Offices

The Center is composed of units and offices.

The units are: Subject Matter Coordination Unit which encompasses diverse subject matter development teams; Individualized Instructional Materials Unit; Evaluation and Field Testing Unit; Training Unit; and Content Quality Control Unit.

These units are under the Office of the Assistant Director for Development. Attached to this is a support office for Technical Services. Furthermore, The Assistant Director for Development is assisted by selected external subject matter consultants and other specialists.

Technical Services

(a). Provides a range of services needed for high quality production print, video, and audio recording, interactive video programming, et al.

(b). Provides photocopying services ranging from simple duplication to enlargement and color.

(c). Acquires and maintains equipment and supplies.

(d). Provides supervision and monitoring of technical personnel functions.

The Office of the Administrative Manager is responsible for administrative services and information resources.

Administrative Affairs

(a). Personnel -- Similar to units in other organizations.

(b). Facilities -- Similar to units in other organizations.

(c). Finance -- Similar to units in other organizations.

(II). Information Resources

This contains staff training and support services related to audio-visual media, library, data bases, and distance education.

1). Trains staff and external specialist participants for awareness and use of media and mediated information.

2). Responsible for acquisition of references, catalogues and other support sources for curriculum development.

3). Stores and maintains all forms of information sources including books, audio and video cassettes et al.

4). Seeks to establish and increase access to data bases in the Arabic countries and other nations, including the multi-nation.

The Office of the Executive Assistant provides liaison, planning, public relations, and secretarial services to the Director.

The Director is assisted by the Technical Advisory Council.

b. Unit tasks

(1). Subject Matter Coordination Unit

(a). Translates goals and matrix of objectives into specific curriculum and materials development projects.

(b). Ensures horizontal and vertical integration in the grouping of objectives and the design and development of curriculum, instructional design, and materials production.

(c). Ensures availability of external services needed for curriculum and materials development initiatives.

(d). Liaisons with Assistant Director for Development in reporting and realizing the curriculum and instructional development.

(e). Recruits and assigns full time and part-time members to teams in accordance with the needs of priority development projects.

(f). Reviews existing goals and curriculum.

(g). Designs operational planning and scheduling of curriculum and instructional materials development.

(h). Suggests curriculum development planning for each subject area.

(i). Coordinates with the other units to arrange for quality review, field testing, training, and supplementary or special materials.

(j). Each team under the leadership of its leader is responsible for all phases of curriculum development in its subject area including: Curriculum plans objectives, content, suggested teaching models, instructional materials, teachers' guides, enrichment and remedial materials, test items and model-

test papers, materials for training and the media, etc.

(2). Training Unit

(a). Responsible for arranging training and for training trainers for dissemination.
(b). Training of field testers.
(c). Develop pilot training for inservice programs.
(d). Arrange for internal training staff development.
(e). Advise on development of training materials, e.g. teacher guides and video teaching aids.
(f). Orient colleges of education with regard to new or revised curriculum materials to ensure incorporation into pre-service teacher education programs.

(3). Individualized Instructional Materials Unit

(a). Preparation of support materials and tests for the bright, gifted and talented.
(b). Preparation of support materials and tests for the education of the learning disabled.
(c). Selection and creation of special materials such as references and dictionaries.

(4). Evaluation and Field Testing Unit

(a). Evaluation of curriculum materials developed in the Center.
(b). Evaluation of training of trainers programs.
(c). Evaluation of pilot teacher training programs.
(d). Designing and conducting field testing (protocols, testing instruction, and collection of data).
(e). Developing test items and item banks.
(f). Developing different types of psychological and educational tests.
(g). Conduct follow up studies for the new curriculum and materials produced by the Center.

(5). Content Quality Control Unit

(a). Reviews content, layout, size, extent, and other characteristics of instructional materials.
(b). Defines and applies quality control standards for curriculum development and materials evaluation.
(c). Applies quality control procedures for articulation (horizontal and vertical).

3. Staffing: Responsibilities and Qualifications

a. Personnel listing

The proposed Center personnel are identified below with a description of duties and qualifications. These personnel area to be appointed during the first year. For the most part when additional personnel are appointed they will increase the number of staff in the same types of duties as those in the first year.

CENTER STAFFING

Personnel listing and number

1.0 Director's Office

1 Director
1 Executive Assistant to the Director
1 Public Information Specialist
2 Secretaries

2.0 Administrative Management

1 Administrative Manager
1 Secretary

2.1 Personnel

1 Personnel Officer
1 Secretary

2.2 Financial Affairs

1 Accountant/Cost Analyst
1 Payroll Officer
1 Purchasing/Inventory Agent
2 Secretaries

2.3 Facilities

2 Equipment Technicians
2 Facilities Maintenance
4 Drivers

2.4 Information Resources

1 Head, Information Resources
1 Librarian/Resources Specialist
1 Data-base Specialist
1 Audio-video Specialist

3.0 Assistant Director for Development

1 Assistant Director for Development
1 Assistant Director Assistant
1 Secretary

3.1 Subject Matter Coordination Unit

1 Head Coordinator
2 Assistant Coordinators
17 Team Leaders
40 Materials Developers
6 Secretaries

3.2 Training Unit

1 Head, Training Unit
3 Training Specialists
1 Secretary

3.3 Evaluation and Field Test Unit

1 Head of Measurement
2 Evaluation Specialists
2 Test Specialists
1 Secretary

3.4 Content Quality Control Unit

1. Head, Content Quality Control
2 Materials Designers
1 Instructional Technologist
2 Copy Editors
1 Psycholinguist
1 Secretary

3.5 Individualized Instructional Materials Unit

1 Head, Individualized Instructional Materials Unit
2 Special Materials Designers
1 Specialist for Education of Bright, Gifted and Talented (Part-time)
1 Specialist in Learning Disabilities (Part-time)

Specialist in Speech Pathology (Part-time)
Secretary

4.0 Technical Services Unit

1 Head, Technical Services
1 Photographer
1 Television-Radio Specialist
1 Calligrapher
4 Graphics Specialists
2 Shop Technicians
2 Secretaries

b. Personnel formation

The establishment and development of the Center assumes that the Center personnel will be formed during the first years. Therefore, the Center benefits by the formation of the Center, its first projects and its personnel at the same time. This will increase the probability of appropriateness and fit among the Center purposes, organization and staffing. For this reason the Center staff training is delineated as a major, continuing process engaging everyone from the Director to team members.

During these first years the staff will concomitantly engage in curriculum change and benefit by substantial training. The qualifications defined in the position descriptions are in the main the objectives of the training program.

c. Personnel team building: full-time and part-time staff

Much of the staff activity in the Center will be comprised of participation in groups. such as planning, implementation, training and evaluation. In an effective organization, most of the energy of the work force is available for doing and improving the work of the organization. A minimum of time and energy is expended on maintaining the human organization. Team-building efforts are aimed at improving the effectiveness, communication, and cooperative working relationships.

To assure the probability of achievement by the Center staff it is imperative that the Center personnel be developed as a unified, committed staff secure in the many groupings which will occur in development projects. Team development in its best sense is creating the opportunity for people to come togethr to share their concerns, their ideas, and their experiences---to work together to achieve common goals. Certain conditions of team building should be addressed. For example, one condition is cognitive understanding. Personnel are usually more willing to commit their time and energy to an activity if they clearly understand what they doing and why they are doing it. Given the complex of differing specialists and the participation of part-time and rotating personnel, team-building is especially essential in the Center.

d. Personnel career ladder: participation incentives

The Center should attract creative and substantially talented personnel. One inhibition to joining the Center, however, may be the need for clarity of employment continuity and professional advancement. Personnel working in other agencies may not be willing to sacrifice the possibility of advancement or salary gains. For this reason, career planning and advancement should be a planned incentive of employment in the curriculum center. For example, senior professional staff might be afforded academic appointments in the Schools of Education or at least the equivalencey of faculity positions and rank advancment. 2

c. Position descriptions: Responsibilities *and Qualifications*

POSITION: DIRECTOR

RESPONSIBILITIES:

1. Guides and ensures the systematic and qualitative definition of national educational goals.

2. Forms the operational plan and schema for converting the broad goals into measurable objectives. These objectives are then organized in scope and sequence to ensure vertical and horizontal integration and comprehensive fulfillment of the national goals.

3. Directs the identification of curriculum and instructional materials development needs, places them in priority order, and intitiates Center activities to fulfill priority needs.

4. Administers the Center development processes which produce curriculum and instructional materials.

5. Administers the Center as an agency of the Ministry of Education and maintains cooperation with appropriate units of the ministry and other entities to achieve national curriculum and instructional advancement.

6. Ensures effective, timely and cost-effective field testing and evaluation of Center product and training.

7. Ensures that the Center staff maintain state-of-the-art knowledge of curriculum and instructional development, media applications, training and evaluation.

QUALIFICATIONS:

a. Successful experience in teaching, as demonstrated by at least ten to fifteen years of evaluated experience.

b. Administrative experience in complex systems, including the realization of policy and procedures for priority planning, quality, control standards, personnel selection, and fiscal oversight.

c. Expertise and experience in curriculum planning and development, including transforming broad goal statements into a systematic statements of measurable objectives, subject matter scope and sequence, instructional designs, textbooks and other learning materials, training of trainers and evaluation instruments and processes.

d. Experience in inservice education and university preservice education.

e. Use of technology in education, including media and computer applications to instructional development, administration, information access and publication.

f. Experience in gaining public awareness and support for the purposes, planning and achievements of a major organization.

g. Doctorate in education with a major in curriculum and instruction.

h. Professorial rank or its equivalent.

i. Demonstrated leadership in an area of curriculum development.

j. Proficient in at least one foreign language.

k. Professional international experience such as participation in international projects and membership in international organizations.

Postion: **Executive Assistant to the Director**

Responsibilities:

1. Facilitates the acquisition of information needed by the Director to fulfill major developmental and administrative responsibilities.

2. Assists the Director in scheduling and setting priorities for meetings, presentations and communications.

3. Monitors and directs the flow of information into the Director's office and the communications from that office.

4. Facilitates communication with the Center staff.

5. Provides direction to the immediate office of the Director.

Qualifications:

1. Prior experience in administrative work.

2 Computer word-processing and spread sheet capability.

Position: **Public** ...Relations **Specialist**

Responsibilities:

1. Gains the support of the general society, the national and governate leadership, and special groups such as teachers, for order the work and developments of the Center.

2. Ensures substantial flow of information to the public concerning the activities and achievements of the Center.

3. Maintains awareness of information disseminated about the Center by any of its entities and assists appropriate persons in the Center to make presentations directly or means of the public media.

4. Prepares for the Director a continuous feedback of public speeches, media releases, related to the Center activities.

5. Maintains a listing of critically significant organizations which warrant regular delivery of information releases, presentations and other sources of data.

6. Maintains awareness of information produced by internal and external entities.

7. Other duties as assigned by the Director.

Qualifications:

1. Training and successful experience in public information services and media professional work.

2. Public speaking, writing and individual interpersonal skills and experience.

3. Knowledge of media leadership and professionals.

Position: **Assistant Director for Development**

Responsibilities:

1. Respsonsible for the overall vertical and horizontal integrity of the development process.

2. Initiates new curriculum development.

3. Maintains quality of process and products.

4. Regulates the flow of work.

5. Supervises amount and quality of output.

6. Insures that output is empirically oriented and field tested.

7. Selects technical personnel and subject matter specialists and curriculum developers.

8. Insures equipment, supplies, and technical services are sufficient and timely to complete the work.

9. Evaluates individual and group input.

10. Supervises and coordinates assignments.

11. Insures correctness and sufficiency of internal staff training is achieved on an appropriate and suitable schedule consistent with work output objectives and planning.

12. Recruits and facilitates outside consultants and other specialists.

Required Qualifications:

1. Minimum ten to fifteen years of successful teaching experience.
2. Expertise and experience as a curriculum and materials planner, developer and implementer.
3. Managerial experience.
4. Doctorate in education with a major in curriculum and instruction.
5. Professorial rank or its equivalent.
6. Demonstrated leadership in an area of curriculum development.
7. Proficient in at least one foreign language.

Position: Assistant to the Asst. Director for Development

Responsibilities:

1. Facilitates the work of the Assistant Director for Development by (a) providing information needed to respond to issues requiring the decision of the Assistant Director; (b) monitoring the communications and appointments requested of the Assistant Director, (c) relaying correpondence and requests for meetings to staff members charged with the specific areas of responsibility entailed in the communications; and (d) ensuring timely responses to inquiries, requirements for decision, and participation in meetings.

2. Ensures the effective working and productivity of the Assistant Director's secretarial staff.

3. Assists in timely communications by drafting responses et al based upon data and evidence gained from documentation and precedents approved by the Assistant Director.

Qualifications:

1. Experience as an executive assistant in a complex organization.

2. Experience in office management.

3. Effective interpersonal and communication skills.

4. Effective writing skills.

5. Competence in a foreign language preferred, but not required.

Position: Head Coordinator,
Subject Matter Coordination Unit

Responsibilities:

1. Forms the teams which create and develop curriculum materials and then reassigns team members as needed for other development initiatives.

2. Provides general supervision to insure that teams are producing high quality materials in a timely fashion.

3. Participates in the determination of development priorities and plans to achieve these priorities.

4. Recommends external specialists to serve part-time or full-time on teams.

5. Assists team leaders and materials developers to cooperate appropriately in order to achieve vertical and horizontal integration in the curriculum materials.

6. Keeps the Assistant Director for Development informed about all aspects of the development teams' operations.

Qualifications:

1. Professional degree in Curriculum and Instruction.

2. Core training in curriculum design and development.

3. Core training in testing and evaluation.

4. A minimum of five to ten years successful experience as a teacher.

5. Excellent organizing capability and interpersonal skills.

6. Core training in word processing.

Position: **Assistant Coordinator**

Responsibilities:

1. Provides assistance to the Head Coordinator in the selection of members, formation, and coordination of development teams, particularly for a given cluster area of subject matter specialties.

2. Provides leadership by general guidance, interpretation of the development objectives, and acquiring the services and support.need by the teams.

3. Informs the Head Coordinator of the status, constraints, and production scheduling of the teams under the Coordinator's general supervision.

Qualifications:

1. Proven organizational capability and interpersonal skills.

2 At least five years of successful teaching experience.

3. Knowledge of curriculum development and instructional design.

Position: **Team Leader**

Responsibilities:

1. With the Head Coordinator forms teams for curriculum and materials development.

2. Participates in the analysis and transforming of general goal statements into a matrix of measurable objectives, determining scope and sequence of objectives, specifying materials development, including those for content and process.

2. Provides subject matter expertise in curriculum and materials development.

3 Gains the advice of external experts.

4. Designs and writes instructional materials.

5. Analyzes curriculum in current use, identifies needed changes, and recommends plans and time tables required to achieve these changes-- either through revisions, addition of support materials, or creation of new materials.

6. Applies useful and effective learning aids, pupil performance measures, and follow-up activities in the production of instructional materials.

7. Constructs tests needed for instruction and includes them in the curriculum units and materials.

8. Supervises team members in planning and producing curriculum and materials

8. Evaluates training of trainers and training of the pilot groups of teachers.

Qualifications:

1. Expertise and experience in instructional technology.

2. Has demonstrated leadership, expertise and experience as a subject matter specialist.

3. Knowledge of and experience in curriculum development, instructional design, and materials development.

4. Training and experience as a writer of curriculum units and materials.

5. Team-building and productivity skills and experience.

6. A minimum of five to ten years of successful teaching experience.

Position: **Materials Developer**

Responsibilities:

1. Creates, selects, or adapts specific stimuli in formation of materials to be presented to pupils, including procedures to be used in presentation, teaching aids to be employed, desired responses, and teacher behaviors to remediate learning failures.

2. Writes curriculum materials including subject content, instructional strategies, learning facilitators, testing as part of the instructional process, and supplementary aids.

3. Reviews and revises existing curriculum materials selected for improvement and continued use.

4. Writes scripts for mediated materials such as video presentations to include content and appropriate instructional strategies.

5 Assists the team members in the recording and delivery of curriculum and instructional materials development.

Qualifications:

1. Training in curriculum development and materials production.

2. A minimum of three years of successful teaching experience.

3. Effective analytic and writing skills.

3. Organizational capability and interpersonal skills.

5. Personnel and budgetary management experience.

6. Knowledge and experience with media use in training programs.

Position: **Head, Training Unit**

Responsibilities:

1. Administers the training unit of the Center including

(a) planning the creation and growth of the training unit;

(b) in cooperation with development teams, planning training programs required for dissemination of new or revised curiculum materials; and

(c) acquiring the cooperation of Ministry supervisors and laboratory school authorities to gain the participation of trainers and the use of pilot schools.

2. Monitors the implementation of training of trainer programs.

3. Monitors the design and testing of teacher training models to be offered to trainers as a means of dissemination.

4. Gains the cooperation and services of development, technical, information resources, and evaluation units in the Center in implementing training programs and creating training materials.

5. Assists colleges of education to incorporate training elements for new or revised materials in preservice teacher education programs.

6. Designs and implements training of trainer programs by means of media and distance education.

7. Cooperates with technical services units in the production of media to support training programs.

Qualifications:

1. Expertise and substantial successful experience in designing, implementing and evaluating training of trainer programs and inservice-teacher training programs.

2. State-of-the-art-awareness of training of trainers and teachers as components of curriculum and instructional development.

3. A minimum of ten years successful teaching experience.
4. Organizational capability and interpersonal skills.
5. Knowledge of and experience in curriculum development

Position: **Training Specialist**

Responsibilities

1. With the cooperation of the development teams, designs and implements training of trainers programs for dissemination of curriculum materials produced by the Center.

2. Designs and tests pilot teacher training models for use by the trainers.

3. Ensures awareness of training program requirements and strategies in the development teams so that these needs may be recognized in designing curriculum and instructional materials.

4. With the cooperation of technicians and other support personnel in the Center designs and implements mediated and distance training training and models of teacher training.

Qualifications:

1. Expertise and successful experience as a trainer, a designer of training and an evaluator of training.

2. Organizational capability and interpersonal skills.

3. A minimum of three years as a successful teacher.

4. Training and experience in curriculum and instructional materials development.

5. Familiarity with media useful in training programs.

Position: **Head of** Evaluation and Field Testing Unit

Responsibilities:

1. Organizes and supervises the Evaluation and Field Test Unit.

2. Develops and applies field test designs and supervises field testing.

3. Interprets field test results.

4. Trains personnel to implement and review field test processes and results.

5. Informs the Assistant Director for Development of the status and projected initiatives of evaluation and field testing.

Required Qualifications:

1. Expertise and successful experience in evaluation, psychometrics, field test desgning and implementation, item bank development, and statistics.

2. Substantial expertise and experience in tests and measurements.

3. Organizational and management experience.

4. A minimum of five years of successful teaching.

5. A doctorate in measurement or evaluation.

6. Knowledge of and experience in qualitative evaluation, e.g., case studies, context evaluation, naturalistic field inquiry or quasi-anthropological methods such as non-participant observation.

Position: **Evaluation Specialist**

Responsibilities:

1. Designs and implements evaluation of curriculum materials, training of trainers programs, pilot teacher training programs and various support media and other materials.

2. Provides (a) needs assessments to determine requirement for a curriculum and instructional development; (b) program evaluation including the internal fit of the various components of a program; (c) program implementation or process evaluation; (d) program improvement; and (e) program certification.

3. Plans and implements field-testing of the curriculum materials in laboratory and pilot schools.with feedback determining revisions.

4. Plans formative evaluations of curriculum materials and training programs.

5. Provides and interprets evaluation results to development teams and Center leadership.

6. Maintains and provides as needed state-of-the-art awareness of evaluation methodology, materials, and research.

7. Participates in the definition of objectives to ensure the measurable nature of the objectives.

Qualifications:

1. Expertise and substantial successful experience in formative and summative evaluation, use of norms and criteria in testing, and use of unobstrusive measures.

2. Writing and oral communication skills.

3. A professional degree in Evaluation and Measurement.

4. State-of-the-art knowledge of evaluation methodology, materials, and applications.

5. A minimum of five years successful teaching.

6. A Master's degree in evaluation or statistics and measurement.

Position: **Testing Specialist**

Responsibilities:

1. Constructs tests and plans testing cycles as integral components of the instructional materials.

2. Designs and implements data collection and analytic procedures including types of measures such as performance and criterion-referenced tests.

3. Designs and implements plans to acquire and secure the integrity of raw data for analysis, reducing the data to computer inputs and management, and designing computer-assisted testing and analysis.

4. Trains development teams in the appropriate use of testing and its results.

5. Probes the effectiveness of the test components and testing cycles and revises them on the basis of trial evidence.

6. Designs and tries tests for training and instructional effectiveness in support of training of trainers and model development for teacher training in the dissemination process.

Qualifcations:

1. Expertise and substantial successful experience in tests and measurements including performance testing, norm-referenced testing, criterion-referenced testing, and unobstrusive measures.

2. Knowledge and experience in the use of statistics.

3. Communication and interpersonal skills.

4. Successful experience in teaching for a minimum of five years.

5. Special degree in testing.

Position: **Head, Content Quality Control Unit**

Responsibilities:

1. Administers the unit responsible for reviewing new and revised curriculum materials, trainer training programs, teacher training models, supplementary materials and media applications to ensure qualitative production and dissemination.

2. Selects and supervises diverse quality control specialists in a manner which encourages (a) individual initiative and integrity in quality review and (b) team building for total or comprehensive system review of materials and training.

3. Trains staff personnel to incorporate quality indicators in curriculum and instructional development and in the production of materials and supplementary media aids.

4. Trains staff personnel to incorporate quality indicators in training program plans including both training trainer plans or teacher training models.

5. Establishes criteria or standards of quality as guidelines to curriculum developers and training planners and administrators.

Qualifications:

1. Expertise and substantial successful experience in assessment of quality and in methods of content quality control.

2. Organizational capacity and interpersonal skills.

3. At least five years of successful teaching experience.

4. Demonstrated leadership in a subject matter area.

5. At least a Master's degree in curriculum development. A doctorate is preferable.

6. Possesses strong leadership qualities but is tactful and diplomatic in using them.

Position: **Materials Designer**

Responsibilities:

1. Reviews curriculum and instructional materials developed by the Center to ensure high quality productivity.

2. Reviews materials being prepared for dissemination to be certain of content, design, layout, and graphics quality and validity.

3. Reviews the documentation which is assumed to validate the content of the materials.

4. Reviews materials used for training of trainers and for pilot teacher training programs to ensure quality and validity of content, design, layout and graphics.

Qualifications:

1. Expertise and substantial, successful experience in curriculum and instructional materials development.

2. Knowledge of and experience in defining standards and processes of quality control in education.

3. Analytic and communication skills.

4. Knowledge of methods and instruments of quality assessment.

Position: **Instructional Technologist**

Responsibilities:

1. Reviews instructional design and materials for effective application of systems concepts to the curriculum and instructional development.

2. Analyzes the design of curriculum materials to ensure statement of objectives, selection and organization of content, inclusion of strategies to achieve the objectives, materials to assist learning; and evalution processes.

3. Applies media to facilitate the availability of information and to increase the amount and rate of achieving specific objectives.

4 Trains staff members in the principles and applications of instructional technology for curriculum change and instructional design advances.

Qualifications:

1. Expertise and substantial, successful experience in instructional technology, including applications to curriculum materials development, training of trainers and pilot teacher training for dissmination.

2. A minimum of three successful teaching years in public education.

3. Familiarity with the potential and actual technology including hardware in applications to curriculum and instructional development.

4. Successful experience in staff training and technical assistance to produce curriculum units and support materials. with appropriate use of the principles of system design and implementation.

POSITION: PSYCHOLINGUIST/DEVELOPMENTAL PSYCHOLOGIST

Responsibilities:

1. Provides training and consultation for curriculum developers in adjusting curriculum and materials to different levels of ability and development.

2. Provides specifications and quality control in the development of curriculum, instructional design and materials for slow learners, students with learning disabilities, and bright, gifted and talented students.

3. Provides analysis and recommendations related to the readability of curriculum and instructional materials.

4. Provides staff training in developmental psychology and its applications to curricular and instructional design, formative evaluation, and the creation of materials including manuals for teachers and supervisors.

5. Evaluates instructional materials, training of trainer programs and other developments.

7. Participates in development teams.

Qualifications:

1. Advanced degree preferably a doctorate but a good master's degree is acceptable.

2. Successful experience in the application of psycholinguistic theory and developmental psychology to instructional design.

3. Successful teaching experience for a minimum of five years.

Position: **Copy Editor**

Responsibilities:

1. Reviews the format, internal consistency, graphics, internal sequence, layout, size and the extension of instructional materials being produced by the Center.

2. Reports the quality of materials being developmed and provides recommendations for improvement.

Qualifications:

1. Expertise and experience in assessing and enduring the quality of layouts, graphics, internal sequence, and size in instuctional materials.

2. Organizational and interpersonal skills.

3. Successful experience as a teacher.

Position: **Head, Individualized Instructional Materials**

Responsibilities:

1. Establishes a unit committed to developing programs and materials for exceptional students and to producing such special materials such as dictionaries and other specifically targeted products.

2. Supervises the production of instructional models, curriculum materials and other support by the Special Materials Developer, part-time specialists, and technical support services.

3. With the assistance of part-time specialists in the education of the bright, gifted and talented and technical support services produces instructional models, programs enhancements and curriculum materials for the bright, gifted and/or talented.

4. Supervises and engages personally in the production of special materials needed by the educational system including references, specialized training materials, dictionaries, et al.

5. Organizes and ensures the design and validation of tests essential to the identification, placement and program support for handicapped students and for bright, gifted, and talented students.

4. Organizes and ensures the training of trainers and teacher training models for education of the exceptional, both education of the handicapped and education of the bright, gifted and talented.

5. Ensures that the teams include in their curriculum and instrucational materials development recognition of special educational needs, e.g. the needs of the learing disabled frequently evident in regular classes.

Qualifications:

1. Expertise and successful experience in materials' development for specialized use, such as for the gifted, or reference materials, or maps, charts, dictionaries, tests, etc.

2. Experience as a senior editor.

3. A minimum of five years successful teaching, preferably with experience teaching bright, talented, or gifted children.

4. A Master's degree, at a minimum.

Position: Special Materials Designer

Responsibilities:

1. Produces materials for the education of exceptional students including education of the learning disabled and other handicapped students and for the education of the bright, gifted and talented.

2. Produces special materials such as references and dictionaries as special materials proximity.

3. Produces materials for the training of trainers and models of teacher education for special education classes, programs, and schools.

4. Production of tests and other sources of identification of the gifted and talented and on the other hand for the identification of the handicapped.

5. Maintains state-of-the-art awareness of the latest trends and materials for advancement.

Qualifications:

1. Expertise and years of successful materials writing and development.

2. At least three years of successful experience in teaching.exceptional students.

3. Successful experience in the production of materials for exceptional students.

Position: **Specialist in the Education of the Exceptional**

Part-time positions are required in the Individualized Instructional Materials Unit. These include the speech pathologist, the specialist in the education of the handicapped, and the specialist in the education of the bright, gifted and talented. The following is brief summary of their common responsibilities and qualifications.

Responsibilities:

1. Designs and tests instructional models, regular program enhancements, and curriculum materials for the education of exceptional children, including the handicapped and the bright, gifted and talented.

2. Assists in the production of tests essential to valid identification, placement and curriculum development for exceptional students.

3. Provides expertise in one or more of these areas: speech pathology; education of the handicapped, especially learning disabled; and education of the bright, gifted and/or talented.

4. Trains development team personnel to achieve incorporation of education for the exceptional in regular programs, such as the needs of the many students with learning disabilities.

5. Trains trainers and provides teacher training models for the education of the exceptional: education of the handicapped and education of the bright, gifted and talented.

Qualifications:

1. Expertise and experience in one or a combination of the following: speech pathology, education of the handicapped and/or education of the bright, gifted and talented.

2. A minimum of three years successful teaching or service experience in education of the exceptional.

3. Organizational capability and interpersonal skills.

4. Knowledge of exceptional education needs in Egypt and familiarity with existing programs and resources.

Qualifications:

1. Expertise and experience in the education of exceptional students, particularly the education of the handicapped. but with training in the education of the bright, gifted and talented.

2. Knowledge of special materials needs of educational systems.

3. Analytic, communication, and interpersonal skills.

4. Organizational and collaboration skills essential to bring together different sources of expertise to complete products for a variety of needs.

5. A minimum of five years successful teaching in education for the exceptional.

Position: **Head, Information Resources Unit**

Responsibilities:

1. Organizing and supervising the Information Resources Unit including ensuring continuous, highly professional information support for the development units in production of curriculum and materials products.

2. Planning, administering, and evaluating the information resource system as it supports the particular components of the Center

3. Ensuring the availability of information in a timely, accurate, relevant and substantial manner for all production priorities and for the general state-of-art professional knowledge and competence of the Center staff.

4. Providing service to external inquirers when appropriate in the judgement of the Director.

5. Training staff to utilize information data-bases and media.

6. Maintaining constant communication with national and international information sources to ensure availability of the finest and most current information.

7. Monitoring the Center production in process and results to review the use of information sources by the Center developers.

8. Managing the processes, productivity, personel, equipment and releationships of the Information Resources Unit.

9. Individually serving as the chief librarian of the Center which includes the creation, administration, development and evaluation of library services.

10. Supervising the assistant librarian and all library processes.

11. Other duties as assigned by the Director.

Qualifications:

1. Training and successful experience in Library administration and services as an information resource for study, professional development and currculum and materials productivity.

2. A minimum of five years of successful teaching experience is preferred but not required.

3. Training and successful experience in curriculum and materials development is preferred by not required.

4. Management and interpersonal skills competencies.

5. Effective writing and materials organizational skills within brief time demands.

6. Effective reviewing of print and other media documents for appropriate use of the unit services.

7. A degree in library sciences, perferably an advanced degree.

Position: **Data-Base Specialist**

Responsibilties:

1. Identifies and establishes directly or indirectly availability of information sources and data-bases to support the curriculum and materials development priorities of the Center.

2. Plans, implements and evaluates a systematic process of data-base growth in the Center and communication with major and relevant data-bases outside the Center in Egypt, Arab countries and other countries.

3. Acquires and maintains usability of instrumentation needed to access Center and external data-bases, e.g. computer networking with major educational data-bases in Europe, the United States and Canada.

4. Trains the leadership and the staff of the Center to use data bases on curriculum and materials development and in public information provided to the general society and specialized groups, such as teachers, supervisors and parent organizations.

5. Creates an immediate data base listing in support of each curriculum and materials development priority planned or being effected by units and teams of the Center.

6. Tries to establish a state-of-the-art information system and instrumentation in support of curriculum and materials development.

7. Pro-actively indicates the availability of data-bases and seeks to know other needs for data-bases among the Center development professionals as the latter pursue priority initiatives and products.

8. Establishes informal and formal networks for information access and transferability as needed by the development peronnel and intiatives.

9 Maintains state-of-the art awareness of data-bases relevant to the Center mission and priorities and knowledge of the technology available to access that data.

Qualifications:

1. Training and successful experience in identifying, creating and accessing data bases, preferably in educational development.

2. Awarness of national, regional and international data-bases relevant to curriculum and educational materials development.

3. Successful experience as a teacher is preferred.

4. Organizational and interpersonal skills.

5. Professional or other communication skills, especially in writing.

6. Competence in at least one foreign language.

Position: **Audio-Visual Specialist**

Responsibilities:

1. Plans, acquires and administers audio-visual materials resources to support curriculum and instructional materials development, training and evaluation.

2 Trains staff for awareness and use of audio-visual information resources, media and instrumentation.

3. Maintains state-of-the-art awareness of audio-visual sources of information and media production while communicating useful applications to the staff.

4. Oversees audio-visual equipment purchases and placement while coordinating such acquisitions with other information services within the unit to ensure cooperative use and non-duplication.

5. Assists the Center leadership to use media to gain support from the society and specialized groups such as teachers, supervisors, and parent organizations.

Qualifications:

1. Training and successful experience in audio-visual information sources, media use and organization.

2. Organizational and interpersonal skills.

3. Basic media technical maintenace skills.

4. Substantial awareness of the access to and use of information systems.

5. Sucessful experience as a teacher preferred.

6. Fluency in at least one foreign language.

Position: Librarian and Information Resource Specialist

Responsibilities:

1. Assists the Unit leader who is a librarian to develop, maintain, and evaluate the library services in support of the Center curriculum and materials production.

2. Maintains effective distribution and recording of the library resources of the Center including cataloguing, intra-Center delivery, and purchasing which ensures state-of-the-art currency, and ease of access to Center staff.

3. Trains Center staff in continuing awareness of library resources, services, technology and other instrumentation, external library access, and publishing sources.

4. Ensures coordination of library services and information acquisition with other services in the Center.

5. Maintains awareness of other library resources in Cairo, Egypt, Arab countries and other countries potentially useful in achieving the curriculum and materials development priorities of the Center.

Qualifications:

1. Training and successful experience in library services and sources.

2. Organizational and interpersonal skills.

3. Successful experience as a teacher.

4. Successful experience in curriculum and educational materials development preferred by not required.

5. Fluency in a foriegn language.

6. Knowledge of libary resources in Egypt.

Position: **Head, Technical Services Unit**

Responsibilities:

1. Establishes and develops a unit which provides assistance to curriculum developers for media applications in curriculum and instructional materials development.

2. Selects and develops a team of specialists in print, visual, and audio media prepared to respond to requests for media applications and equipment support.

3. Designs and provides staff training in the capabilities and use of media to enhance instructional effectiveness and evaluation.

4. Maintains state-of-the-art awareness of media applications to curriculum development---teaching and learning, including mass and highly targeted utilization.

5. Identifies new technology that can be utilized in Egypt such as computer access to educational information systems and data-bases in other nations.

6. Participates in international and regional conferences on technology in curriculum and instructional materials development.

Qualifications:

1. Expertise and subtantial experience in applications of technology in education including print, visual, audio and electronic media.

2. Substantial familiarity with information systems, hardware and software applications to education and possible uses in curriculum and instructional materials development.

3. Successful teaching or training experience.

4. Organzational capability, communication skills, and interpersonal skills.

5. A minimum of five years successful teaching.

6. An advanced degree, perferably in media.

Position: **Television-Radio Specialist**

Responsibilities

1. Provides specialized assistance to curriculum developers and trainers in the production and use of media for instructional materials and training, especially audio and video media applications.

2. Under the direction of development teams and curriculum developers produces video and audio learning aids.

3. Assists curriculum developers and trainers to provide distance education programs by means of radio and/or television and to include radio and television media in curriculum materials, training trainer programs, and models of teacher training.

4. Assists the Public Information Specialist to develop radio and television programs to gain public support, parent acceptance, and commitment by educators to the curriculum developments and instructional materials produced by the Center.

5. Maintains state-of-the art awareness of television and radio applications to curriculum and instructional development.

6. Participates in regional and international conferences.

7. Identifies and informs curriculum developers, trainers and evaluators about signficant and applicable advances in radio and television applications to education.

8. Trains staff in the use of television and radio in education, including curriculum and instructional materials development, training, and evaluation.

Qualifications:

1. Expertise and substantial experience in radio and television technology and its applications in education.

2. Successful teaching or training experience.

3. Organizational skills.

4. Basic equipment maintainence skills.

Position: **Shop Technician**

Responsibilities:

1. In accord with requests of curriculum developers and trainers, produces learning aids, e.g.science kits.

2. Provides electronic and/or mechanical maintenance support for the equipment in the Center and assists in the organization and adaptation of that equipment to the needs of development teams, trainers and evaluators.

3. Advises Center and unit leadership on equipment needs, purchase, placement, service support, and power supply to ensure systematic and ready use.

Qualifications:

1. Demonstrated knowledge and experience in technical fields appropriate to the Center needs.

2. Interpersonal and organzational skills.

3. Creativity in adapting electronic and mechanical equipment to instructional and training support.

4. Basic edquipment maintenance skills.

ANNEX C

FORMULATING OBJECTIVES, SELECTING, AND ORGANIZING LEARNING EXPERIENCES

Specific, measurable objectives define the content and behaviour that the curriculum seeks to have students learn. The outline of the content is sometimes called the "scope" of the curriculum, but it is always seen in relation to the behaviours that the students should manifest in relation to the content.

Three major sources are analyzed in order to determine the objectives. One is the nature of the society. The second is the nature of the academic diciplines or other areas of knowledge that undergird the curriculuim area. The third is the nature of the learner.

The analysis of the society tells us what kinds of information, skills, and values the student needs in order to participate effectively in the community. For example, in the area of science, applications can be emphasized--helping students understand the world around them and to acquire the understandings and skills to deal with an increasingly technological world.

The analysis of the discipline helps identify the major concepts, types of information, and skills that scholars believe are crucial to an understanding of the area. Biologists, for example, often suggest that the concepts of structure and function be employed to organize learning experience so that the student comes to understand the structure of organisims and the functions that relate to those structures.

The study of the learner can be approached from a number of points of view, but the center should first focus on obtaining information about the academic knowledge of students in the major curriculum areas. Small-scale studies can be employed to obtain information about the achievement of students through the grades. This information can be used to determine areas of strength and weakness in the present curriculum and the range of indivudual differences that need to be accomodated during development.

The selection of learning experiences.

Learning experiences are determined by the instructional models that are selected for the curriculum and the types of materials that are selected. There are four types of instructional models: personalistic models that emphasizes the student as a unique personality and being; social models that emphasize social inquiry and understanding; information-processing models, drawn from cognitive psychology and the structure of the academic disciplines; and behavioral models that emphasize the nature of tasks and feedback to the student.

The designers examine the alternatives and select the models that appear most-closely matched to the objectives of the curriculum unit, for example, if the objectives emphasize

analytic thinking, the designers will be likely to select models that have a proven value in generating analytic thought. Where information is to be mastered and memorized, mnemonic models will be considered.

The instructional models provide the specifications for the type of instructional material that will be needed. For example, inductive science curriculums generally require materials for conducting experiments.

Organizing learning experiences.
Learning experiences need to be organized so that one experience builds on another (sequence), the major ideas, values, and skills are emphasized vertically (continuity) and the learner's experience during one part his learning bears a positive, reinforcing relationship to his other learning experiences (integration).

Sequencing can be provided in a number of ways. For example, history courses often seek it through chronology. Mathematics often uses the progression of computational skills. Language designers often employ vocabulary development and work-attack skills.

Continuity also can be approached variously. In science, analytic reasoning skills are often employed, ranging from simple induction to causal inferencing. Developmental psychology also

provides information about the sequencing of content and instructional processes so as to conform the emerging capacity of the students and to facilitate development.

Integration requires a look across the curriculum to determinate how instruction in one area can be tied to and reinforce and extend the others. For example, literature units are frequently correlated with social studies units so that students studying a given area or social phenomenon read literary sources about that area or pattern.

The process of working through the curriculum areas and developing a coherent framework is arduous, because there are so many options and the search for the "knowledge that will be of most worth" is never complete and is not formula-driven. Yet it is the essential task for the designers and, once it take shape, development teams can proceed expeditiously to the still-demanding but more defined tasks of creating powerful curriculum units. The work proceeds in a straightforward manner:

A. The study of the sociecty stated needs desiresfor education, the disciplines, the schools current ability to produce the learning desired in an efficient and effective manner and of the student's abilities and developmental stages', are conducted including tne analysis of information from social policy-makers;

B. The overall goals of the curriculum are formulated;

C. The goals for the curriculum areas are generated;

D. The instructional strategies and principles for continuity and sequence are selected for each curriculum area and applied to develop the process and content scopes and sequences;

E. The principles for integrating the curriculum areas horizontally andvertically are developed and applied to revise the framework for each area, bringing them together into

F. The master and sequence chart- the overall curriculum framework from which all else will proceed.

ANNEX D

THE INSERVICE EDUCATION SYSTEM IN EGYPT

Excerpted from Final Report: Work Order Six: Inservice Education, Academy for Educational Development. (1986).

The following pages are excerpted from the Final report on Egypt's In-service Education System--the end product of Work Order Six of the Technical Assistance Project conducted by the Academy of Educational Development. The senior American author, Dr. Bruce Joyce, was also a valued member of the Curriculum Center Design Team. The expert is included because the analysis of the in-service system and recommendations made for its improvement are cogent, still timely though now over two years old, as yet undealt with, and worthy of serious consideration.

CHAPTER ONE

THE ORGANIZATIONAL STRUCTURE OF THE MINISTRY, STATUS AND RECOMMENDATIONS

The ministry is designed in a straightforward hierarchical form. Status and function are directly linked and the theoratical relationships among levels in the organization are easy to discern.

WITHIN THE MINISTRY

The minister of education is supported by three first under-secretaries. Currently Mr. Kamal Mansour, Dr. Mohammed Abu El Ela, and Mr. Medhat Kazem occupy the positions. Reporting to the First Undersecretaries are the Undersecretaries, two of whom concern us here. One, Mr. Mahmoud Galel, report to Mr. Mansour and is in charge of Basic Education. The second is Thuraya Abadallah, responsible for inservice education. At the next level are director-general Samira El Ghawaby, who reports to Mrs. Abdallah, and Mrs. Hamida Mansour, director general for grades one to six (also referred to as basic education), who reports to Mr. Galel.

Also within the ministry, and responsible for liaison to the filed, are the inspectors general. The inspector-general have

functions which are primarily evaluative (see Figure 1 for an illustration of lines of authority within the ministry).

WITHIN THE ZONES

Theoratically, if two first undersecretaries, the two undersecretaries names above, and the two directors general are in agreement about a direction for school improvement, four types of activity can be set in motion. Two involve the creation of materials: textbooks and syllabi can be prepared and distributed. Third, the six inservice centers can generate workshops and courses. Fourth, the inspectors general and officials in the zones can begin the movement of information and training to prepare senior supervisors and supervisors, headmasters and senior masters, to work with the teachers to bring about the change. Currently, most of the training that teachers receive is generated under the leadership of the directors of primary and preparatory education at the zone levels. At full strength, there is one supervisor (usually called inspector) for every one hundred teachers. In addition, senior masters or department heads in the schools (who optimally teach half-time) are available to provide training to teachers.

Hence, when the organization is up to strength, the training potential is formidable in terms of numbers of available personnel. Also, if the chain is used properly, two-way communication can take place, school personnel reporting problems

and needs upwards so that the information can be used to redeploy resources and provide additional help. In addition, technical institutes and universities can be induced to modify preservice education and programs for upgrading teacher credentials to bring them in line with the innovation.

The system has demonstrated its strength by the degree of progress that has been made in extending the period of common education to nine years and in the introduction of the "practical" subjects in schools. Many schools have incorported staff, facilities, and space for those subjects. Many have not, of course, but the capability of the system is limited by resources rather than limitations inherent in the structure.

LIMITATIONS IN THE STRUCTURE

However, the system does have the labor undersome inherent limitations. First, there are only six inservice centers, lightly staffed and budgeted (only LE 100,000 to conduct training). The centers rely on consultants for the majority of their training programs.

Second, time for inservice education is not built into the workloads of the teachers so that intensive training, even for a very few days, has to be arranged on an ad hoc basis. Supervisors, headmasters, and senior masters can visit the classroom and offer advice, but they have to make special arran-

gements to assemble the personnel from the schools for the explanation, demonstration, and practice that are requisite to the acquisition of new skills. However, once training is organized, schools appear to be able to free their personnel, a few at a time, without excessive disruption.

Third, the personnel at the higher levels of the ministry change positions frequently. There is no mechanism, except for the transmission and conservation of ideas within the community of secretaries, to maintain continuity of policy. In a hierarchical system the operational personnel, who are relatively stable in their positions, tend to become unresponsive and cynical unless they believe that changes in personnel at the top will not also abruptly change important long-term initiatives. If school improvement efforts are short-term and changeable with the personnel, the result is to degrade the efforts. Important changes in schooling take time to achieve, and the community within the ministry needs agreement about how to preserve important long-term initiatives until they can be implemented, phasing in new initiatives in measured cadence as resources permit.

Fourth, the most obvious and notable omission from the organization is a unit that can systematically develop training materials and procedures and offer "training for trainers". In other words, specific initiatives can be communicated at the theoratical level but the zone personnel have the make the

translation to action without the support of a development system. Even in the practical subjects an innovation, such as the development of science workshops, will founder unless persons can be found who can learn to use those workshops effectively and provide training to others. This appears to us to be the single most serious flaw in the structure of the system. As one of our informants put it, "Effective training needs three things: trainers, training materials, and trainers. We have only the trainees."

RECOMMENDATIONS

1. With respect to development capability (that is, the capability to follow a policy decision with the development of training materials and the "training of trainers") -- Inherent in any significant improvement in the educational system is the problem of bringing about change. Although there are many social, economic, and political factors associated with an initiative to improve education, there are critical technical ones without which even the best-functioning organization is impotent. Vital is the ability to develop new training procedures and to prepare support personnel to use them with teachers.

Thus we recommend that a development system be established to serve initiatives for improvement. This system would be designed

designed to develop training procedures and materials and to train the personnel who will work directly with teachers.

It is entirely possible that the development units could be staffed by personnel already in existing positions, for example, inspectors general, senior supervisors, supervisors, and personnel from the staffs at the governorates. However, the unit would need intensive study of development and training and would have to be very efficiently organized. The centers and zones are the logical places to house the unit. Chapter Six of the Report discusses organizational options and procedures for designing and implementing such a unit.

2. That a long-term planning system be established to ensure continuity of initiatives within the organization. There is always a limited amount of discretionary resources that can be used for initiatives for the overall improvement of the educational system. Nearly all important initiatives need several years before they will have a mature impact on the system. Each new cohort of ministers needs to recognize that past initiatives (basic education is a very good example) need to be pushed forward and at the same time be able to make new initiatives, within their ter, with confidence that those will be carried forward by their successors. This is an internal problem and, in our opinion, should be studies and solved internally.

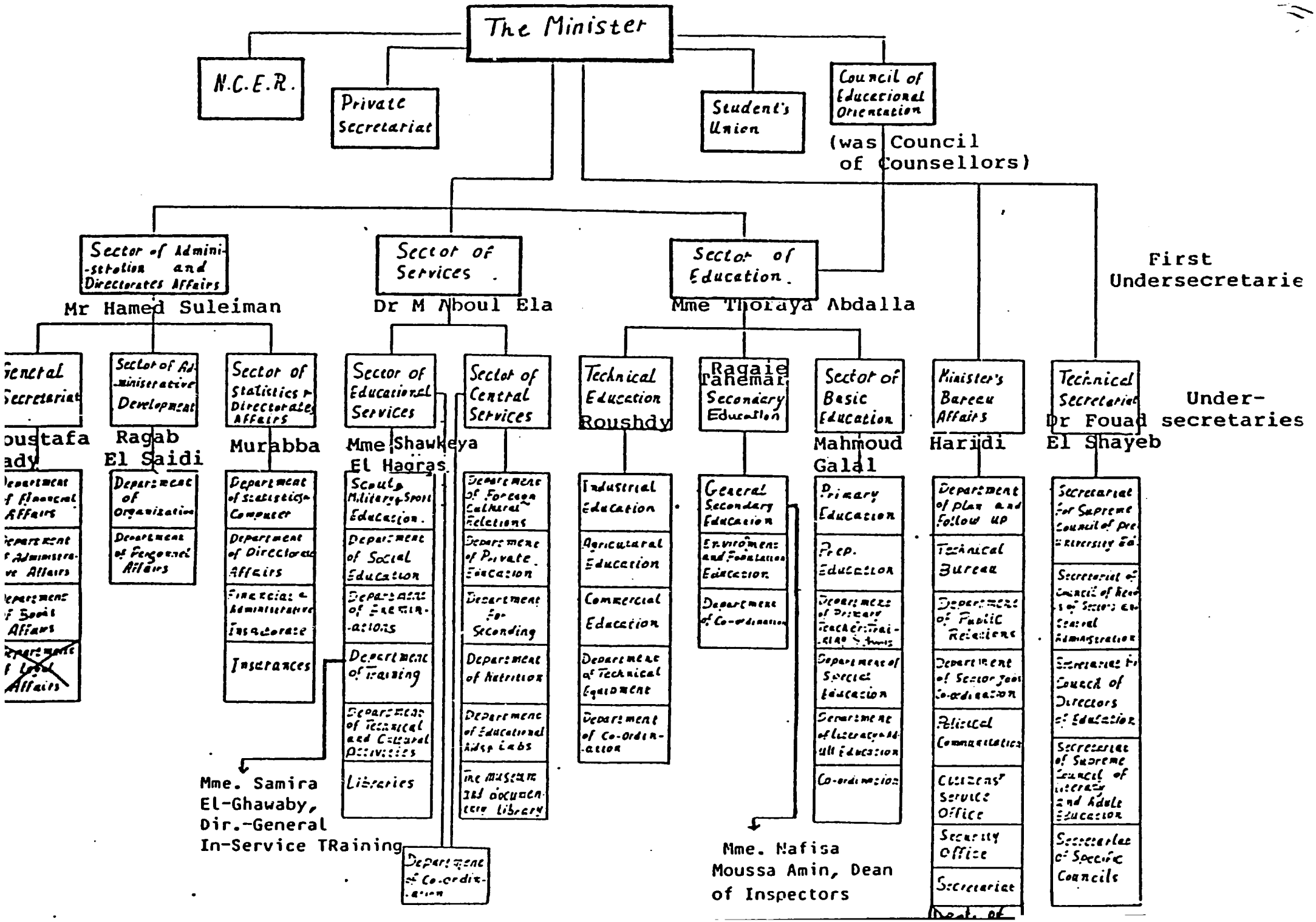
3. New initiatives should be related to the development/training unit, so that the developmental effort necessary for their implementation can be put in motion.

ANNEX E

ORGANIZATION OF THE MINISTRY OF EDUCATION, SCHOOL SUBJECTS AND TIME TABLES

Education Plan for Elementary
Education for the School Year 1987-1988

SUBJECTS	Primary Grades						Preparatory Grades		
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
Religion	3	3	3	3	3	3	2	2	2
Arabic	10	10	10	10	9	9	6	6	6
Foreign Language	-	-	-	-	-	-	5	5	5
Mathematics	6	6	6	6	6	6	5	5	5
Social Studies	-	-	-	-	3	3	3	3	3
General Knowledge and Environmental Education	3	3	6	6	-	-	-	-	-
Science and Health	-	-	-	-	4	4	4	4	4
Art	2	2	2	2	2	2	1	1	1
Physical Education	2	2	2	2	2	2	2	2	2
Music	1	1	1	1	1	1	1	1	1
Vocational Education	-	-	-	-	4	4	5	5	5
TOTAL PERIODS	27	27	30	30	34	34	34	34	34


The Minister
N.C.E.R.
Private Secretariat
Student's Union
Council of Educational Orientation
(was Council of Counsellors)
First Undersecretarie
Under-secretaries
Sector of Administration and Directorates Affairs
Mr Hamed Suleiman
Sector of Services
Dr M Aboul Ela
Sector of Education
Mme Thoraya Abdalla
General Secretariat
oustafa
ady
Department of Financial Affairs
Department of Administrative Affairs
Department of Social Affairs
Department of Legal Affairs
Sector of Administrative Development
Ragab El Saidi
Department of Organization
Department of Personnel Affairs
Sector of Statistics & Directorate Affairs
Murabba
Department of Statistics & Computer
Department of Directorate Affairs
Financial & Administrative Inspectorate
Insurances
Sector of Educational Services
Mme Shawkeya El Haoras
Scout, Military & Sport Education
Department of Social Education
Department of Excursions
Department of Training
Department of Technical and Cultural Activities
Libraries
Mme. Samira El-Ghawaby, Dir.-General In-Service TRaining
Sector of Central Services
Department of Foreign Cultural Relations
Department of Private Education
Department for Seconding
Department of Nutrition
Department of Educational Aids Labs
The museum and documentary library
Department of Co-ordination
Technical Education
Roushdy
Industrial Education
Agricultural Education
Commercial Education
Department of Technical Equipment
Department of Co-ordination
Ragaie Tahemar
Secondary Education
General Secondary Education
Environment and Population Education
Department of Co-ordination
Mme. Nafisa Moussa Amin, Dean of Inspectors
Sector of Basic Education
Mahmoud Galal
Primary Education
Prep. Education
Departments of Primary Teacher Training Schools
Department of Special Education
Department of Literacy and Adult Education
Co-ordination
Minister's Bureau Affairs
Haridi
Department of plan and Follow up
Technical Bureau
Department of Public Relations
Department of Sector Joint Co-ordination
Political Communications
Citizens' Service Office
Security Office
Secretariat
Technical Secretariat
Dr Fouad El Shayeb
Secretariat for Supreme Council of pre-University Ed.
Secretariat of Council of Heads of Sectors and General Administration
Secretariat for Council of Directors of Education
Secretariat of Supreme Council of Literacy and Adult Education
Secretariat of Specific Councils

worker (including a pregnant one) who leaves a job due to conditions not causally connected to his work or his employer. The Court held that the Federal Unemployment Tax Act (26 U.S.C.A. § 3304(a)(12)), which states that unemployment compensation may not be denied under state law solely on the basis of pregnancy, was only intended to forbid a state from singling out pregnancy from disadvantageous treatment, but was not intended to compel a state to afford preferential treatment for women on account of pregnancy.

It is not clear where these rulings will lead. In any event, they may well launch state and federal legislative activity on employee rights, and the complex competing issues framed in these cases suggest that they will not be the Court's last examination of this area of the law.

c. Pending Federal Legislation. As stated, the Pregnancy Discrimination Act defines discrimination on the basis of pregnancy as prohibited sex discrimination and provides that women affected by pregnancy, childbirth, or related medical conditions must be treated the same for all employment-related purposes, including receipt of fringe benefits, as other persons with similar ability or inability to work. However, only five states have temporary disability insurance policies. Thus, the federal law is only as good as state law in this area.

Federal legislation now pending would provide unpaid pregnancy disability leave for both mothers and fathers. The House bill, H.R. 925, is entitled the "Family and Medical Leave Act of 1987." It was co-sponsored by Representatives Patricia Schroeder and William Clay. A companion bill, S.249, was introduced in the Senate by Senators Dodd and Specter.

The current legislation (if enacted) would cover all employees in the private sector, except those employers employing five or fewer employees. Employees (men and women) will be permitted to take up to 18 weeks of parental leave over a two-year period. The leave will be unpaid, but an employer must continue health insurance

MS

ANNEX F

TIME LINES
FOR THE CENTER'S
DEVELOPMENT CYCLE

These time lines are estimates of course, and are for use in conjunction with Development Cycle found in Chapter III.

TIME LINE CURRICULUM DEVELOPMENT CYCLE

	1..2..3..4..5..6..7..8..9..10..11..12..13..14..15..16..17..18
AUTHORIZATION	
1.1 Decrees	X
1.2 Board & rect'rs. appts	X
1.3 Recruit Appt. Key Pers'nl	
ORGANIZING	
2.1 Output iorities	------
2.2 Pers'nl eded: types, s., qualifics.	------
2.3 Recruit/ ssign,personnel	------
2.4 Operation ıith equip.	------
2.5 Space onfiguration	------
2.6 Equip. specifications	------
2.7 Equip. urchase/inst'l	------
2.8 Pers'nl earch/appt. tartup	------
2.9 Core ers'nl train. + Individ. train + Group. train	------

```
                                  1..2..3..4..5..6..7..8..9..10..11..12..13..14..15..16..17..18
     2.10 Methods                 ----
to determ. individ.
goals, skills

     2.11 Team                    -------
building

     2.12 Operat'g                -----
procedures

     2.13 Prepare                 -------
staff develop.

     2.14 Arrange                 ----          ----          ----
externs. staff inter'ps

     2.15 Arrange                 ----          ----          ----
external.intern. for
staff

     2.16 Conduct                 ----------------------------------------
core training.
     +specializ.gps
     +indivi.train'g

3.0 INITIAL CURRICULUM

     3.1  Master scope            ----
and sequence develop.

     3.2  Assembl.                ------------------
Curriculum Doc'ts

     3.3  Public fora;            --------------------
interactive media

     3.4  Document                              ------------------------------
goals, attidudes, knowl'g

     3.5  Spec'fic'tn                           ------------------------------
concept. content

     3.6  Goals statemt./                       ------------------------------
meaqs'ble objectives

     3.7  Objectives                            ------------------------------
ordered

     3.8  Operat'l                              ------------------------------
scope & sequence

     3.9  Survey                                                  ------
preparation
```

1..2..3..4..5..6..7..8..9..10..11..12..13..14..15..16..17..18

3.10 Sampl'g
eachers: objectives/
erformance

3.11 Instr.
odels selec.

3.12 Instr.
trategies des.
r selection

3.13 Models/
trategies: costing/
cheduling analy's

3.14 Assess-
entmeasures &
om item bank

3.16 Supplem.
earn. mater.select.

3.17 Review
extern. specialist
aterials

3.18 Specify
each. train. mater'ls

3.19 Superv'rs
ehavious

3.20 Managt.
rocedures

.12 Labor'ty
chools arrange for
youts

3.22 Form've
valuation

3.23 Revis'n
eed creteria

3.24 Train
evelopers.

3.25 Tryouts:
ield test

1..2..3..4..5..6..7..8..9..10..11..12..13..14..15..16..17..18

3.26 Feedback
/iew

3.27 Revis.need
:isions: if, which

3.28 Revis.
›lementation

3.29 Produc.
›ies for testing

) PILOT TESTING

4.1 Pilot
sting prep.

4.2 Pilot
hools select.

4.3 School
thor. appr'vl

4.4 Data
alysis proced's
sign

4.5 Teach/
pervis.orient.
train. design

4.6 Eval.
rms prep.
as. implem't.

4.7 New
rric. segment
stribution

4.8 Train
eval. trainers

4.9 Implem.
eval. pilot teach.
aining

1..2..3..4..5..6..7..8..9..10..11..12..13..14..15..16..17..18

4.11 Pilot test. training & evaluation

4.12 Make final revision ----- -----

4.13 Obtain offic. approval ----------

4.14 Trans. prototype mat's to produc. agency ----

4.15 Dissem. curri. unit nat'nwide

4.16 Plan nat'l dissemin

4.17 Prep. for disseminat.

4.18 Plan teach. training strategy, includ. mass media, live training, corresp.

4.19 Prep. train. plans for teach. trainers

4.20 Cond't teach. sup., & adm. training of trains. & eval. implem.

4.21 Class observations

4.22 Revise teach. manuals, aids, by observat.

4.23 Staff develop. semin'rs ----------

4.24 Int'l conferences

1..2..3..4..5..6..7..8..9..10..11..12..13..14..15..16..17..18

4.25 Revise
:er'ls base
ıool exam.

) CENTER SEC.
ıGE DEVELOP.

5.1 Rep't
'ine develop.
.est cycle

5.2 Train
ec. staff for
ıff training

5.3 Recr't.
:ond staff

5.4 Prep.
cilkities for
cond grp.

5.5 Impl.
c. cycle staff
aining

5.6 Engage
c. staff in
rric. devel.

5.7 Impl.
ll curric. dev.,
st, & dissem.

5.8 Survey
:ts.; intview
aders, etc. for
ı/rev. curric.

) CENTER THIRD
ıGE CYCLE

6.1 Plan
'ategy for update curric.

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ANNEX G

BUDGET

ANNEX H

EQUIPMENT SPECIFICATIONS

EQUIPMENT SPECIFICATIONS

Quantity Description

Graphics Production Center

2	Deluxe Precision Light Table With Factory Installed Greatrack And Accessories
1	Waxer 14 inch
2	Rollers
2	Solvent Containers
2	All Metal Paper Cutter
1	Ultrasonic Pen Cleaner
2	Flat File Drawer Set (1 1/8 x 22 x 17) Drawers
2	Sets Small Drawing/Paste-up Equipment
	10in 45 Degree Triangle
	14in 45 Degree Triangle
	10in 30/60 Degree Triangle
	14in 30/60 Degree Triangle
	Professional French Curve Set
	Flexible curve, 16 in
	Bow Compass With Extension Bar, Circle Cutter, Ruling Pen Adapter
	X-acto No.1 Super Knife Bulk Blades, Per Packages (100)
	Non Repro Blue Ball Point Pens
	Tape Dispenser, Multi-roll
	Ruling Pens, Set of 6
	Pica Rule 12 inch
	Calligraphy Pens, Set of 4

Small Darkroom

1	Stainless Steel Sink, 30 inch X 84 inch X 7 inch
1	Shelf For Sink
1	Water Filter Package
1	Auto 16 Processor
1	Safe Light
2	Timers
4	Trays 8 inch X 10 inch
4	Trays 11 inch X 14 inch
1	Vertical Camera
1	Camera Timer
1	Diffusion Transfer Processor
1	Enlarger
1	50mm f2.8 Lens,
1	100mm f5.6 Lens
1	150mm f5.6 Lens
1	35mm Camera
1	55 mm f2.8 Lens
1	35 mm f2.0 Lens
1	Copy Stand

1	Light Set
1	Cable Release
1	Tripod

Production Equipment

1	GBC Comb Binder (Power Driven)
1	GBC Punch (Power Driven)
1	Set Assorted Combs 1/4 inch to 2 inch (10 sizes) Enough to Do 100 Books in Each Size (1000 Books Total)
1	Unbind Machine
	Cover Blanks
1	Hydraulic 3 Hole Drill
1	Table Top Folder (With Air Table)
1	Paper Shear 30 1/2 inch
1	Stapler/Sticher, Up to 3/4 inch Thickness
1	Table Top Stapler,
1	Copy Machine
1	Copy Machine

Computer Products-Research, Word Processing, Graphic Design & Accounting Equipment

13	80286 Computers (TA Compatible)
2	Xerox Modified Documenter Model 6085
4	386 Computers
4	VGA Color Monitors
13	Monochrome Monitors
4	Seagate 80 meg Hard Disks
13	Seagate 30 Meg Hard Disks
17	101 Key Keyboards
2	80387 Math Coprocessors
4	Genoa Galaxy 3150-60 tape Backup Systems
2	Hitachi CDR 3500 UY CD Rom Readers
2	Hayes V-Series Smartmodem 2400 With Software
2	Laser Printers
8	Laser Printer Single Bin Feed 200 Sheets
4	Optional Legal Length Tray
6	1 Megabyte of Additional Memory
2	2 Megabytes of Additional Memory
2	Scanners Model
2	Cannon IX-12 Scanners With Interface Card And Software
2	NEC P5 Color Printers
2	Bar Code Readers (Hannd Held), Videx Time Wand TW-016
2	Bar Code Reader Download And Recharging Station, Videx TWR-000
1	8625 Bar Code Writer

Ancillary Equipment

17	Power Centers (Surge Suppression & EMF/RFI Noise Protection)
17	1000 Watt UDX 220 Volt To 110 Volt Down Transformers
17	Parallel Printer Cables
9	Parallel to Parallel Cables
5	2-Way Parallel Data Switches
1	3-Way Parallel Data Switches
2	2-Wau Cross Matrix Parallel Data Switches

Software

17	WordPerfect 5.0
17	WordPerfect Library
17	PlanPerfect
17	Turbo Fonts (Arabic) Plus
3	Harvard Graphics
3	Micrografx
4	386 to the Max
2	Read Right (Scanner Software)
2	Video TimeWand Software TWS-000
	SPSS Plus With Value Option (No Key Disk Required)
2	Value Plus
2	Basic Statistics
2	Advanced Statistics
2	Tables
2	Graphics
2	Data Entry
2	Trends (Time Series And Forecasting)
2	Fast Start (Computer Based Training Program)
	Computer Associates AccPac Accounts Receivable
1	Computer Associates AccPac Accounts Payable
1	Computer Associates AccPac General ledger
1	Computer Associates AccPac payroll
1	Computer Associates AccPac inventory control
1	Computer Associates AccPac order entry
1	Associates AccPac Retail invoice

CD Roms

1	ERIC complete Starter Set
1	Second Year ERIC Subscription
1	PsycLIT Current Disc (1974-Present)
1	Grolier Electronic Academic Encyclopedia
	MicroTrend Inc.
1	BioLibe Series (Biology Teaching Aid)
1	Fast Past (World History Tutorial)
1	Nature Plus (Animal & Landscape Photos)
1	Versa Text (Reading Skills Teaching Aid)

VIDEO EQUIPMENT

3	Interlockable cameras
2	Time Base Correctors
1	Character Generator
4	Hand held microphones
4	Lavalire microphones
3	Tripods with Video Heads

or for a larger operation

3	Interlockable cameras
	Studio configuration
	EFP Configuration
1	Portable Switcher and SEG
2	Portable Video Decks
	Portable battery power pack
1 or 2	AC adapter battery charger
4 to 8	Battery
4	Editing Video Decks
2	Editing Controler
2	Time Base Correctors
1	Character Generator
	Comprehensive Video PC-2 (board) with software (makes your computer into a character generator, 40 nanosecond)
4	unidirectional and super directional mikes
4	Lavaliere mikes
3	Tripods with Video Heads
	Tripod Head
	Portable dolly

Vehicles

2	4 door, four passenger sedans
2	8 person vans (micro buses)

Maintenance Equipment

1	Complete set of hand and power tools for minor carpentry and electrical repairs