

AGENCY FOR INTERNATIONAL DEVELOPMENT  
PPC/CDIE/DI REPORT PROCESSING FORM

ISN 72302

ENTER INFORMATION ONLY IF NOT INCLUDED ON COVER OR TITLE PAGE OF DOCUMENT

1. Project/Subproject Number 546-1	2. Contract/Grant Number PDC-5832-I-00-0095-00	3. Publication Date June 1991
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4. Document Title/Translated Title  
National Center for Examinations and Educational Evaluation

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6. Contributing Organization(s)

7. Pagination 51 p.	8. Report Number	9. Sponsoring A.I.D. Office USAID/Cairo
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10. Abstract (optional - 250 word limit)

11. Subject Keywords (optional)

1.	4.
2.	5.
3.	6.

12. Supplementary Notes

13. Submitting Official Derry Velardi	14. Telephone Number (202) 966-5804	15. Today's Date 7/12/91
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16. DOCID	17. Document Disposition DOCRD [] INV [] DUPLICATE []
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**MONITORING REPORT**

**NATIONAL CENTER FOR EXAMINATIONS AND EDUCATIONAL EVALUATION**

**Monday, May 27 - Sunday June 9, 1991**

**Protase E. Woodford**

## Acknowledgements

The task of carrying out this monitoring visit was aided immeasurably and made pleasurable by the selfless cooperation of a number of people.

I especially want to express my appreciation to the Director of the National Center for Examinations and Educational Evaluation, Dr. Fouad Abu-Hatab, and the four Division Directors, Dr. Amina Kazim (Research), Dr. Mohammed Eid (Operations), Dr. Hussein El-Derini, (Training and Dissemination), and Dr. Salah Mourad (Test Development). They all were open, frank and forthcoming in our discussions, and generous in the time they dedicated to the monitoring activity. I must also express my appreciation to Dr. Rawia Fadil, architect - for the hours she spent reviewing plans for the NCEEE building with us, and on site at Moqattam.

The progress to date on the NCEEE is impressive. Senior staff, while working ostensibly part time, have accomplished far more than could reasonably have been expected. The problems and tasks facing them are large, but they have a complete grasp of the issues, and the skills and means to confront and resolve them.

From the time of my first involvement in the feasibility study for the NCEEE it was obvious to me that an essential element in the success of the project would be a means of making everything come together. The Egyptian Ministry of Education, AID, ODA, the foreign experts, and a host of other players or potential players were critical pieces in the puzzle, pieces that all had to fit.

The close and collaborative working relationship between Drs. Peterson and Carroll have helped greatly to provide that kind of cohesion. Both have a clear sense of the mission of the NCEEE and of its enormous potential for reforming education in Egypt across the board. They understood what Dr. Fathi Sorour hoped to accomplish by using the powerful tools of evaluation to effect change in instruction. They respect and appreciate the talents and capabilities of their Egyptian colleagues.

My own involvement in the project has required close collaboration with Dr. Carroll. He enjoys the complete confidence and trust of the Egyptians, the British and the Americans. Because he has been a part of every phase of the project, has worked closely with all parties, knows where everything fits in, he has been an essential element in the development of the NCEEE. He also has a keen sense that this is an Egyptian project and that the role of all others is to provide the most beneficial, cost effective support to accomplish the agreed upon mission of the NCEEE, within existing guidelines and constraints.

The project, for the next year or two, needs someone in the role

now being played by Dr. Carroll. Ideally, there should be no need for such a person after that. Among the duties and responsibilities of this position, as I see them, are:

- to be informed of all activities related to the NCEEE
- to advise on the technical and material needs of the NCEEE
- to evaluate and prioritize the needs of the NCEEE and make recommendations to the funding agencies
- to provide liaison among the funding agencies and the MOE
- to keep the funding agencies apprised of NCEEE progress

The project needs a 'fixer' during its initial stages. The more informed and involved in the NCEEE the person is, the better. Most important is that the person enjoy the confidence and the personal and professional respect of the participating agencies and their personnel.

## 1. BACKGROUND - ORIGINS OF THE NCEEE

The National Center for Examinations and Educational Evaluation (NCEEE) was set up by a joint planning process involving Egyptian, British and U.S. resources. It is established by Presidential Decree and funded from the national budget independent of the Ministry of Education. The aim of the NCEEE is to accelerate educational reform by:

- a. developing and implementing examination reforms which will:
  - support new curricula and promote higher skills;
  - develop selection for higher education;
  - increase the currency of certificates awarded;
- b. training educators and informing the general public; and
- c. modernizing examination administration by computerization.

The Host Government is providing a budget to cover staff costs - salaries, committee fees, local training costs etc. - and costs associated with test production for the Ministry. This budget is estimated at £E 15mn., or over US\$ 4mn., over the first three years. The Host Government is also providing a purpose-built building, estimated to cost £E 10mn. (more than US\$ 3mn.).

The British ODA is committed to provide support for training in Britain and elsewhere, consultancy visits to assist with training in Egypt, resident specialist/adviser assistance, English language and computer training in Egypt, equipment, book presentations and translation and project-related expenses.

USAID is committed to support the NCEEE through consultancies, training in Egypt and the U.S., and supply of furniture and equipment. This support will come from the Basic Education Project (grades 1-8). It will complement, and be coordinated with, support requested from ODA (for the secondary level).

## 2. PURPOSE OF THE CURRENT VISIT

The current visit is one of a regular series of monitoring visits as recommended in appendix 5 of the original feasibility study report for the center. The objectives of the visits were to:

- a. review with the Director and Divisional Directors the implementation of plans for the Center;
- b. review with the Director and Divisional Directors changes that have become necessary in the planning of the Center since the original feasibility study;

- c. discuss with the Director and Divisional Directors the time-line for Center activities for the period until June-1992;
- d. advise the Director and Divisional Directors on the development of inter-divisional coordination and procedures for efficient management of the Center;
- e. discuss with the Director and Divisional Directors the program of training for Center staff;
- f. recommend to the funding agencies any changes that may be desirable in the scheduling of agreed inputs during the implementation phase; and
- g. recommend to the funding agencies future inputs, or changes in already-agreed inputs, that would promote the development of the Center.

A full schedule of the meetings and visits undertaken is included as appendix A below.

### **3. ACCOMPLISHMENTS OF THE NCEEE TO DATE**

#### **3.1 Staffing of the NCEEE**

The staffing plan described in the Feasibility Study Report has been followed with a few alterations. For example, the four department heads described in the original study are now Division Directors. In Test Development it had been proposed that there be six Subject Coordinators. Those positions have since been upgraded to Department Heads. The change in status will be advantageous because the department heads will hold PhDs and thus will have the requisite status to deal effectively with committee chairs and members.

The Director and Division Directors of the NCEEE were appointed and have been in position since July, 1990; but due to conditions beyond the control of the NCEEE and its Administrators it has not been possible to make further appointments of professional and support staff needed according to the original timetable. Approvals for hiring have now been received and recruiting is underway.

#### **3.2 Physical Plant**

The proposed NCEEE building at Moqattam has been erected and will be completed on or before schedule. The building, in virtually every aspect, exceeds the expectations of the feasibility report team. In addition to providing for all present and near term needs, there is substantial adjacent area for any probable long term need. There is, however, one unfortunate feature of the

NCEEE building. In the original plans approved by the NCEEE Administration and incorporated into the design were security provisions that were ignored in the implementation of the design. Windows in secure areas were to be sealed or openable only from the top impeding physical access to the areas from without the building. The windows that were installed can be opened from the bottom. In order to compensate for this it has been necessary to order and install steel bars on all exterior windows.

### 3.3 NCEEE senior staff visits to the U.K. and Turkey

As part of the development process of the NCEEE, The Board of Directors, consisting of:

Dr. Fouad Abu Hatab, Director of the NCEEE  
Dr. Amina Kazim, NCEEE Director of Research  
Dr. Hussein El-Derini, NCEEE Director of Training and  
Dissemination  
Dr. Mohammed Eid, NCEEE Director of Operations  
Dr. Salah Mourad, NCEEE Director of Test Development

have so far made two visits to testing centers overseas, for purposes of orientation and familiarization. The first visit, during October, 1990, was to ÖSYM, the agency in Turkey responsible for the development, administration and reporting of university entrance examinations. The second visit, to the United Kingdom from April 1 through 17, 1991, enabled the group to visit a number of relevant institutions in both Scotland and England. Both of these visits are generally considered to have gone very well indeed. A full description of the visits is given in Appendix B below.

### 3.4 Test Development

The following are the main achievements to date of the NCEEE in the area of test development:

- a. 15 subject committees and their respective chairs have been appointed to take responsibility for basic and general secondary education.
- b. The subject committees have developed specifications for certification examinations in all subjects for grades 5, 8 and 11; and promotion examinations for grades 4, 6, 7, 9 and 10. Test specifications for each of the subject areas for the 1991 Thanawiya 'Ammah examinations were developed by the committees.
- c. The committees have also been writing test items for all levels beginning with grade four up through the Thanawiya 'Ammah. The test items that have been produced to date by all the subject committees are now undergoing review and

revision by specialists.

- d. The committees are developing model papers for distribution. The papers will be sold, and income will be used for NCEEE projects.
- e. Seven committees have been appointed to develop specifications and examinations for technical subjects in the Government schools.
- f. During May, 1991 the members of the Subject Committees participated in an intensive training program covering the role and purpose of the NCEEE; setting objectives and specifications; item writing and review. The training program commenced at 4 p.m Thursday, May 24 and continued through Thursday, May 30.

While recruitment of Department Heads and Subject Officers had been delayed for fiscal reasons, approvals have now been obtained, suitable candidates have been tentatively identified and active recruitment will commence shortly.

### 3.5 Training

- a. The Director of Training and Dissemination in collaboration with outside consultants developed a Feasibility Study to Establish a Training Program to Support the Development and Work of the NCEEE. This very comprehensive report covers such aspects as:
  - assessment of training needs for 1991 - 1995
  - central vs. local in-service training
  - trainer training
  - selection of trainees
  - role and responsibilities of collaborating agencies
  - financing of training
  - personnel and facilities
  - quality control of training
  - materials development
  - schedules
  - course outlines
- b. The Director of Training and Dissemination is currently producing a work-plan for the division. The work-plan will include relationship of the division to the other divisions of the NCEEE.
- c. Job descriptions for the staff position in the division are being developed.
- d. The first training program was brought to a successful conclusion on May 30, 1991. This was an orientation program

for senior members of the subject committees focussed on setting behavioral objectives and developing test specifications. Over 115 people were trained in writing items to specifications. The program consisted of lectures/presentations followed by discussion and then a 'hands on' workshop session. The training sessions were for 4 hours daily for seven consecutive days. I attended a number of workshop sessions and the final plenary session which was devoted to feedback from the participants. There was full attendance. The feedback was focussed and constructive. Many of the suggestions will be acted upon to improve future training. Overall, the response was very positive.

### 3.6 Dissemination

While the major emphasis of the Division has been on training, a number of important dissemination activities have already been undertaken:

- a. A presentation was made about the NCEEE, its mission, objectives and duties, to attendees at a symposium on "Creativity in Language Teaching".
- b. In the U.K. staff participated in a broadcast during which the NCEEE was discussed.
- c. A brochure describing the NCEEE and its work has been produced and should be available by the end of June, 1991

### 3.7 Research

The Research Division has been organized around three major functions:

- to carry out a program of on-going test related research;
- to provide research support to the various divisions of the NCEEE; and
- to provide research services and consultation to external clients.

The Research Division is comprised of four departments:

- Test Related Research (Statistical Analysis etc.)
- Psychological and Educational Research
- Program and Institutional Evaluation

- Teacher Evaluation

Two major studies are currently underway:

- A study investigating the possible variations in level of achievement by sectors (Cairo, Alexandria, Mansoura, Assiut); by governorates; by types of schools (4); by years (1986 - 1990); and by sex.
- A study to evaluate the model questions produced for all examinations in all subjects at all levels during 1990.

Research Division staff have participated in a number of other NCEEE related activities:

- The Division Director delivered a presentation about the role and purpose of the NCEEE Research Division to a symposium on creativity held in Cairo in 1991.
- Division staff participated in the one-week training program on development of objectives and item writing May 24 - 30, 1991.

### 3.8 Operations Division

The Operations Division is still in an organizing and planning stage. It is expected that with the acquisition of equipment and the impending move to the NCEEE building, the level of effort will increase significantly. Nonetheless, there have been important accomplishments.

- An item banking procedure has been defined and pilot tested;
- A number of test items in different subjects have been entered into the item bank; and
- A resource library with relevant materials is under development for the Operations Division.

## 4. CRITICAL ISSUES AND RECOMMENDATIONS

### 4.1 Defining the role of the NCEEE

The National Center for Educational Evaluation and Examinations is an independent, autonomous body created by Presidential Decree. Nevertheless, there exists in the Egyptian academic community some lack of understanding of the actual duties and powers of the Center.

While the overall mission of the NCEEE and its responsibilities have been described in various documents and fora, the relationship of the NCEEE to other governmental and academic agencies, institutions and governing bodies has not.

This lack of definition of the NCEEE role and function vis-a-vis those of the other institutions has the potential of creating conflicts and discord among bodies that need to cooperate to achieve their various goals.

Senior staff of the NCEEE have recommended that they prepare a detailed statement of the Center's role and purpose and its responsibilities with particular emphasis on those areas where responsibilities are not clearly spelled out or may be shared. This recommendation is supported. Following are some of the questions to be addressed:

- In what areas is the NCEEE's function primarily advisory?
- In what areas does the NCEEE determine policy?
- When the NCEEE and another body or bodies are not in accord, how is this problem resolved?
- What is the relationship of the Director of the NCEEE to the directors or chairs of collaborating agencies?
- On what boards and councils is it appropriate for there to be full NCEEE representation?
- How does the NCEEE relate to:
  - the NCERD
  - the CCIMD
  - the Supreme Council of Universities
  - the Supreme Council for Pre-University Education
  - the Ministry of Education (e.g., the General Directorate for Examinations, the General Directorate for In-service Training, the Subject Counsellors)
  - the administration of education at the decentralized (i.e., mudiriya and edara) level

When complete, the document should be submitted to His Excellency the Minister of Education and/or other appropriate individual or body as determined by the Director of the NCEEE for discussion and response.

#### 4.2 Assessing the effectiveness of the NCEEE

The NCEEE's functions are defined by Presidential Decree. If the Presidential Decree is fully implemented, then:

a. The NCEEE should be the coordinating body for policy-setting with regard to examination programs, including:

- task definition
- scheduling

- identifying the bodies responsible for different aspects
  - negotiating and agreeing upon division of responsibilities.
- b. Technical and professional decisions with regard to all General Certificate examinations should be under the control of the NCEEE, including:
- test setting
  - test production and administration
  - grading
  - data processing.
- c. The central role of the NCEEE in the production of test specifications and criteria, and its independence of the CCIMD, must be recognized, notwithstanding the importance of the NCEEE responding appropriately to changes in curriculum design. This presupposes a close collaboration between the CCIMD and the NCEEE; but in no way diminishes the overall responsibility of the NCEEE for the design of the examinations.
- d. The NCEEE should be the main source of evaluation data and information to the universities and Ministry of Education for decision-making purposes.

#### 4.3 Staffing

In order for the NCEEE to carry out its mandate and functions all full-time personnel in the staff complement should be hired as soon as possible. To date few staff have been hired, including the senior administrators, and they are all part-time. If the plan for the introduction of Advanced papers is to be implemented in 1992, the staffing problem will be particularly acute.

#### 4.4 Scaling and Equating of Thanawiya 'Amma and Advanced Papers

It is essential that an equating plan and a scaling procedure for both the Thanawiya 'Amma and the Advanced Level papers be developed and implemented for the following reasons:

- a. It is anticipated that in future secondary school graduates will apply for university admission during a year subsequent to the year of graduation. In order to insure equity in the admissions process, scores or marks from one year's examinations must be comparable to those of a previous or subsequent year. Pass rates for different years of the Thanawiya 'Amma are often dramatically different. While this does not present a major problem when all placement decisions are made during a single year, the problem could be very grave if selection decisions have to be made on the basis of examination results from different years, without

some equating procedure to make the results comparable.

- b. A major mission of the NCEEE is to provide information on the state of education in Egypt on a regular basis for government, the academic community, and the public at large. In order to be able to carry out useful longitudinal studies of student achievement, a means for comparing performance across time must be established. The equating of test forms from year to year is therefore essential. It is also essential that a scale or scales for reporting test results for the Thanawiya 'Amma and Advanced Level papers be developed.

It is recommended that all Divisions of the NCEEE be involved in scale definition and development. While the involvement of Test Development, Research and Operations is obvious, it is no less important to involve the Dissemination unit. The scale definitions must be comprehensible to the lay public. The Dissemination unit must find ways to make the scale "user friendly". It is recommended that any kind of numerical scale be accompanied by "real life" descriptors of performance readily comprehensible to the general public.

- c. Scaling and equating will provide very useful information to the universities concerning the relative abilities of entering students from year to year.

While preliminary work on scaling and equating should begin as soon as possible, the major effort will take place after the introduction of the Interim Advanced Level papers in order to put subsequent papers on a common scale.

#### 4.5 Security

Senior staff of the NCEEE have all expressed concern about test security. Because of the importance of the decisions made on the basis of the examinations for which the NCEEE is responsible, the risk of compromise is ever present and great. A number of safeguards have already been considered and will be implemented. Also recommended are:

- enhancements to NCEEE building security
- technical security measures

##### a. Enhancements to NCEEE building security

Access to the new NCEEE building will be strictly controlled. Security guards at the sole entrance to the facility and photo bearing i.d. are valuable security measures. Nevertheless, there are especially sensitive areas within the building that should be provided with enhanced security. These areas are:

- the area where newly-printed examination books are stored;
- the computer operations area; and
- the area where electronic and/or hard copy of item pools are maintained.

It is recommended that access to these areas be limited to a very small number of senior staff. It is suggested that a card access system be installed in those sensitive areas. The card access system will provide a record of who entered each area and when.

#### **b. Technical Security Measures**

In spite of the most elaborate and efficient security measures limiting access to test materials, the risk of compromise always exists. A number of measures internal to the tests themselves are therefore recommended. Two specific recommendations are:

- positions of items in the text should be alternated by inserting one non-operational test question at the beginning or end of the objective test paper, thereby varying the sequence of keys; and
- the position of the key can be varied among up to four versions of the same test by scrambling options, thus negating the value of access to any one answer key.

#### **4.6 Maintenance of Plant and Equipment**

The NCEEE administration have addressed the issue of building maintenance. Included in the plans, for example, are positions for a building director and custodial staff. An equally important issue is the provision of regular maintenance of equipment. Specifically, such items as computers, optical scoring equipment, desk-top publishing units, video cameras and copiers, all need regularly scheduled maintenance. The need for schedules of routine maintenance and provision for special maintenance by contract or otherwise should be addressed.

#### **4.7 Establishment of Test Development procedures**

It is recommended that a manual of procedures for test development, to be used by Department Heads, Subject Officers and Committee members, should be produced by the Test Development division. A suggested list of typical steps in test development appears as appendix C.

#### **4.8 Establishment of a Research Council**

The NCEEE Directors have met and discussed the importance of

ongoing development and refinement of a research agenda keyed to the needs and priorities of the NCEEE and its operating divisions. It is suggested that an internal "Research Council" composed of the Director of the NCEEE and the four Division Directors meet regularly to review and revise the Research agenda. It is recommended that the Research Council be chaired by the Director of the Research Division.

#### 4.9 Suggestions for a research agenda

Some recommendations for areas where the NCEEE might consider undertaking research are included in appendix D. they cover the following areas:

- Developing moderation systems
- Assessing school effectiveness
- Validation studies
- Questionnaire surveys
- Research to support test development
- Policy-oriented research.

#### 4.10 Linkages between Research and Test Development

It is expected that the staff of the Department of Test-related Research will have as a primary responsibility the monitoring and analysis of performance of the tests and test items developed by the NCEEE. It is suggested that at least one Researcher be assigned to work with each of the Test Development Departments. Among the responsibilities of the researcher will be:

- to analyze performance of trial or pre-test items
- to collaborate with TD in setting statistical specifications for final form examinations
- to perform item analyses of pre-tests and final forms
- to meet with Subject Officers and subject committees to review statistical results of tests
- to provide test analyses reports
- to perform preliminary item analyses (PIA) of Thanawiya 'Amma and Advanced Papers and to review PIA's with Subject Officers prior to official scoring of objective test papers

- to help develop equating plans and specifications for ongoing tests
- to recommend and help develop validation studies for assigned tests

#### **4.11 The scope of work of the Operations Division**

Some suggestions for possible areas of activity for the Operations Division are included in appendix E.

#### **4.12 Eric access**

It is recommended that the NCEEE should subscribe to the ERIC (Educational Resources Information Center) abstracting database on CD-ROM, and the ERIC Tests and Measurement materials on microfiche. Consideration should also be given to providing other institutions in Egypt with comparable materials relevant to their special fields of interest.

### **5. THE ADVANCED LEVEL PAPERS**

#### **5.1 Background**

The then Minister of Education H.E. Dr. Fathi Sorour, in his plan for educational reform, had considered the introduction of Advanced Level Papers in conjunction with the Thanawiya 'Amma as a vehicle for effecting a departure in instruction from reliance on rote memory and accumulation of facts to emphasis on developing higher order reasoning and problem solving skills. As a result, the first priority listed in the Feasibility Study Report for the establishment of the NCEEE (1990) was the development of Interim Advanced Level Papers. The introduction of the Advanced Level Papers was originally scheduled for June 1992.

#### **5.2 Original and Current Plans for Advanced Level Papers**

As originally conceived, the Interim Advanced Level Papers would be based on the same content as the Thanawiya 'Amma papers, but would test higher abilities. Such an approach would eliminate the need for the creation of new curricula and instructional materials prior to introduction of the first Advanced Level Papers. However, new syllabi, curricula and instructional materials have been created specifically for the Advanced Levels. While this approach may from a pedagogical perspective be superior to the original concept, it does create significant operational problems.

#### **5.3 Use of the Advanced Level Papers**

Two approaches to the use of the Advanced Level Papers for university selection were presented for consideration in the Feasibility Study Report:

- a. The weight assigned to the Advanced Papers could be increased over a number of years. The marks on the Advanced Papers would be added to those of the Thanawiya 'Amma. The advantage would be to ease the impact of the new tests on students and parents, to allow sufficient time for in-service training programs to re-train teachers to adequately prepare students for the Advanced Papers, and to allow for revision and reformulation of curricula and instructional materials.
- b. the Advanced Level Papers would carry the full number of marks on initial introduction. The marks on the Advanced Level papers would be added to those of the Thanawiya 'Amma for purposes of university admission.

#### 5.4 Format of Advanced Level Papers

In the Feasibility Study Report it had been recommended that the Advanced Level Papers contain both objective (multiple choice) questions and constructed response/essay type questions. A decision has been taken to use only multiple choice questions in the first Advanced Level Papers. The rationale for this decision is sound. It will, however, entail some revision to the original plans for inputs, most notably in the training of item writers and the provision of scoring equipment. These modifications have been incorporated into the recommendations for USAID inputs in section 7 below. A proposed schedule of events for introduction of the interim advanced level tests is included in this report as Appendix F.

#### 5.5 Current status and recommendations

The Supreme Council of Universities on June 5, 1991 decided to delay introduction of the Advanced Level Papers, and review the steps taken so far. This decision is endorsed. The main advantages of postponement would be:

- time would be available for training of NCEEE staff, teachers, administrators etc.
- the system could be trialled before introduction;
- it would be possible for the public to be fully informed about the changes prior to their introduction.

It is recommended that:

- a. interim advanced level papers be introduced in 1993 on the

following model:

- the interim advanced level papers should be based on the same curriculum as the Thanawiya 'Amma; but designed to assess higher-order skills;
- the papers should be multiple-choice, scored by machine;
- the advanced level examinations should be taken as close as possible in time, subject by subject, to the subjects of the Thanawiya 'Amma; and
- both Thanawiya 'Amma and the advanced level should be taken in a single year, and would be valid for admission to university in that year only.

The advantages of this would be:

- a test based on same curriculum is least disruptive to teachers and students; and
  - using the same curriculum would facilitate public understanding of the nature of higher-order skills.
- b. the final form of the advanced level should be introduced from academic year 1994-95, and would probably differ from the interim version in the following ways:
- a new curriculum and textbooks would be introduced specifically for advanced level; and
  - students would have the option of taking the advanced level with the Thanawiya 'Amma, or subsequently.

In this case, it is recommended that the textbooks that have already been prepared for the advanced level should be reviewed, that the CCIMD should be involved in the production and field trials of both curriculum and textbooks during academic year 1993-94, and that the NCEEE should produce and field test model questions in parallel with this.

- c. In order to facilitate the introduction of the advanced level it is further recommended that the NCEEE should:
- develop equating procedures to enable students to take Thanawiya 'Amma and advanced level in different years, or enter university one or more years after passing the examinations;
  - undertake a comparative study of university admission

procedures in a variety of countries, and on this basis recommend to H.E. the Minister of Education the most appropriate procedures;

- evaluate the predictive validity of different subjects at Thanawiya 'Amma for different university courses and make appropriate recommendations based on the results; and
- conduct a survey of public opinion concerning university admission procedures.

## **6. TRAINING NEEDS/USAID INPUTS**

It is recommended that USAID offer six main types of support to the NCEEE project:

- Seminar and Intensive Item-writer Training for Advanced Level Papers
- Orientation/Study Visits to US Institutions by Senior NCEEE Staff
- Longer-term training
- Consultations in Egypt
- Short-term specific-issues visits
- Equipment

### **6.1 Seminar and intensive item-writer training for advanced level papers (August/September 1991)**

The modification in design of the Advanced Level Papers will require intensive training of NCEEE TD staff and outside item writers in techniques for preparing multiple choice test questions, especially for the assessment of higher order skills. Because objective testing of this type is more frequent in the United States, it is recommended that test development specialists from US testing organizations be assigned to provide such training.

In order to meet the announced schedule for introduction of the Interim Advanced Level Papers it is proposed that the item writer training seminar and workshops take place no later than September, 1991. The scope of work envisioned is as follows:

#### **Staff:**

- 1 Senior Test Development Specialist to conduct both a three day seminar on objective testing principles and guidelines and a

nine day item writing workshop in his or her field of specialization. Assume 2 days preparation time, 2 days travel, 12 working days. Total = 16 days.

3 Test Development Specialists to conduct nine day workshops. Assume 1 day preparation time, 2 days travel, 9 working days. Total = 12 working days.

6 NCEEE Department Heads to collaborate in 3 day seminar and to aid in selection of participants for workshops.

4 NCEEE Department Heads, 1 for each workshop according to field of competence/responsibility.

#### 6.2 Orientation/Study Visits to US Institutions by Senior NCEEE Staff - April 1992

A two-week visit to the United States by the Director of the NCEEE and the four Division Directors - Test Development, Training and Dissemination, Research, and Operations - should, ideally, coincide with the ETS Invitational Conference. The Invitational Conference, held annually in New York City for one day, brings together the most prominent members of the US and international psychometric community. Invitations for the leadership of the NCEEE can be arranged.

If the US visit were to be limited to the Northeast, then meetings at the following agencies and institutions would be valuable:

- The American Council on Education (ACE) Washington, DC
- The Buros Institute for Mental Measurement University of Nebraska, Lincoln, NE (Meeting in Washington, DC)
- The College Entrance Examination Board (CEEB) New York, NY
- Educational Testing Service (ETS) Princeton, NJ
- Mexico: Secretariat of Public Education: Office of Evaluation
- College Board of Puerto Rico

A full rationale and possible schedule for each of these visits is included in appendix G.

#### 6.3 Longer-term training

Two programs at ETS are recommended for consideration as meeting some of the longer-term training needs of the NCEEE:

## **ETS Summer Interns Program**

ETS has an internally supported post-doctoral Summer Interns Program for Minority Scholars. The program provides technical and professional support for the interns to carry out research programs in their specific fields of interest. It might be possible to add on a limited number of places for senior NCEEE staff such as TD, Research, and Training and Dissemination Department heads. These internships might be run over a number of years, two per year for example. It is doubtful if ETS would use its funds for this purpose, but a suitable pricing structure could be explored.

## **ETS International Instructional Program Educational Testing 1: Test Construction**

This is a summer program of 4 weeks duration, usually beginning towards the end of June. It is a basic course focusing on the construction of multiple choice tests. There is some emphasis on the writing and scoring of essay questions. It is a basic course designed for individuals with extensive responsibility for the development of tests. It is not appropriate for individuals who have done graduate work or have equivalent experience in tests and measurements. This program would probably be valuable for the TD Department Heads and most of the TD Subject Officers. The cost per person is \$2000.

In addition, provision should be made for some long-term (i.e., 2-3 months) in the U.S. for key personnel in the Division of Training and Dissemination. Duration, type and site of training should be determined by consultation between the Board of the NCEEE and specialist advisers.

### **6.4 Consultations in Egypt**

It is very probable that Willem Spits will identify areas in Operations where specialist visits will be valuable. This will probably be true in other areas as well. Test Development and Research might want consultation on such issues as equating. I would recommend that up to 180 consultation days over the next three years be built in and left open for later description.

### **6.5 Short-term specific issues visits**

Specific issues are occasionally identified where outside specialist visits would be valued. "Creativity" in teaching and testing is one such topic that should be given early attention. A 10 to 15 day per year budget for such visits for seminars and workshops would seem appropriate.

### **6.6 Equipment**

If the advanced papers are to be in multiple-choice format, then it is desirable that they should be scored by machine. Since the number of papers will be very large (i.e., about 250,000 candidates taking about 3 subjects each), a high-specification scoring machine will be required. If the advanced papers are to be implemented in June 1992, purchase and installation of this scoring system should be given the highest priority.

In addition, the Training and Dissemination Division will require significant equipment. Two major needs are for equipment and materials to facilitate off-site training, and equipment and materials to implement "desk-top publishing" of training kits, manuals and other support materials. A detailed description of the mode of delivery of off-site training and materials development will provide specifics. It is to be expected that among the items needed will be:

- audio cassette tape copiers
- audio cassette players
- video camera
- VCR players and monitors
- video tape copier
- "desk-top publishing" equipment

APPENDIX A - SCHEDULE OF MEETINGS AND VISITS

Mon. May 27	10:00	Initial meetings with: Dr. Fouad Abu-Hatab, Director; Dr. Amina Kazim, Director of Research; Dr. Mohammed Eid, Director of Operations; Dr. Samiha Sidhom Peterson
	14:30	Peter Kresge and Sid Chambers, USAID
	15:30	David Carroll
Tue. May 28	10:00	Meeting with Dr. Hussein El-Derini, Director of Training and Dissemination, and David Tyler (USAID Training Consultant) at NCEEE
	14:00	Meeting with Muriel Kirton at British Council
	16:00	Attend training session at In-service Training Center, Manshiet El-Bakry
Wed. May 29	10:00	Meeting with Dr. Salah Mourad, Director of Test Development
	11:00	Meeting of full NCEEE Board
Thu. May 30	08:30	Visit to new NCEEE building, Moqattam
	16:00	Attend training session at In-service Training Center, Manshiet El-Bakry
Sat. June 1	11:00	Meeting with Mme Samira Moustafa, Counsellor for English Language, at Ministry of Education
	12:00	Meeting with Dr. Fouad Abu-Hatab, Director, at NCEEE
Sun. June 2	09:00	Meeting with Mme Sawsan Qorra, Undersecretary, Ministry of Education and Director, Educational Planning and Management Information Unit.
	10:00	Meeting with Dr. Hussein El-Derini, Director of Training and Dissemination, at NCEEE
Mon. June 3	09:00	Meeting with Sid Chambers and Dr. Samiha Peterson, at USAID

Tue. June 4	10:00	Meeting with Dr. Rawia Fadil, Director, Physical Planning Unit, at Silver Tower
	13:00	Meeting with Sid Chambers at USAID
Wed. June 5	09:00	Meeting with Dr Kawsar Kouchok, Director, CCIMD
	11:00	Meeting of full NCEEE Board
	14:00	Meeting with Sid Chambers, USAID, Peter Kresge, USAID, Dr. Hussein El-Derini, David Tyler, Samiha Peterson and David Carroll at USAID
Thu. June 6		Report Preparation
Sat. June 8	10:00	Round-up meeting with the Board of the NCEEE, at NCEEE

## APPENDIX B - NCEEE SENIOR STAFF VISITS TO THE U.K. AND TURKEY

As part of the development process of the NCEEE, The Board of Directors, consisting of:

Dr. Fouad Abu Hatab, Director of the NCEEE  
Dr. Amina Kazim, NCEEE Director of Research  
Dr. Hussein El-Derini, NCEEE Director of Training and  
Dissemination  
Dr. Mohammed Eid, NCEEE Director of Operations  
Dr. Salah Mourad, NCEEE Director of Test Development

have so far made two visits to testing centers overseas, for purposes of orientation and familiarization, to ÖSYM, Turkey, and to a number of institutions in the United Kingdom.

### 1. VISIT TO ÖSYM, TURKEY

During the first week of October, 1990, the NCEEE Directors visited the ÖSYM, the agency in Turkey responsible for the development, administration and reporting of university entrance examinations. The purpose of this visit was to enable the Executive Director and Divisional Directors of the NCEEE to:

- a. familiarize themselves with the structure and operating procedures of ÖSYM, a testing center of similar size and scope of work to the NCEEE, operating in a country of similar population, cultural background and stage of development to Egypt;
- b. observe the day-to-day working of ÖSYM, including code of practice (stated and implemented), task definition, setting and monitoring of performance standards, staff recruitment and retention procedures, etc.;
- c. spend time individually with their counterparts at ÖSYM, observe that counterpart's responsibilities and working procedures, identify operational problems they face, and discuss the role of the equivalent post-holder in the NCEEE;
- d. discuss with the Director, Senior Consultants and other senior staff of ÖSYM the implementation proposals for the NCEEE; and
- e. explore possibilities for future collaboration between the two institutions - e.g. in the area of consultancy and training visits.

A wide variety of issues were covered in very frank and extremely useful discussions between the NCEEE and ÖSYM staff, including:

Test center management

Staffing levels and compensation rates  
Code of practice for staff  
Organizational structure of various departments  
Organization of overall examination procedure  
Planning and development of tests  
Commissioning, reviewing and revising test items  
Test item storage and management  
Examination paper assembly  
Computer applications in examinations  
Registration and other student services  
Student selection and placement procedure  
Relations with other parts of the education system

The NCEEE staff considered OSYM an exceptionally suitable place to visit. It is a successful center, running a selection and placement procedure for University students, with similar staffing levels and divisional structure to those proposed for the NCEEE.

## 2. Visit to the United Kingdom

The Board visited the United Kingdom from April 1 through 17, 1991. They visited the following institutions:

Edinburgh: Scottish Examination Board (SEB)  
Scottish Center for Research in Education (SCRE)  
Moray House College

Glasgow: Scottish Technical & Vocational Education Council  
(SCOTVEC)

Dundee: Scottish Consultative Council on the Curriculum  
(SCCC).

London: the School Examinations and Assessment Council  
(SEAC)

Guildford: the Associated Examining Board (AEB)

Slough: the National Foundation for Educational Research  
(NFER), Slough

Cambridge: University of Cambridge Local Examinations  
Syndicate (UCLES)

The purpose of these visits was to enable the Director and Divisional Directors of the NCEEE to:

- a. familiarize themselves with the structure of the British examination system, and the major institutions involved in examinations and assessment at pre-university level;

- b. discuss current developments in British examinations, in particular in relation to the transition from stage to stage, and monitoring of standards;
- c. gather information about British practice in the preparation of examination specifications, item writing (particularly in assessment of higher skills and aptitude, and objective items) and grading;
- d. review British experience in the planning of in-service training in connection with reforms in assessment, and observe the implementation of in-service training in Britain;
- e. familiarize themselves with recent developments in operating procedures, with particular reference to the rapid and secure processing of results of non-objective tests, and the production of lists and certificates;
- f. review recent British research, particularly in relation to the setting and monitoring of standards, applications of item response theory, certification and selection, aptitude testing, and validation studies;
- g. spend time individually with their counterparts in U.K organizations, observe their responsibilities and working procedures, and the operational problems they face; and discuss with them the role of the equivalent post-holder in the NCEEE;
- h. explore the possibilities for future collaboration - e.g. in the area of consultancy and training visits to Egypt, and U.K training of NCEEE staff; and
- i. on their return to Egypt, to prepare a report on their visit, including recommendations for any follow-up; this report to be submitted to the Supreme Council for Examinations and Educational Evaluation, and, through the British Council, the ODA.

## APPENDIX C - TYPICAL TEST DEVELOPMENT PROCEDURES

The following list of procedures to be followed in the development of a test will present steps that may not be appropriate for all tests, and may omit some steps that might be appropriate for other tests. The list is presented simply as a guide for test development and an overview of the test development process.

### 1. Planning Conference

Staff: Subject Officer, TD Department Head, Administrators  
Purpose: To map general strategies

### 2. Prepare Planning Document

Staff: Subject Officer  
Purpose: To document all details relevant to preparation of a new test, including time of test, sources of items, critical dates, equating, committee meetings, staff responsibilities, hours or monies budgeted

### 3. Begin Compilation of Materials and Information on Curriculum, Including Curriculum Surveys, Teacher Questionnaires, etc.

Staff: Subject Officer, TD Department Head  
Purpose: Provide Sources for Helping Set Test Specification

### 4. Prepare Schedule for Test Production

Staff: Test Production Staff  
Purpose: Fit New Test into Ongoing Production Schedule and Alert Relevant Staff

### 5. Nominate and Appoint Subject Committees (necessary only for new program)

Staff: TD Director, TD Department Head, Subject Officer  
Purpose: Conform to Policy

### 6. Contact and Orient Committee Chair and Members; Include Relevant Statistical and Test Information

Staff: TD Department Head, Subject Officer  
Purpose: Prepare Committee for Meeting

### 7. Convene Planning Session Prior to Committee Meeting

Staff: TD Director, TD Department Head, Subject Officer, (Committee Chair)  
Purpose: Review Agenda, Procedures and Desired Outcomes of

Committee Meeting

**8. Hold Subject Committee Meeting**

Staff: Subject Officer (TD Department Head)  
Purpose: To Develop or Review Test Specifications

**9. Prepare Subject Committee Meeting Report**

Staff: Subject Officer  
Purpose: To Document Proceedings and Decisions

**10. Select Item Writers**

Staff: Subject Officer, (TD Department Head, Committee Chair)  
Purpose: Prepare List of Invitees for Item Writing Training

**11. Orient and Train Item Writer (by mail or workshop)**

Staff: Subject Officer, Training Specialist  
Purpose: Create Item Pool for the Test

**12. Review and Revise Items**

Staff: Subject Officer, Committee Chair, TD Department Head  
Purpose: Prepare Items for Pre-testing

**13. Carry out Independent Reviews and Keys for Items**

Staff: Subject Officer, TD Department Head, Other Reviewer  
Purpose: Quality Control

**14. Summarize, Evaluate and Establish Item Pool**

Staff: Subject Officer, TD Department Head  
Purpose: Create Final Item Pool

**15. Decide on Pretest Administration Period**

Staff: Subject Officer, TD Department Head, TD Director  
Purpose: Decide on Optimum Time for Pretesting

**16. Send Visual Stimulus Material to Test Production (maps, diagrams, illustrations, photographs, etc.)**

Staff: Subject Officer  
Purpose: Provide Sufficient Time to Produce Material

**17. Select Equating Items**

Staff: Subject Officer, Assigned Research Specialist  
Purpose: Create Equating Set for Pretests

**18. Prepare Initial Draft of Pretest (by hand or by computer)**

Staff: Subject Officer  
Purpose: Submit Draft to TD Department Head, Committee Chair  
**19. Review Draft Pretest**

Staff: Committee Chair, Other Staff Reviewer  
Purpose: Quality Control

**20. Prepare Pretest Documentation (keys, draft test, equating plans, reviews etc.)**

Staff: Subject Officer  
Purpose: Documentation, Information

**21. Review and Key Pretest, Review Documentation, Discuss and Revise as Necessary**

Staff: TD Department Head  
Purpose: Quality Control

**22. Send Pretest and Documentation to Test Editor**

Staff: Subject Officer  
Purpose: Review by Editor

**23. Editorial Review**

Staff: TD Editor  
Purpose: Assure Conformity to NCEEE Style

**24. Check Editorial Comments, Revise if Necessary**

Staff: Subject Officer  
Purpose: Reconcile Review

**25. Send Pretest to Test Production**

Staff: Subject Officer  
Purpose: Prepare Test for Printers

**26. Review Camera Ready Copy from Production**

Staff: Subject Officer  
Purpose: Check for Errors, Revise if Necessary, Return to Test Production

**27. Review Printers Proofs**

Staff: TD Editor, Subject Officer  
Purpose: Quality Control

**28. Department Head Printers Proof Review**

Staff: TD Department Head  
Purpose: Quality Control

**29. Print Test**

Staff: NCEEE Print Shop  
Purpose: Produce Requisite Number of Test Copies

**30. Send Reference Copies of Pretests to Production and Test Files**

Staff: TD Test Files  
Purpose: Documentation

**31. Release Test for Shipping**

Staff: TD Production  
Purpose: Send Tests to Test Centers

**32. Pretest Administration**

Staff: Test Centers  
Purpose: Obtain samples

**33. Perform Pretest Item Analysis**

Staff: Assigned Research Specialist, Assigned Operations Specialist  
Purpose: Determine Quality of Items

**34. Review Item Analysis**

Staff: Subject Officer, Assigned Research Specialist (Committee Chair)  
Purpose: Select Items for Final Form Test Pool

**FINAL FORM**

**35. Select Equating Items**

Staff: Subject Officer, Assigned Research Specialist  
Purpose: Select Equating Set for Final Form

**36. Review Pretested Items; Write New Items if Needed**

Staff: Subject Officer, Selected Item Writers  
Purpose: Complete Item Pool for Final Form

**37. Perform Reviews of Final Form Items**

Staff: Committee Chair, Subject Officer, TD Department Head,  
Selected Reviewers  
Purpose: Assure Quality of Final Form Items

**38. Summarize and Collate all Reviews**

Staff: Subject Officer  
Purpose: Reconcile Reviews

**39. Prepare Initial Draft of Final Form**

Staff: Subject Officer  
Purpose: Submit for Review

**40. Review Draft Final Form, Discuss and Revise if Necessary**

Staff: Committee Chair, Selected Reviewers, Subject Officer  
Purpose: Quality Control

**41. TD Department Head Review**

Staff: TD Department Head  
Purpose: Quality Control

**42. Send Draft Test and Documentation to TD Editor**

Staff: Subject Officer, TD Editor  
Purpose: Editorial Review

**43. Review Editorial Comments, Revise if Necessary**

Staff: Subject Officer  
Purpose: Reconcile Differences

**44. Copyread Test**

Staff: TD Editor  
Purpose: Proofreading

**45. Complete Paperwork for Test Assembly (keys, equating plans,  
specifications etc. in documentation folder with draft test)**

Staff: Subject Officer  
Purpose: Documentation, Information to Relevant Staff

**46. Perform Quality Control Checks, Type and Produce Camera-  
Ready Copy, Proof Read, Return to Subject Officer**

Staff: TD Production Staff  
Purpose: Prepare Test Copy

**47. Camera-ready Copy Review, Prepare Independent Key**

Staff: Selected TD Reviewer  
Purpose: Independent Review

**48. Reconcile Reviews, Indicate Revisions**

Staff: Subject Officer  
Purpose: Documentation

**49. Check Revisions**

Staff: TD Editor  
Purpose: Quality Control

**50. Type and Proof Revisions**

Staff: TD Production Staff  
Purpose: Revise

**51. Check Revisions, Arrange for Independent Review**

Staff: Subject Officer  
Purpose: Quality Control

**52. Approve Camera-ready Copy for Printing, After Independent Review, Certify Key, Verify Three Independent Keys for Each Item, Complete all Documentation**

Staff: Subject Officer  
Purpose: Quality Control

**53. Perform Quality Control Checks**

Staff: TD Production Staff  
Purpose: Quality Control

**54. TD Department Head Review of Camera-ready Copy**

Staff: TD Department Head  
Purpose: Quality Control

**55. Send to Printer**

Staff: TD Production Staff  
Purpose: Begin Printing Process

**56. Prepare Proof Copy**

Staff: NCEEE Print Shop  
Purpose: Quality Control

**57. Proofread Printers Copy**

Staff: TD Production Staff  
Purpose: Quality Control

**58. TD Department Head Printer's Proof Review**

Staff: TD Department Head  
Purpose: Quality Control

**59. Print Test**

Staff: NCEEE Print Shop  
Purpose: Produce Requisite Number of Final Form Copies

**60. Send Copies of Test to Test Files, Test Production**

Staff: NCEEE Print Shop  
Purpose: Documentation

**61. Ship Tests to Test Centers**

Staff: NCEEE Operations  
Purpose: Test Administration

**62. Test Administration**

Staff: Test Center Staff  
Purpose: Administer Test to Population

**63. Perform Preliminary Item Analysis (PIA)**

Staff: Assigned Research Specialist, Assigned Operations  
Specialist  
Purpose: Identify Flawed Items

**64. Review and Respond to PIA**

Staff: Subject Officer, Assigned Research Specialist  
Purpose: Determine if Items Should be Scored

**65. Test Answer Sheets Returned and Scored**

Staff: NCEEE Operations Computer Center  
Purpose: Prepare Scores

**66. Perform Item Analysis**

Staff: Assigned Research Specialist, Assigned Operations  
Specialist  
Purpose: Determine Test Quality

**67. Quality Control Review of Item Analysis**

Staff: TD Department Head, Assigned Research Specialist  
Purpose: Quality Control

**68. Review Item Analysis**

Staff: Subject Officer  
Purpose: Inform Committee Chair and Committee of Item  
Performance

**69. Prepare Test Analysis**

Staff: Assigned Research Specialist  
Purpose: Documentation of Test Performance

**70. Review Test Analysis, Evaluate Test, Suggest Improvements  
for Next Version of the Test**

**Staff:** Subject Officer, TD Department Head, Committee Chair

## APPENDIX D - POSSIBLE NCEEE RESEARCH PROJECTS

### 1. DEVELOPING MODERATION SYSTEMS

- a. In order to demonstrate the importance of moderation, a research could be conducted into the variations in standard amongst different Adadiya Certificates produced in different Governorates. This could be done using the data from the tests produced in January for the Educational Planning Unit.
- b. Moderation procedures could then be developed in consultation with an expert from Scotland (possibly during September/October).
- c. Moderation procedures for promotion tests could be implemented experimentally on a limited scale, e.g. in Cairo, Giza or some nearby Governorate (possibly as a controlled experiment) during the 1991-92 school year.
- d. If the trial is successful, moderation could be extended to a wider area (perhaps the entire country) during the 1992-93 school year, using the mudiriya-level branches of the NCEEE.

### 2. ASSESSING SCHOOL EFFECTIVENESS

The data from the Thanawiya 'Amma could be used on a national scale to indicate which subjects are being taught less well than expected in a given school. This information could be fed back to the school through the subject inspectorate, which could provide guidance to the school on how to improve teaching in that subject.

The same could be done within a Governorate using the Adadiya Certificate data; or promotion tests if they are constructed using centrally-prepared and calibrated material; or machine-scored objective test could be used, if it covered a range of subjects, and was administered across a substantial number of schools.

Therefore, an experimental study could be set up, as follows:

- i. procedures could be developed using the data from the January testing done by the Educational Planning Unit;
- ii. a full-scale trial could be mounted either using the Thanawiya 'Amma data (as soon as these are available on a computer the Center can freely use) or using Adadiya Certificate data from a single Governorate, which would have to be entered manually.

A regular national system could be implemented as soon as the Center takes over the processing of the Thanawiya 'Amma data.

This could be a joint project with the Ministry of Education subject Inspectorates, as represented by the Counsellors.

### 3. VALIDATION STUDIES

- a. Follow-up of a sample of successful (and if possible unsuccessful) candidates in the new "advanced" papers.
- b. analysis of the Thanawiya 'Amma scores to show the effect on rank order of differences in difficulty between subjects in a single year, and from year to year, and of choice of track (Literature, Science and Mathematics).

### 4. QUESTIONNAIRE SURVEYS

- a. Assessing the problems teachers face with assessment.
- b. Investigating parent and student views about the examination system in Egypt, about specific examinations, and about handling of the major steps in the educational ladder - especially transition to university.
- c. An enquiry into employers' views on the examination system, and how they would like it to be changed.

### 5. RESEARCH TO SUPPORT TEST DEVELOPMENT

- a. Field trials of questions prepared by the Center, leading to item analysis. This information can be used:
  - i. to improve the question banks by contributing to the selection of the best questions, and revision or rejection of less good questions;
  - ii. to develop question writers' skills by giving them feedback about the performance of the questions they prepare and discussing this with them; and
  - iii. to make possible the construction of tailored tests through item banking.
- b. Item analyses of advanced papers to indicate which items were answered well or badly. This information could be given to the subject committees, and the most important items published with guidelines to teachers and parents.
- c. Development of instruments for assessing and surveying literacy and numeracy, for use primarily with young adults. This research could in due course lead to a national survey of literacy standards.
- d. Development of aptitude testing.

6. POLICY-ORIENTED RESEARCH

- a. A study of the effect of private tuition on examination results.
- b. A study of the financing of examinations, and possible means of controlling costs.
- c. Investigations concerning the assessment of practical skills, which could include:
  - i. The assessment of practical skills in academic subjects such as Science, Computing and Technology.
  - ii. assessment of vocational skills in the context of both Technical and General secondary education (including the possibility of giving credit for these for admission to higher education); and
  - iii. assessment and accreditation of work experience (in the context of lifelong education, and possible admission to higher education).

## APPENDIX E - POSSIBLE AREAS OF WORK FOR OPERATIONS DIVISION

### 1. SETTING UP A PROCEDURE FOR PROCESSING SCORES FOR THE INTERIM ADVANCED LEVEL PAPERS

The development, production, processing and reporting of results of the Interim Advanced Level papers will be the responsibility of the NCEEE. At present it is expected that the papers will be ready for processing in June 1992.

- a. Determine specifications for test scoring equipment.
- b. Develop general answer sheet specifications. It is recommended that a standard NCEEE answer sheet be designed for use with both Thanawiya 'Amma and Advanced Level papers.
- c. Install, pilot test the test scoring equipment using mock test for trial run.
- d. Train key staff in operation of test scoring equipment. (See item c under Thanawiya 'Amma)
- e. Analyze results of trial run, make any necessary adjustments, or revisions to procedures.
- f. Develop a procedures manual for answer sheet processing; develop and document Quality Control procedures.
- g. Develop master calendar for answer sheet processing for the 15 Advanced Level tests (with TD and Research).
- h. Assign one operations staff member to work with each TD department for the following and other activities:
  - to meet with TD and Research staff to set answer sheet specifications
  - to set subscore specifications, if necessary
  - to develop equating specifications
  - to schedule PIA's
  - to aid in setting up other analyses such as:
    - intercorrelations among test sections
    - correlations of background variables to test performance (sex, region, age, etc.)
  - develop score conversion tables for each test

### 2. SETTING UP A PROCEDURE FOR PROCESSING SCORES FOR THE THANAWIYA 'AMMA

- a. In collaboration with Mr. Oweis Ahmad Oweis, Director-General of Examinations, design a procedure for graders to enter scores directly onto OMR forms which involves minimum disruption of existing procedures.

- b. Design the necessary OMR forms.
- c. Design and implement training for computer staff.
- d. Set up a trial run on a sample from a previous year, using a limited number of experienced graders.
- e. Analyze the results of the trial run and make any necessary changes to the procedures. Prepare operations manual for procedure.
- f. Design and set up a mudiriya-level organization for handling all Center operations. This organization could overlap with the EPU organization.
- g. Design and implement training programs for:
  - i. mudiriya-level staff; and
  - ii. graders.

### 3. DEVELOPING THE DATA PROCESSING FUNCTION

- a. Set up a computer system within the Center with:
  - i. appropriate statistical software (e.g., SYSTAT and SPSSPC for general statistics, PC-BILOG, TESTAT and Microscale for test statistics).
  - ii. Capability for machine-reading of objective-test data by an NCS Sentry 3000.
- b. Train:
  - i. 2 computer operators who have a background in Mathematics/Statistics in the operations of statistical data processing.
  - ii. 2-4 data entry/clerical staff.
- c. In collaboration with the Division of Research, obtain from Cairo University Computer Center the Thanawiya 'Amma data for 1986-90. Transfer the data to a medium that can be used on the Center's computers.
- d. In consultation with the Division of Research, undertake statistical analysis of the Thanawiya 'Amma scores, and trial printing of lists for subsets of the data.
- e. In collaboration with the Test Development Division, set up a trial try-out of test material involving:
  - i. both manual and OMR data entry
  - ii. "classical" and IRT analyses of objective, short-answer and extended-answer data.
  - iii. feedback of item analysis to item writers in workshops where the results are discussed, and revisions made to items where necessary.

### 4. TAKING OVER PROCESSING OF THANAWIYA 'AMMA TOTAL SCORE DATA

**FROM CAIRO UNIVERSITY COMPUTER CENTER**

- a. Using the procedures developed under (1) above, make a trial at either Governorate or Sector level in 1991, in parallel with existing procedures.
- b. Assess the results of the trial run. Revise procedures accordingly. Purchase any additional hardware that may be required for full task in 1992.
- c. Implementing full score processing for Thanawiya 'Amma in 1992 if the results of the trial are good.

**5. SELECTING A GOVERNORATE TO ACT AS A TEST-BED FOR OPERATIONS PROCEDURES**

- a. Identifying a Governorate
- b. developing procedures for registration, distribution and collecting of tests, grading, transfer of data to computer, merging, score processing, preparing lists of scores, and so on.
- c. Preparing a plan for translating them to national level.

**6. DEVELOPING THE ITEM MANAGEMENT AND BANKING FUNCTION**

determining needs  
planning system to specification.  
making a book of topic and skill codes for each subject.  
training computer and data-entry personnel  
triallying system  
implementing system

**7. DEVELOPING THE DESK-TOP PUBLISHING FUNCTION**

setting up system to produce camera-ready copy  
training people  
triallying system  
implementing system

**8. DEVELOPING A MANAGEMENT INFORMATION SYSTEM**

- a. Training 2 computer operators and 2 data-entry/clerical staff in database techniques.
- b. working with the EPU to ensure the system takes advantage of, and is compatible with their data-gathering system.
- c. Developing database systems for maintaining databases of:
  - i. schools;
  - ii. item writers;

- iii. test centers;
- iv. invigilators;
- v. trainers, etc.

d. Implementing and maintaining database systems.

## APPENDIX F - SUGGESTED STEPS IN DEVELOPING THE ADVANCED PAPERS

### Step 1

Obtain copies of textbooks and materials. Distribute text materials to Subject Committee members, NCEEE-TD Department Heads and Subject Officers for review and as preparation for special Subject Committee meetings for the Advanced Level papers.

### Step 2

Convene Subject Committees (with additional members if appropriate). Purpose of the meetings will be to set final specifications for Advanced Level tests. Suggest a 3-4 day meeting.

### Step 3

Arrange for one three-day multiple choice item writing seminar and four nine-day follow up subject area workshops. The three-day seminar will focus on theory and principles, and sample item writing. During the nine-day workshops participants will write items to specifications in their subject matter specialties. Four follow-up workshops to be held: (1) Mathematics and Sciences; (2) Foreign Languages; (3) Social Sciences and (4) Other subjects.

It is recommended that one senior Test Development specialist with significant experience in the design and development of objective, multiple choice items and the construction of objective tests be appointed to carry out the initial three-day seminar with the collaboration of local experts. An additional three objective testing experts should be appointed to lead the follow-up workshops. The four experts should represent the four major disciplinary areas.

### Step 4

Identify up to 20 potential item writers in each subject area (including Subject Committee members on a voluntary basis), to be invited to participate in the three-day item writing seminar. All Trainers appointed and on staff by the time of the item writing seminar also should be invited to attend.

### Step 5

Conduct three-day item writing seminar for approximately for approximately 300 attendees. Among issues addressed will be:

- guidelines for writing sound multiple choice items
- writing items to meet specifications
- writing multiple choice items to evaluate higher order

- skills and abilities
- guidelines for reviewing multiple choice items

#### Step 6

Select participants for follow-up nine-day subject-specific workshops. The workshop leader in collaboration with local experts, the Director of Test Development and the Director of Training and Dissemination will identify eight to twelve most promising potential item writers in each discipline from the total participants in the three day seminar and invite them to participate in the nine-day workshops.

#### Step 7

Conduct follow-up workshops. Ideally, the nine-day workshops should commence immediately following the three-day seminar. The nine-day workshop conducted by the seminar leader can, obviously, follow right away. If the other three workshops cannot be scheduled immediately thereafter, then they should be scheduled as soon as possible, but no later than the end of September. They need not take place simultaneously, but every effort should be made to provide opportunity for the seminar leader to meet with each workshop leader prior to workshops.

Each Subject Area workshop will be conducted by a leader in collaboration with senior NCEEE staff. The product will be a pool of about 500 multiple choice items written to the specifications for each of the Advanced Level papers.

#### Step 8

Item review and draft test assembly. The item pool for each subject will be reviewed by the Subject Committee Chair with the support of the Subject Officer. Each item will be: (1) accepted as is; (2) revised; or (3) rejected. Each Subject Committee Chair together with the Subject Officer will assemble to specifications two (2) parallel forms of the Advanced Level Paper.

#### Step 9

Create NCEEE-TD style manual. A Test Development Editor with the collaboration of the TD Department Heads and Director of Test Development will draft a "style manual" for NCEEE Test Papers. The style manual will cover such items as:

- General directions for all tests (how to mark answer sheet, whether to guess or not, etc.)
- Directions for standard item formats
- Standard wording for test questions
- Mechanics, ie punctuation, numbering, underlining, etc.

#### Step 10

Develop Test Development Quality Control Procedures document. Department Heads and Test Editor under the direction of the Director of Test Development will produce a document describing Quality Control Procedures for TD, covering such issues as:

- number of reviews and reviewers
- preparation and checking of answer keys
- documentation and record keeping

#### Step 11

Prepare Test Production Schedule. The Director of Test Development in collaboration with appropriate staff will provide to Department Heads and Subject Officers a Test Production Schedule indicating dates when final drafts of assembled tests must be submitted for production. The Test Production Schedule will also indicate dates when (1) tests will be returned to the Subject Officers for review; (2) Subject Officers must provide corrections and revisions to Test Production; (3) camera ready copy will be available for review; (4) camera ready copy must be submitted to printer.

#### Step 12

Test editing. Each draft Advanced Level paper will undergo an editorial review for style, format, language etc. Discrepancies will be resolved by TD Editor with Subject Officer, Department Head if necessary.

#### Step 13

Answer sheet and scoring specifications meeting. Subject Officer, Department Head, Statistical Analyst assigned to the test, and Operations officer meet to set and document answer sheet specifications and scoring procedures.

#### Step 14

Test Production. Fifteen Subject tests will undergo final review prior to submission for production. Each Subject Officer will be responsible for carrying out the steps assigned according to the Test Production Schedule.

#### Step 15

Final Quality Control checks upon receipt of printer's proofs from test production, including final proofreading, key verification, layout and design.

#### Step 16

Test Production cycle complete. Required numbers of test books printed and stored under secure conditions.

APPENDIX G - U.S. INSTITUTIONS TO BE VISITED BY NCEEE BOARD

1. THE AMERICAN COUNCIL ON EDUCATION (ACE) WASHINGTON, DC

ACE is a non-profit, membership organization involved with major issues of educational policy. ACE has a number of important measurement functions. It is responsible for the tests of General Educational Development (GED) the nationally recognized tests for High School Equivalency that is accepted by most states, Canadian provinces (in English and French) and Puerto Rico (in Spanish). ACE is also the agency that grants university credit for non-traditional educational experiences. The Defense Language Institute (DLI) language tests recently were evaluated by ACE for the award of university credit.

Suggested Length of Visit: 1 day

Suggested participants: NCEEE Director, Director of Research, Director of Training and Dissemination, Director of Operations, Director of Test Development.

2. THE BUROS INSTITUTE FOR MENTAL MEASUREMENT UNIVERSITY OF NEBRASKA, LINCOLN, NE (MEETING IN WASHINGTON, DC)

The Buros Institute is a small research unit most known for publication of the Mental Measurements Yearbook. The Buros Institute surveys and evaluates virtually all published examinations in the United States. The Director of the Institute is one of the foremost experts on equating procedures. Because it is very likely that both the Thanawiya 'Amma and the Advanced Papers will be equated in future in order to be able to compare results over time, and because security concerns in Egypt will likely require equating techniques other than the traditional common item equating procedure, a meeting with the Buros Director would be valuable. Buros works closely with ACE. A meeting at ACE facilities in Washington could probably be arranged.

Suggested Length of Visit: 1 1/2 days

Suggested Participants: Director of Test Development, Director of Research, Director of Operations.

3. THE COLLEGE ENTRANCE EXAMINATION BOARD (CEEB) NEW YORK NY

The College Board is a non-profit, membership organization that sponsors a number of educational programs. It sponsors and determines policy for the Scholastic Aptitude Test (SAT), the various College Board Achievement Tests, the Advanced Placement Program and Examinations (AP), the College Level Examinations Program (CLEP) and others.

Suggested length of visit: 1 day

**Suggested participants:** NCEEE Director, Director of Research,  
Director of Training and Dissemination

**4. EDUCATIONAL TESTING SERVICE (ETS), PRINCETON, NJ**

ETS, a non profit, educational institution, is the largest agency in the world dedicated to educational evaluation, research and measurement. It develops examinations for a wide variety of clients including state education agencies, foundations, and the federal government, as well as international agencies such as the United Nations. The Research Division is involved in such issues as test validity and reliability, item and test bias, educational policy planning, human resources development, evaluation of teacher performance, technology in instruction and evaluation.

It is recommended that prior to a visit, a list of specific interests be drawn up by NCEEE staff and submitted to the ETS Coordinator for international exchange in order to arrange for appropriate ETS staff to be available. It is probable that the following areas will be of interest:

- a. **ETS Officers Division:** A meeting with Senior ETS officers to discuss such issues as policy, relationships to higher education institutions, ethics, long range planning, costing and budgeting.

**Suggested Length of Meeting and participation:** 1 day for full NCEEE Directors group. 3-4 days for NCEEE Director and possible back-up.

- b. **ETS Research Division:** A meeting with Research Division Directors to discuss overall scope of ETS research effort, organization and goals of research, design of research agenda, determination of priorities.

**Suggested Length of Meeting and participation:** 1/2 day for full group. Follow-up meetings with individual Division Directors, project directors, researchers. 2 days for NCEEE Research Director. An additional 1 or 2 day meeting of the NCEEE Research Director with the Directors of Statistical Analysis for the College Board Division and the Schools and Higher Education Programs Division would be very valuable.

- c. **ETS Literacy Projects:** ETS has been carrying out a number of foundation and federal government supported projects in the area of Adult Literacy. Meeting with project directors and key staff could be valuable.

**Suggested Length of Meeting and Participation:** 2 hours for full NCEEE Directors group. 1 day for Director of Training and Dissemination and Director of Research.

- d. **National Assessment of Educational Progress/International Assessment of Educational Progress (NAEP/IAEP):** Much innovative test development work is carried out in NAEP. NAEP is the most important source of information for educational policy planning in the US. A federally funded program, NAEP has been providing 'The Nations's Report Card' on educational attainment at ages 9, 13, and 17, since the 1960's. The scales for interpreting student performance and the sampling techniques for NAEP are major breakthroughs in psychometric practice. The development of objectives and specifications and their wide distribution throughout the academic community has had a significant impact on instruction. The IAEP has been carrying out similar assessments on an international basis. The third international assessment will include dozens of nations worldwide. The research and dissemination aspects of NAEP/IAEP as well as Test Development activities are clearly relevant to the NCEEE's mission.

**Suggested Length of Meeting and Participation:** 1/2 day meeting with Executive Director of NAEP/IAEP and key staff = full NCEEE Directors group. Follow up 1 - 2 day meetings according to special interests, ie TD, Research, Training and Dissemination.

- e. **Test Development:** A series of meetings with the three ETS Test Development Directors (College Board, Schools and Higher Education Programs, Center for Occupational and Professional Assessment) and TD coordinators of major programs should be useful for the NCEEE Director of Test Development. It is suggested that the NCEEE TD Director prepare and submit to ETS TD Directors a list of specific issues to be discussed.

**Suggested Length of Meeting and Participation:** 1/2 day orientation for full NCEEE Directors group. 4 days for NCEEE TD Director.

- f. **Operations Division:** Willem Spits will be in a good position to recommend the structure of this part of the visit. Included will probably be:

- data processing
- scheduling
- printing
- answer sheet design
- mailing/delivery & receipt of materials/storage

**Suggested Length of Meeting and Participation:** to be determined in consultation with W. Spits.

- g. **ETS Test Security and Test Security Offices**

**Suggested Length of Visit and Participation:** 1/2 day for NCEEE Director and Director of Training and Dissemination

- h. **ETS Test Production Services:** This area is responsible for the actual production and editing of all ETS tests; maintenance of item and test files, Quality Control, liaison with TD and printing.

**Suggested Length of Meeting and Participation:** 1/2 day for full NCEEE Directors Group. 1 1/2 days for NCEEE TD Director.

- i. **ETS Information Services:** Area responsible for general organizational information dissemination to the media and general public.

**Suggested Length of Meeting and Participation:** 1/2 day for full NCEEE Directors group, 1 full day for Director of Training and Dissemination.

- j. **ETS Human Resources Division, Training Department:** Area responsible for training of personnel, development of training materials.

**Suggested Length of Meeting and Participation:** 1/2 day for Director of Training and Dissemination.

**5. MEXICO: SECRETARIAT OF PUBLIC EDUCATION: OFFICE OF EVALUATION**

This unit is charged with the evaluation of all aspects of Mexican education. It analyzes and designs the content, plans and programs of studies, the methods and means of evaluation and teaching standards for special education, pre-school, primary secondary and teacher education. It designs and develops measurement instruments for all levels. It makes recommendation regarding curricula and instruction. There are six functional areas:

- the office of content and instructional methods
- the office of evaluation of policies and educational systems
- the office of evaluation of the educational process
- the office of accreditation and certification
- the office of incorporation and revalidation
- the scholarships and grants office

The staff is composed of 96 people, 79 professional and technical staff and 17 support staff. The responsibilities of the center are many and varied. They do an enormous amount of data collection and reporting to the federal government and the various state governments. They provide in-service training - in

the field - to local education agencies. They carry out all the activities in connection with national testing programs. They are a major source of information and recommendations for educational policy planning.

Given the scale of operations in Mexico, the kinds of resources available and the similarity in overall mission to that of the NCEEE, I believe that a 2 to 3 day visit would be valuable. I know that the administrators of the center in Mexico are eager to develop international contacts and would welcome such a visit. I also feel that the quality of their operation and their staff is very good. The travel costs for NCEEE staff might be no greater depending upon air fare structure. I believe that there would be no cost involved other than travel and lodging for NCEEE staff.

#### 6. COLLEGE BOARD OF PUERTO RICO

The College Entrance Examination Board supports a quasi-autonomous unit in Puerto Rico. The Puerto Rico College Board prepares the Prueba de Aptitud Academica (PAA) for admission to Commonwealth of Puerto Rico colleges and universities. Unlike the SAT, the PAA is administered to all high school seniors in Puerto Rico. The P.R. College Board also assists the P.R. Department of Education with other assessment programs such as teachers assessment. The Board in Puerto Rico is responsible for all the tasks associated with their assessment programs. Because of the size and scope of their activities, they might be able to provide useful advice to the NCEEE Directors group.