

VOCATIONAL TECHNICAL EDUCATION
IN EGYPT

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
TECHNICAL ASSISTANCE DIVISION
EDUCATION OFFICE
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This preliminary sector assessment of vocational technical education in Egypt was prepared by the Education Office, Technical Assistance Division, USAID/Egypt.

As no other report of this type exists, it should prove to be of great value as a data and information base for those involved in vocational technical education development programs in Egypt.

This report will be under constant revision, with gaps being filled as rapidly as possible. Periodically, updated and revised sections will be available from the Education Office.

Suggestions from recipients that would enhance its value and usefulness would be appreciated.

ARAB REPUBLIC OF EGYPT

TECHNICAL-VOCATIONAL EDUCATION

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GLOSSARY

AF	Armed Forces
DPVT	Department of Productivity and Vocational Training (with MOIMR)
MOAG	Ministry of Agriculture and Land Reclamation
MOCS	Ministry of Commerce and Supply
MOE	Ministry of Education
MOEC	Ministry of Economy
MOF	Ministry of Finance
MOHE	Ministry of Higher Education
MOHR	Ministry of Housing and Reconstruction
MOIMR	Ministry of Industry and Mineral Resources
MOH	Ministry of Manpower and Vocational Training
MOP	Ministry of Planning
MOPH	Ministry of Public Health
MOSAI	Ministry of Social Affairs and Insurance
NOT	Ministry of Tourism
NOTC	Ministry of Transport and Communications
MOESRT	National Council of Education, Scientific Research and Technology
TABC	Training Agency for Building and Construction (with MOHR)

CHAPTER I

FORMAL TECHNICAL-VOCATIONAL EDUCATION

The lack of an internationally accepted terminology poses a barrier to communication, and therefore to understanding in the field of vocational and technical education and teacher preparation. The establishment of such a terminology is a difficult and delicate task, complicated as it is by differences in language and educational concepts, structures and traditions. An attempt has been made to use a terminology which is conceived as an instrument of literary national communication and does not necessarily reflect the terms and concepts of any particular national community.

For the purposes of the present study the following terminology is used.

General technical education: a programme of education which is a part of the general education offered in schools on the lower secondary level and is designed to introduce students to the elements of technology and basic practical technical skills. These programmes are offered for exploratory and guidance purposes rather than to prepare students for any specific occupation. Thus general technical education serves to enlarge the general education of all students, to orient some toward further technical or vocational education, and to provide early school-leavers with some rudiments of technological understanding which will enable them to be more easily trained on the job. The programme content will depend upon which of the above three functions is emphasized. Other terms used for this type of education include: elementary technology, industrial arts, polytechnical, and pre-vocational.

Vocational education: education designed to prepare skilled workers for industry, agriculture, commerce, etc., which is usually provided on the upper secondary level. Programmes of vocational education include general studies, practical training for the development of skills required by the chosen occupation and related theory. The proportion of these components may vary considerably but the emphasis is usually on practical training. These programmes may be full-time in schools or other educational institutions or part-time as supplementary education for apprentices or others receiving their practical training in employment.

Technical education: education designed to prepare technicians for industry, agriculture, commerce, home economics, medicine, etc., which is usually provided at the upper secondary or lower tertiary level. The curricula of technical education include general education, general technical theory, training in special technical procedure and skills, and related theory. These components may vary considerably depending on the type of technicians to be trained and the level at which these programmes are offered.

Teacher education or preparation: a programme of pedagogical studies, both theoretical and practical, leading to qualified membership in the teaching profession. Teacher education may be given in conjunction with studies in a special subject area or may be the content of a professional programme taken

separately. Teacher preparation for secondary and higher education takes place at the tertiary level, the length and content of programmes dependent upon the subject and level at which the teacher will eventually teach, and upon his qualifications at entry into the programme.

General technical teacher: a person teaching the theoretical and practical aspects of elementary technical subjects usually at the lower secondary level.

Vocational teacher: a person teaching theoretical subjects and/or the theoretical aspects of practical training courses in secondary educational institutions in which skilled workers are educated and trained for occupations in the trades, crafts, industry, agriculture and/or commerce. In some countries, the vocational teacher is responsible for practical workshop training as well.

Workshop teacher : a person teaching the practical skills required by technicians and skilled workers in school workshops, usually on the upper secondary level, but also in the first cycle of secondary education or on the post-secondary level. Normally, the technical or vocational teacher to whom courses the practical training activities relate co-ordinates the work of the workshop teacher.

Technical teacher : a person teaching general and special technical theory in educational institutions on the upper secondary or post-secondary level, the aim of which is to educate and train technicians. Usually the technical teacher is responsible for both classroom and laboratory work, but may also supervise practical workshop training to the extent required in order to integrate the theoretical and practical aspects of technical education. He may be assisted in laboratory work by appropriately qualified laboratory technicians.

Training officer, training director : a person employed by an undertaking (or group of undertakings) with the main functions of supervising, organising and/or planning training carried out within the undertaking(s) as well as arrangements made for training given outside for the staff of the undertaking(s). Depending on the size of the undertaking or group of undertakings and the volume of training activity, the training-officer or training-director may be concerned with training for all levels of staff or for one or two levels only. He may teach some or all of the courses himself and may supervise the work of specialist instructors and other training-staff.

Instructor : a person performing the same function as the workshop teacher but employed in training centres, training workshops, or in industrial or commercial enterprises.

Skilled worker : is almost totally concerned with things and only marginally with data and people. He needs to have the right level and special skills together with enough knowledge of mathematics, science, drawing, technology, and communication skills to know how to use the tools, instruments, machines, materials and the special techniques required to practice his work effectively.

Technician : is a person who occupies a position between that of the qualified scientist, engineer or technologist on the one hand and the skilled worker on the other.

"He is charged with the application and control of technical practices that have been defined by the technologist. He should have practical knowledge and experience of skills involved, combined with adequate technical and process

knowledge and experience to enable him to diagnose problems, work out details of a task or operation, carry out the work himself, and in some cases to exercise supervisory or advisory duties." (1)

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Historical Review of Technical-Vocational Education in Egypt:

Prior to the Ministerial Issue No. 211 of 1953 for the establishment of the preparatory stage, there existed two types of technical schools:

1. Primary Vocational Schools: Industrial, agricultural, horticulture and commercial. Study period three years. Pupils were admitted after completing the first level of education.
2. Mid-Technical Schools: Industrial, agricultural, commercial, secondary technical schools for girls and boys. Study period five years. Students were admitted after completing the primary stage.

After the Ministerial Issue No. 211/1953, the system was developed into two stages.

First Stage: Including all types of preparatory technical schools (industrial, agricultural, commercial, technical for girls and co-technical). Study period was three years. Access to this stage was for students who have successfully completed the primary stage. The purpose of this stage was to provide professional technical workers, skilled agricultural workers who could perform all technical work in all fields of agriculture, or workers having a limited technical knowledge sufficient to carry on secretarial work in small commercial establishments.

The concern about technical-vocational education emerged with the start of industrialization in 1955. Four organizations were involved in the

to promote technical-vocational education. These were:

1. The Ministry of Pedagogy and Education (MOE): Schools mainly academic in nature, poor facilities, divergence from the practical needs.
- Military Factories: Relied on Czechoslovak experience and refused any other alternative in addition to lack of cooperation with other organizations.
3. Ministry of Industry: Established the Department of Productivity and Vocational Training in 1956, and was interested in industrial education and training.
4. The Armed Forces: Established vocational training centers in 1959 and restricted its activities in the framework of its centers without any attempt to coordinate with similar centers.

The shortage in the training of manpower needed for the economy became quite evident at the beginning of the first five-year plan in 1960.

The needed manpower was not included in the plan. To repair this, two committees were selected in July 1961 to study and assess the stock of technicians and workers needed for the five-year plan. The two committees submitted their reports in December 1962. The reports included a general survey of the human resources needed, the shortage in manpower, and methods of coordination between different organizations responsible for the preparation of skilled manpower.

The main recommendations were:

- On-the-job training is a principle that need not be discussed.
- There is a danger in expanding university education.
- There is a danger in continuing the policy of "employment"

in the absence of a manpower plan.

- Vocational trades should be specified and vocational guidance implemented, and the absorption of dropouts of prep-schools in a type of training relative to the urban and rural need.

The study resulted in the abolition of prep-type education and the establishment of vocational training centers. In 1962/63 the first class of the preparatory commercial was closed, and in 1963/64 the first class of the preparatory industrial and agricultural was closed except for preparatory-industrial schools connected with the factories.

In 1965 a Ministerial Decree was issued to convert prep-industrial and agricultural schools into the new preparatory school system.

Second Stage: Includes all types of secondary technical schools (industrial, agricultural, commercial and female). Period of study is three years. Access to this type of education is for students holding the General or Technical Preparatory Certificate with special conditions.

In the school year 1963/64 the female schools were converted into general secondary schools covering practical fields.

In 1958/59 a level for secondary technical education for girls was established which later in 1970/71 was called "Industrial for Girls

In 1964 a "Manpower Ministerial Committee" was established and a Ministerial Decree was issued regulating the employment of all graduates.

The "Central Agency for Training" was established in an attempt to concentrate the efforts and expertise related to the preparation of manpower for different economic sectors, and was able to create "Training Awareness" and conduct studies for different organizations.

In 1965/66 "Extended Industrial Studies" were provided to graduates of industrial secondary schools to prepare them to be qualified teachers of the practical materials in the industrial schools.

In 1966 the "Technical Institutes" were established lacking any facilities or teaching staff, resulting in a 60 percent drop-out rate.

In 1970/71 the five-year industrial technical schools started accepting students who have completed successfully the preparatory level. The purpose of this stage is to provide the students with the education and training commensurate with the graduation of a class of technicians to help in the implementation of the economic plan.

In 1972 the "Higher Council of Manpower and Training" was established. It suffered from shortage in funds and inauthorization to implement.

The trend towards providing more specialized technical schools has increased during the period 1973-1975.

Policy and Strategy of Technical-Vocational Education

The Higher Council of Universities has charged one of its committees with the duty of studying the policy and strategy of technical-vocational education in Egypt. In June 1976, the committee submitted the following recommendations:

First, the Policy:

1. It is essential that the policy of technical-vocational education in Egypt becomes stable for the period of the next two economic plans to allow for benefits of vocational-technical education.
2. To issue the policy needed to satisfy the real needs of Egypt, the Arabs and African countries as far as we could, taking into consideration the difficulty in projecting those needs.
3. To increase the efficiency of available facilities for technical-vocational education, poor as they are.
4. Coordination between different civil and military organizations working on technical-vocational education.
5. The policy of wages should be based on wage/productivity and not on the pricing of certificates.
6. To open the door for technical school graduates to complete their studies coupled with practical training.

Second, the Strategy:

1. To improve educational guidance and discover the technical abilities of students in an early stage.
2. To adjust the educational ladder with the manpower ladder and adjust the ratio of engineer/technician/skilled worker (for example: 1 engineer: 3-5 technicians: 20-30 skilled workers) and to apply this ratio in the field.
3. To proceed towards the intake of a relative amount of technical science in general education and the concentration not on memorization but on the use of available knowledge in the real life.
4. To guide the use of all available capabilities.
5. To exchange international, African and Arab experiences and benefit from the experiences of advanced and developing countries.

The MOE Plan:

The report of the MOE on the Development of Education in A.R.E. during the period 1973/74 - 1974/75* states that the plan of the Ministry of Education (MOE) is to expand admission to the secondary stage in its different kinds of schools. Public secondary schools should absorb about 70 percent of those who have completed successfully the preparatory stage. The rest of the pupils can be admitted to private secondary schools and

* MOE. Documentation Center for Education. Report on the Development of Education in A.R.E. during the period 1973/74 - 1974/75. Feb. 1975.

to technical training centers. Technical secondary schools should increase to meet the demands of the economic development and to be in line with the world trends in encouraging this kind of education.

In the 1976 report it was stated that one of the priorities of educational policy is "...developing secondary education so that technical and vocational education would grow within its framework and would be used in the public (general) education as much as possible and provided its field be expanded."

The GOE has laid out a ten-year plan to be executed in two stages with a goal of graduating 80 percent of the specialized technicians as well as the assimilation of one-third the number of secondary school students admitted to the universities.

The MOE has summarized the problems which face the plan in the following:

1. Deficiency in the Education Budget.
2. People prefer general to technical education.
3. The rapid increase in population, rate of growth is 2.5 annually.
4. The cost of construction materials is increasing.

Objectives of Technical Education:

The objectives of technical education are:*

1. To promote it to accommodate 60 percent of the total number of students on the secondary level in the school year 1980/81.

* Technical Education, A Report. Office of the Undersecretary for Technical Education, MOE, 1977.

2. To provide all the facilities needed for this type of education to achieve its goals through:
 - Improvement of educational methods
 - Development of curricula and books
 - Provision of equipment
 - Provision of qualified teachers
 - To establish new specializations to keep in pace with scientific and technological development
 - To provide means of practical training for students in the schools, factories and establishments.

3. To link this type of education with the production and services sectors, and to increase the number of specialized schools to achieve:
 - Training of students in the most developed machines and equipments used in the production sectors.
 - To allow production sectors' services to participate in the preparation of students according to their real needs.
 - To limit duplication in the preparation of one and the same level of labor force.
 - To achieve best use of the expenditures allocated to technical education, from one side, and the provision of the necessary funds needed by the sectors to establish their own training centers.
 - To consider tech-schools as production units in its field of specialization to benefit from the material and human energies of these schools in increasing production for the benefit of the national economy and to increase the income of labor force

in these schools (students and teachers) and the training of students and raising their technical levels and providing teachers' skills and experience.

Descriptive Profile of the (Formal) System:

Structure of the System

Technical education in Egypt has three main levels:

- The level of preparing skilled workers
- The level of preparing technicians
- The level of preparing technologists and engineers

The Ministry of Pedagogy and Education is responsible for the preparation of skilled labor through the three-year school system and technicians through the five-year school system. This type of education is regulated by Law No. 75/1970.

A. The Three-Year School System (Grade 10-12)

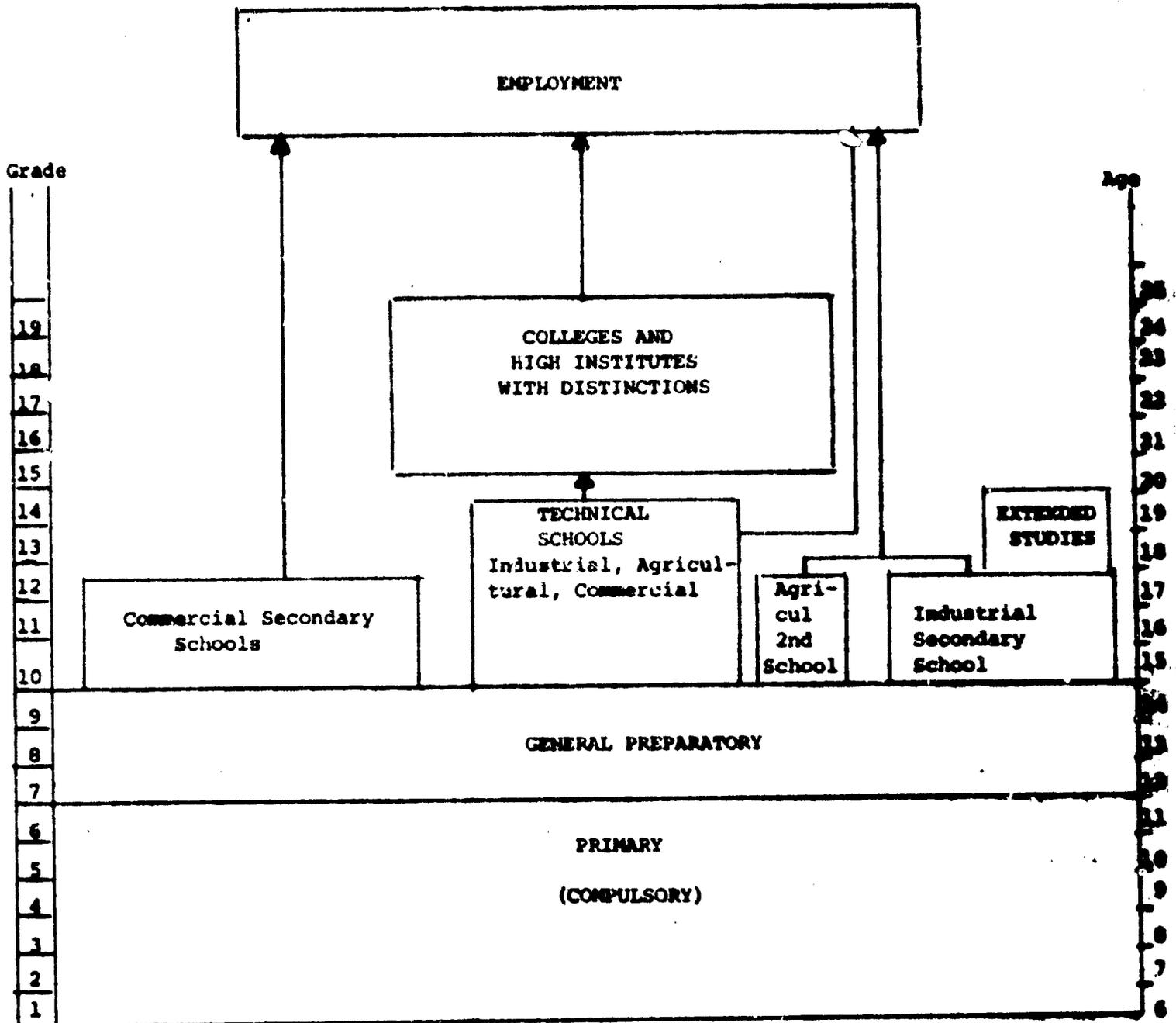
This is the level of preparing skilled labor. It is divided into:

1. Technical secondary industrial education, grades 10-12
2. Technical secondary agricultural education, grades 10-12
3. Technical secondary commercial education, grades 10-12

Formal technical secondary education for girls started in 1959/60.

There are separate schools for each sex. For girls there are only industrial and commercial schools. As of 1975/76 females were given a chance to join the secondary agricultural education on an equal basis with males.

CHART 1
 FORMAL
 TECHNICAL EDUCATION IN EGYPT



H. The Five-Year School System (Grades 10-14):

This is the level of preparing technicians. It is also divided into industrial, agricultural and commercial.

This type of education started as technical industrial education in the school year 1970/71. Period of study is five years. Admitted are holders of the general preparatory certificate. This system was applied to agricultural education in 1975/76 in the domain of land reclamation and agricultural mechanization in cooperation with the World Bank (IBRD).

Admission:

Requirements for admission to all technical schools (three- and five-year systems) are:

- to hold the general preparatory level certificate
- to be at least 18 years old
- to pass the physical test

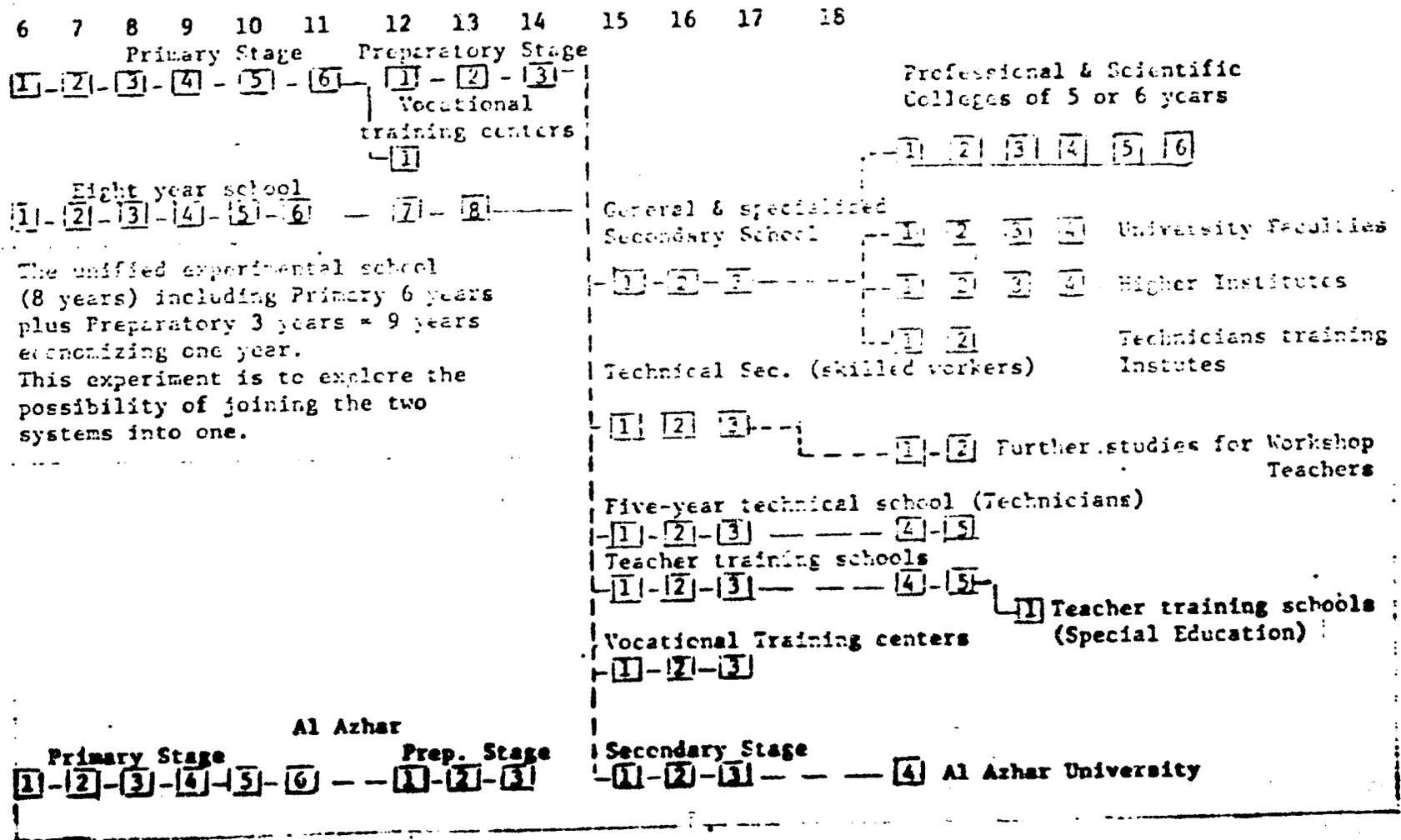
C. Extended Industrial Studies (Grades 13 and 14):

This type of study started in the school year 1965/66 and admits graduates of industrial secondary schools to ensure an output of qualified workshop teachers for the industrial schools.

The following organizational chart illustrates the structure of formal technical education (Chart 2).

CHART 2

The Educational Ladder in the A. R. E.



Administration:

A. At the National Level

The Ministry of Education (MOE), the Ministry of Higher Education (MOHE), and the universities are the implementation organizations that administer formal technical education in all its levels, as follows:

1. The universities administer technical colleges from which engineers and technologists are graduated.
2. The Ministry of Education is divided into several sectors including the sector of "Technical Education." The latter is presided over by the Undersecretary of Technical Education and is divided into five departments: Department of Industrial Education, Department of Agricultural Education, Department of Commercial Education, Department of Technical Equipment and Department of Planning and Coordination (Chart 3). Each of the first three departments administer the school in its field of specialization. Each is divided into four administrations: Administration of School Affairs, Administration of Curriculum and Textbooks, Administration of Student Affairs and Exams, Administration of Technical Counseling.
3. The Ministry of Higher Education assumes jurisdiction over all technical institutes to prepare technicians needed for certain training centers.

In addition to the above mentioned implementation organizations, there exists on the national level in Egypt two advisory councils whose duties are wholly or partly connected with technical vocational education and the manpower plan.

1. Higher Council of Manpower and Vocational Training

Established in 1976 according to the Presidential Decree No. 795/1976 and is presided over by the Prime Minister. Its duties are to prepare a National Policy for Manpower and Vocational Training. It has no power to implement.

2. Higher Council of Education, Scientific Research and Technology

Established in 1974. Presided over by the President himself or his representative. Its duties are to prepare the national policy, strategy and plan for education in Egypt including technical vocational education. No authority to implement.

B. At the School Level

The organization at the school level is shown in Chart 4.

According to MOE organization each technical school should have:

- 1 Director
- 4 Assistant Directors:
 - 1 for General Knowledge
 - 1 for Student Affairs and Exams
 - 1 for Technical Materials
 - 1 for Workshops (in industrial schools) or for Agricultural Affairs (in agricultural schools)

Chart 3

Arab Republic of Egypt

Administration of Technical (Formal) Education

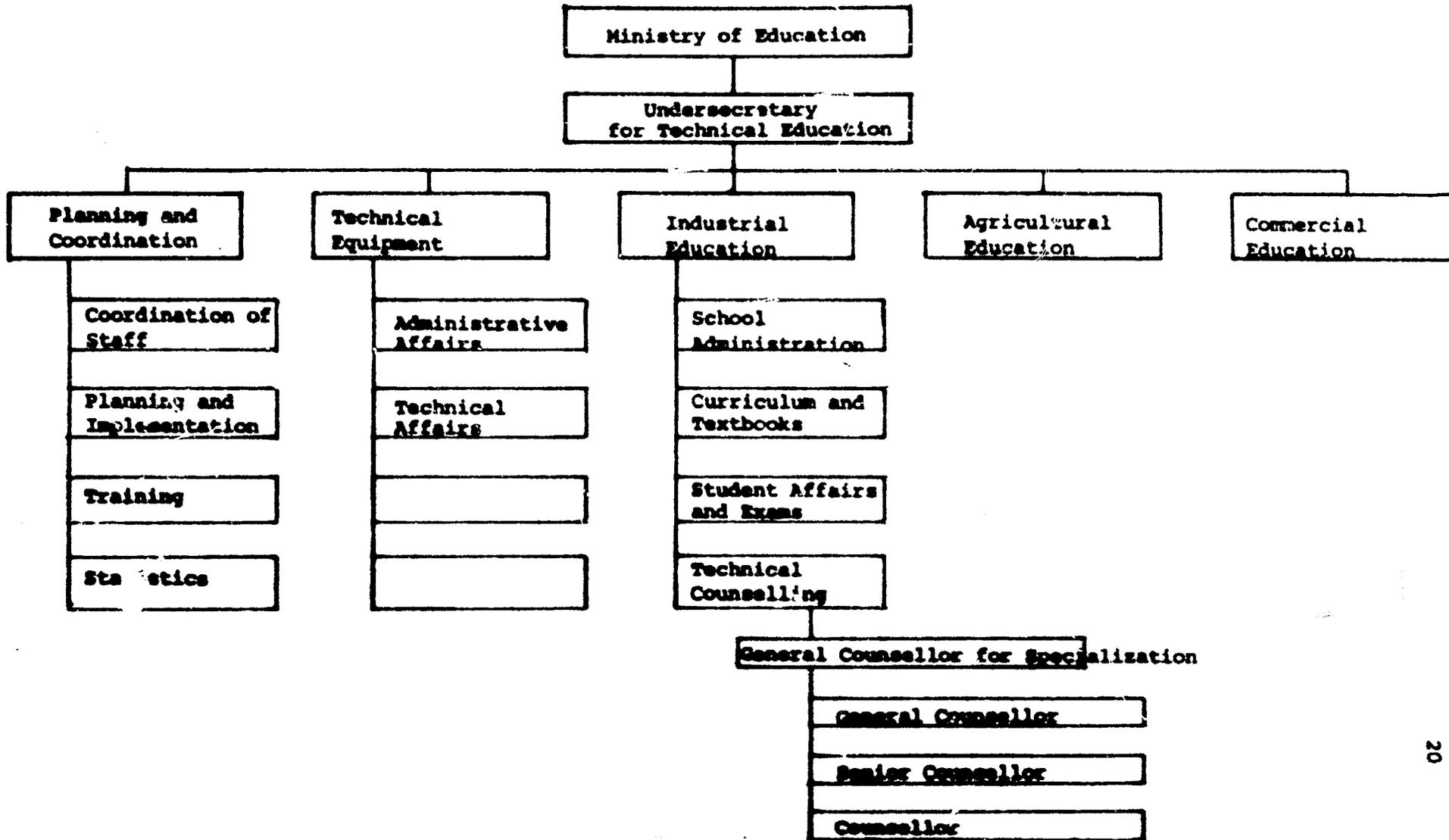
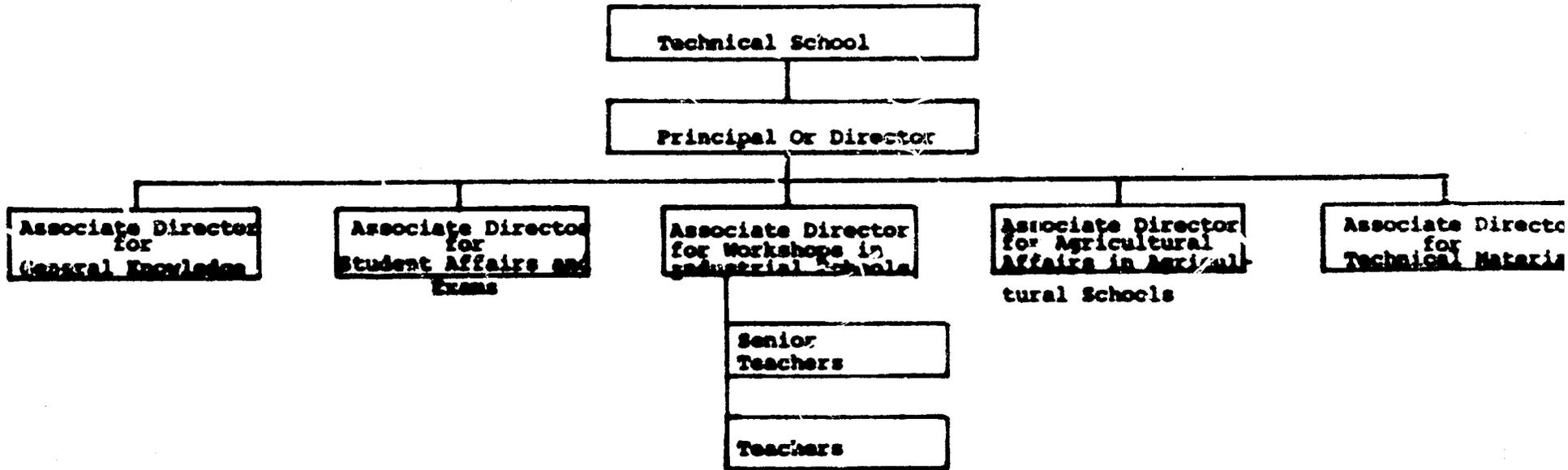


Chart 4

Arab Republic of Egypt
Administration of Technical (Formal) Education
(The School Level)



Quantitative Development in Technical Education:

A. Schools

1. Technical Schools

The following table shows the quantitative development of schools, sections, classes and average student per class in formal technical education during the past 20 years.

Table No. 1

Quantitative Development in Technical Education

In the Arab Republic of Egypt

During the 20 Years from 1956/57 - 1976/77

School Years	Stage (Level)	Number of Schools	Number of Sections	Number of Classes	Total Number of Students			Average Students per Class
					M	F	Total	
56/57	Prep	51	10	461	11,580	1,345	12,925	28
	Sec	84	17	1,044	23,461	5,977	29,438	28
66/67	Prep	17	134	578	13,243	3,433	16,676	29
	Sec	190	119	3,833	91,546	28,888	120,434	31
76/77	Sec	365	258	12,040	267,261	141,279	408,540	34

Source: MOE Statistical Division, Development and Flow of General Education Since the Middle of the 20th Century 1950/51 - 1976/77: Cairo, 1977

The total number of Secondary Technical schools has increased from 84 schools in the school year 1956/57 to a total of 198 schools in 1966/67 and 365 schools in 1976/77. Sections increased from 17 in 1956/57 to 119 in 1966/67 to 258 in 1976/77.

The number of classes jumped from 1,044 in 1956/57 to 12,040 in 1976/77. Nevertheless, the average student/class has gone up from 28 in 1956/57 to 34 in 1976/77, pointing to the fact that the rate of construction of schools to accommodate the ever growing number of students is far behind.

During the period of the third Five Year Plan, the average annual growth rate of schools as shown in Table 2 was 5.7 percent and of classes 8.0 percent, while the average annual growth rate of students during the same period was 7.1 percent which shows again the shortage in the number of schools relative to the growth in enrollment rates.

Table No. 2

Quantitative Development of Schools

1972/73 - 1976/77

1. Schools

Year	Number	G.R. ^{1/}	A.A.G.R.
76/77	365	6.7%	
75/76	342	2.4%	5.7%
74/75	334	8.4%	
73/74	308	5.1%	
72/73	293		

2. Sections

76/77	258	5.3%	
75/76	245	17.8%	8.7%
74/75	208	7.2%	
73/74	194	4.3%	
72/73	186		

3. Classes

76/77	12,040	8.9%	
75/76	11,060	7.7%	8.0%
74/75	10,265	10.0%	
73/74	9,330	5.4%	
72/73	8,850		

^{1/} G.R: Growth Rate
 A.A.G.R: Average Annual Growth Rate

In 1976/77 the 364 technical schools were distributed over all types of technical education (industrial, agricultural and commercial) as shown in the following table:

Table no. 3 ^{1/}

Number of Schools, Sections and Students

In Technical Education of MOE

(1976/77)

Type of Technical Education	No. of Schools	No. of Sections	No. of Classes	Number of Pupils		
				M	F	Total
Industrial 3 Years	112	2	3,064	91,868	11,006	102,874
Industrial 5 Years	4	-	142	3,971	89	4,060
Total Industrial	116	2	3,206	95,839	11,095	106,934
Agricultural	55	-	1,216	40,089	1,656	41,745
3 Year Official	178	57	5,614	92,300	96,381	188,681
Private and Services	12	195	1,947	37,899	31,699	69,598
5 Years	3	-	20	221	431	652
TOTAL	193	252	7,581	130,420	128,511	258,931
	364 ^{2/}	254	12,003	266,348	141,263	407,611

1/ Source: MOE: Technical Education, A Report. Office of Undersecretary for Technical Education, MOE, 1977.

2/ MOE Statistics show a total of 365 technical schools

Although the average annual increase in secondary technical schools was 5.7 percent in the last five years, yet the average annual increase of secondary industrial schools (including the five-year system) did not exceed 2.5 percent in the same period (108 secondary industrial schools in 1972/73 and 118 schools in 1976/77) as shown from the following table:

Table No. 4

Quantitative Development of Secondary Industrial Schools

1972/73 - 1976/77

School Year	Schools 3-Year	Schools 5-Year	Total Number of Schools	G.R.	A.A.G.R.
76/77	114	4	118		
75/76	109	4	113	4.40	
74/75	108	4	112	0.90	2.50
73/74	104	3	107	4.70	
72/73	105	3	108	0.00	

2. Teacher Training Centers

There are two schools for teacher training:

- (i) The Technical Teacher Training College at Maharia producing B.Sc. Degree teachers in the mechanical, electrical and architectural engineering technologies.
- (ii) The Technical Teacher Training School at Kobba (a joint project between MOE and UNESCO which in 1979 will graduate its first annual output of 250-280 teachers in the technical specializations of mechanical, electrical, electronics, automation and fine mechanics).

3. Secondary Industrial Schools, Extended Studies

There are six schools for extended industrial studies and one for construction.

The schools are located in the three big cities of Cairo, Alexandria and Assuit. (For details, see Annex 1 on Industrial Education.)

The Diploma of Extended Studies is conferred upon the graduates of these schools in the technical trades of mechanical, electronics, automotive, electrical, architectural, decorative and textile.

Type of Labor Prepared by MOE Technical Schools

The Technical Report of the Office of Undersecretary of Technical Education summarizes the types of labor as follows:

I. Industrial Schools

Divided into:

a) Male 3-year System:

Prepares skilled labor in nine main branches with 53 specializations. (See Annex I for details)

b) Female 3-year System:

Prepares skilled labor in nine specializations. (See Annex I for details)

c) 5-Year System:

Prepares technicians and industrial trainers

1. Technicians in the following seven specializations:

- Mechanics
- Electricity
- Electronics
- Automobiles
- Construction and building
- Sanitary Engineering
- Utilities

2. Industrial trainers in the following specializations:

- Operation Mechanics
- Fine Mechanics
- Electricity
- Wireless
- Automobiles

II. Agricultural Schools

Prepares skilled labor on the general level. Period of study: 3 years.

III. Commercial Schools

Divided into:

a) 3-Year School System

Prepares skilled labor in the following specializations:

1. General
2. Commercial Correspondence
3. Legal Affairs
4. Commercial Insurance
5. Purchase and storage
6. Hotel affairs

b) Five-Year System

1. Social Insurances
2. Commercial
3. Banks

F. Administrative Staff:

In 1976/77, the total number of staff was 26,487 working in administrative and teaching positions as follows:

Table No. 5

Administrative Staff in Secondary Technical Schools

(1976/77)

	<u>Schools</u>	<u>Directors</u>		<u>Directors</u>		<u>Senior Teachers and Teachers</u>	
		<u>F</u>	<u>Total</u>	<u>F</u>	<u>Total</u>	<u>F</u>	<u>Total</u>
Secondary Industrial ^{1/}	114	18	111	18	367	912	10,785
Technical Industrial	4	-	5	-	21	27	527
Secondary Agricultural	55	-	55	1	184	63	3,892
Secondary Commercial	<u>192</u>	<u>43</u>	<u>148</u>	<u>50</u>	<u>381</u>	<u>3,373</u>	<u>10,241</u>
TOTAL	365	61	319	68	953	4,375	25,215

Source: "Technical Report," NOE, Office of Undersecretary for Technical Education

^{1/} The term "Secondary Industrial" refers to the three-year system of secondary technical industrial schools, and the term "technical industrial" refers to the five-year system.

The data shows an average of four directors and associate directors for each secondary industrial school, seven for each technical industrial school, four for each agricultural school, and three for each secondary commercial school.

The proportion of female directors and associate directors in all secondary technical schools is only 10 percent.

Since the total number of technical schools is 365 schools, it appears that there is a shortage of 46 directors and 507 associate directors. The 114 industrial schools are short of 89 associate directors.

C. Pupils

i. Enrollment

The following table is a comparative study of enrollment in formal secondary technical education relative to total enrollment in secondary education (general and technical) in the past 20 years from 1958/59 - 1976/77.

Table No. 6

Enrollment in Secondary Technical EducationTotal Enrollment in Secondary Education

1956/57 - 1976/77

	Enrollment in Secondary Technical		Total Enrollment in Secondary Education	% Technical/ Total Secondary
1956/57	M	23,461	114,338	20.52
	F	5,977	24,253	24.64
	Total	29,438	138,591	21.24
1966/67	M	91,546	262,004	34.94
	F	28,888	102,305	28.24
	Total	120,434	364,309	33.06
1976/77	M	267,261	524,243	50.98
	F	141,279	277,158	50.97
	Total	408,540	801,401	50.98

The data pinpoints:

1. A substantial increase in total number of enrollments in secondary technical education in the past 20 years, from 29,438 students in 1956/57 to 120,434 students in 1966/67 to 408,540 students in 1976/77. The average annual growth rate in technical education over the last ten years is 7 percent.
2. The proportion of students enrolled in secondary technical education has increased from 21.24 percent in 1956/57 to 33.06 percent in 1966/67 to 51 percent in 1976/77.

3. The proportion of girls enrolled in technical education has increased substantially over the last ten years from 23.99 percent to 34.58 percent.
4. A striking feature is that the proportion of students enrolled in secondary technical education is the same for both sexes (51 percent), which implies that women are trying to keep in pace with men in technical education.

The percentage of admission in technical secondary schools will reach 56 percent in the school year 1977/78 out of the total number of who will be admitted in the secondary level.

Table 7 gives a clear idea about enrollment growth rates in formal secondary technical education; as a whole, percent female and average student per class during the period of the third five-year plan of the national action program, as follows:

1. The proportion of female students increased by a margin of 2 percent during the last five years.
2. Growth rates range between 7.6 percent and 8.6 percent with an average annual growth rate of 7.1 percent.
3. Average student per class did not change during the whole period (34 students/class).

Table No. 7

Quantitative Development of Students and Teachers
During the Last Five Years (1972/73 - 1976/77)

	PUPILS				Average Student Per Class	SENIOR TEACHERS AND TEACHERS					Teacher/Student Rat.	
	Total	% F	% G.R.	% AAGR		F	Total	% F	G.R.	AAGR		
79	408,540	34.6			34	4,375	25,215	17.35				1:16
34	378,400	33.5	7.97		34	3,809	24,294	15.7	3.8			1:16
34	348,359	33.5	8.62	7.1	34	3,354	20,717	16.2	17.3		11.9	1:17
43	322,101	32.6	8.15		35	3,024	16,979	17.8	22.0			1:19
57	299,374	32.1	7.59		34	2,760	16,260	17.0	4.4			1:18

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Enrollment growth over the last five years (1972/73 - 1976/77) has been relatively rapid in all types of secondary technical education following the third Five Year Plan (1973-77) of the National Action Program (1973-1982).

Table No. 8

Enrollment Growth in Technical Education

<u>Enrollment</u>	<u>1972/73</u>	<u>1976/77</u>	<u>Average Annual Growth Rate</u>
Industrial	87,713	107,864 ^{1/}	5.3
Agricultural	34,137	41,745	5.2
Commercial	177,524	258,931	9.9

Although the average annual growth rate in the last five years is much less than that during the previous five years (1967/68 - 1971/72) -- average annual growth rate for industrial 12.3 percent, for agricultural 7.6 percent and for commercial 23.7 percent -- yet this does not imply a decline in the growth rate of enrollments in secondary technical education in the years of the third five-year plan, but points to the fact that the high growth rate in secondary technical education in the five years 1967-1971 was the outcome of the escape of students from mandatory military service following the 1967 war.

^{1/} Including students in Technical Schools (five-year system, grades 10-14) and students in Extended Studies (2 years, grades 13 and 14).

ii. Flow of Students

The flow of students in Technical Vocational Education could be well studied from data about new enrollments in secondary technical schools (10th grade).

Table No. 9 shows the development of the flow of students in Formal Secondary Technical Education over the past 20 years.

The data reveals the following:

1. Industrial Education: (including extended studies)
 - The number of students in industrial technical education (including extended studies) has jumped from 17,042 students in 1966/67 to 35,926 students in 1976/77 or almost doubled. But the proportion of those joining industrial education out of the total number of students newly enrolled in secondary technical education has sharply decreased from 37.36 percent in 1966/67 to 26.53 percent in 1976/77. (Out of 45,744 students newly enrolled in secondary education in 1966/67, 17,042 enrolled in industrial education, while in 1976/77 only 35,926 students enrolled in industrial schools out of 135,427 students who enrolled in all branches of technical education. This is probably accounted for by the vast increase in the number of students entering commercial education (20,637 in 1966/67 compared to 85,872 in 1976/77).
 - The proportion of girls joining industrial education to the total number of students in industrial education is very low.

Development of New Enrollments in Formal Secondary Technical Education in Egypt *

(1956/57 - 1976/77)

School Year	System	Type	Grade	New Enrollments (10th Grade)		
				F	Total	%F
1956/57	5-year	Industrial		-	3,912	0.00
		Commercial	10-12	727	4,669	15.57
		Agricultural		-	1,457	0.0
		Secondary Female		1,687	1,687	100.00
TOTAL				2,414	11,725	20.59
		Industrial		-	15,428	0.00
		Industrial for Girls Secondary Tech for Girls		1,222	1,222	100.00
		Commercial	10-12	10,317	20,637	49.99
		Agricultural		-	8,065	0.00
	2-Year	Extended Studies	13-14	27	392	6.89
TOTAL				11,566	45,744	25.28
	3-Year	Industrial		3,727	34,626	10.76
		Commercial	10-12	43,627	85,872	50.80
		Agricultural		947	13,629	6.95
		Total 3 Years		48,301	134,127	36.00
	2-Year	Extended Studies	13-14	17	418	4.0
	1-Year	Technical	10-14	29	882	3.29
TOTAL				48,347	135,437	35.70

* Number of New Enrollments were taken from: MES Statistical Division, Development and Flow of General Education from the Middle of the 20th Century, 1956/57 - 1976/77

7.33 percent in 1966/67 and 10.5 percent in 1976/77.

- The proportion of girls entering industrial schools to the total number of girls entering secondary technical education in 1976-77 is only 7.8 percent (3,773 girls in industrial education compared to a total of 48,347 girls in all technical branches).

- The number of girls joining the Secondary Industrial Schools for Extended Studies (teacher-training schools) has decreased from 27 in 1966/67 to 17 in 1976/77 despite the slight increase in the total number of students (male and female) attending the two-year extended studies (397 in 1966/67 and 418 in 1976/77).

2. Agricultural Education

The data shows that the number of students in agricultural education has increased in the first ten years from 1,687 pupils to 8,065 pupils and in the second ten years the total number of new enrollments in agricultural education reached 13,629 pupils.

Girls were not allowed to be partners in agricultural education until the school year 1975/76 when they were given equal opportunity with males in agricultural education.

The number of girls enrolled was 619 girls equivalent to 4.5 percent of the total number of students admitted to these schools.

In 1976/77 the number of newly enrolled females to the total number of students admitted to agricultural education reached 6.95 percent (947 females out of a total of 13,629).

3. Commercial Education

The proportion of students admitted to secondary education ranged from 39.8 percent in 1956/57 to 45.1 percent in 1966/67 and up to 63.4 percent in 1976/77. This continuous increase has been accompanied by a relative increase in the proportion of females in secondary commercial education (15.6 percent in 1956/57, 50 percent in 1966/67 and 51 percent in 1976/77).

D. Graduates

The total number of graduates from secondary technical schools, ~~three-~~ and five-year systems, in 1976/77 was as follows:

- 110,605 skilled workers
- 390 technicians

The following table shows the number of students enrolled in different types of secondary technical education in the school year 1974/75 (except for the five-year industrial schools, whereby the 1972/73 enrollment figures are given), and the number of graduates after three and five years of study. Because of the lack of data about dropouts and repeaters, the latter was calculated from the available figures.

Table No. 10

Graduates in 1976/77Compared with New Enrollments in the Base Year

	New Enroll- ments in 1974/75	Graduates in 1976/77	Drop-outs 1/or Repeaters
3-Year Course	29,165	30,500	1,335
Industrial			
5-Year Courses (1972/73)	590	390	100
Agricultural	11,896	11,932	36
Commercial	73,268	68,173	5,095

The data show the following:

1. Graduates from secondary industrial schools (three-year system) in 1976/77 exceeded the number of new enrollments in the base year which suggests a number of repeaters prior to study period or during its course.
2. Graduates from technical schools (five-year system) in 1976/77 was less than the number of newly enrolled students by 100 or nearly 20 percent.
3. Graduates of agricultural education showed the same features as industrial education (three-year system).
4. Graduates of commercial education showed a high percentage of dropouts amounting to nearly 7 percent of enrollment in the base year.

E. Teachers:

There are two types of teachers in technical education in A.R. Egypt.

1. Teachers of General Education:

These are graduates of the universities and are trained in special sessions.

2. Teachers of Technical Material:

Divided into:

- a. Teachers of theoretical technical material
- b. Laboratory teachers
- c. Workshop teachers

In Secondary Industrial Education (3-Year Courses)

- Engineers teach theoretical technical material
- Graduates of extended industrial studies (grades 13 and 14) teach the practical material in the workshop

In Secondary Industrial Education (5 year courses)

- Engineers for theoretical technical material
- Holders of Diploma of Extended Industrial Studies for Workshops
- Graduates of technical schools (five-year courses) for the laboratories

In Secondary Agricultural and Commercial Education

- Graduates of specialized agricultural and commercial colleges in the universities, and certain pedagogical specializations (Faculty of Commerce, University of Zakazik and University of Mansoura,) or
- Graduates of specialized colleges plus pedagogical ones (agricultural college in Mashtuhur). In this case they teach both theoretical and practical materials.

- Theoretical studies for graduates of secondary technical schools are carried in the college of pedagogy while practical studies are carried in the College of Engineering.

Leasing of Teachers:

Teachers leased are:

- teachers of theoretical materials
- surplus of teachers in commercial or agricultural technical education

The Arab countries ask for a small number of technical teachers in the commercial and agricultural field, but demand an increasing supply of workshop teachers.

Training Program:

During the summer vacation, all teachers of theoretical materials are enrolled in a training program to upgrade their scientific level and provide them with knowledge in methods of teaching and education, in addition to practical training in the factories and farms.

The MOE objective is to fuse the teacher of theoretical material and that of practical material into one teacher of technical material.

Table No. 10 shows the gradual growth in the number of senior teachers and teachers during the last five years from 16,260 teachers in 1972/73 up to 25,215 teachers in 1976/77, with an average annual growth rate of 11.9 percent.

The following table shows the total number of enrollments and teachers in different types of secondary technical education in the school year 1976/77.

Table No. 11

Enrollment and Number of Teachers

1976/77

Formal Technical Education

	Enrollment	Total Number of Teachers	Pupils/Teacher Ratio
Secondary Industrial (Grades 10-12)	102,874	10,755	10
Technical Industrial (Grades 10-14)	4,060	527	8
Secondary Agricultural (Grades 10-12)	41,745	3,592	12
Secondary Commercial (Grades 10-12)	258,931	10,341	25

There is sufficient number of teachers needed for commercial and agricultural schools, but the industrial education is facing a serious shortage in certain scientific specializations after the abolition of the assignment system of engineers.

The "Ministerial Committee for Social Development" has approved the request of MDE to advertise the need for 400 engineers to teach in the industrial schools. The Ministry has already placed an ad, but no more than 20 engineers have applied for the position.

The Ministry is now studying the possibility of offering incentives to engineers who are in the teaching profession.

The Ministry is undergoing extensive studies to raise the level of all workshop teachers in the industrial schools in the different specializations. This is accomplished in six centers in Cairo, Alexandria and Assuit.

Future Teacher Requirements

Future teacher requirements (Table No. 13) have been calculated on the basis of projected enrollments in different types of formal technical education, using the school years 1976/77 as the base year (Table No. 12). Although the average annual growth rate (A.A.G.R.) for industrial, agricultural and commercial education during the last five years 1972-76 was 4.7 percent for industrial education (three years), 16 percent for industrial education (five years), 5.2 percent for agricultural education, yet, projections were carried using a 10.2 percent figure which represents the A.A.G.R. for both three-year and five-year industrial education and is close enough to the AAGR of commercial education. The same growth rate was applied to agricultural education to express the need for increase in the size of agricultural education, despite the fact that this is not likely to happen in the next coming year unless something is done concerning the large number of agricultural engineers graduating from the universities.

One of the serious bottlenecks in the formal technical education system is the workshop teachers. According to the 1976/77 MOE statistical data

the number of secondary industrial schools is 112 schools with an enrollment of 102,874 and an annual output of 30,500. The total number of teachers is 10,755. An additional 1,221 teachers per year are needed in the next few years to cope with the increasing number of enrollment in these schools. This is not an easy task because of the fact that the only leap in the number of teachers in industrial schools (three years) happened in 1974/75. The average annual increase in the number of teachers during the last five years was 846 teachers which represents a shortage of almost 365 teachers needed annually.

In 1976/77 there was a drop in the number of teachers from 10,798 to 10,755 (43 fewer teachers). (Table No. 14)

The average annual increase in the number of teachers in secondary (five years) industrial schools (Table 14) is about 100 teachers annually. With the Ministry's plan and agreement with the World Bank to convert certain three-year schools to the five-year system industrial schools, there appears to be a shortage of 175 technical teachers needed annually for both the technical schools and the schools of extended studies.

Unless new teacher training schools are established to meet this requirement quantitatively as well as qualitatively, no progress in industrial education could be achieved. The problem is so serious that it needs not only the assistance of the IBRD but also the USAID. This goal, of course, is tied by the capacity of GOE in providing the physical and other facilities needed.

There seems no problem in providing the additional number of teachers needed for agricultural and commercial education.

Table No. 12
Actual and Projected Enrollment ^{1/}

1976/77 - 1980/81

Formal Technical Education

<u>Secondary Technical</u>	<u>Grades</u>	<u>1976/77</u>	<u>1977/76</u>	<u>1978/79</u>	<u>1979/80</u>	<u>1980/81</u>	<u>(1976-1981) A.R.G.R.</u>
	10-12	102,874	113,367	124,930	137,673	151,716	
Industrial	13-14	11,227 ^{2/}	12,372	13,634	15,025	16,558	10.2% ^{3/}
	10-12	4,060	4,474	4,930	5,433	5,987	
	10-12	41,745	43,916	46,200	48,602	51,129	5.2%
Agricultural	10-12	41,745	46,003	50,695	55,866	61,564	10.2%
	10-12	258,931	284,565	312,737	343,698	377,724	9.9%
Commercial	10-12	258,931	285,342	314,447	346,521	381,866	10.2%

^{1/} Projected enrollments were based on the average annual growth rate of enrollments in secondary technical education in the last five years, i.e., the actual capacity of the existing system. (See Table No. 10)

^{2/} This number represents the actual enrollments from graduates of industrial education (grades 10-12) plus the number of technical teachers in industrial enrollment who are being upgraded in the extended studies.

^{3/} The 10.2 percent is the enrollment average annual growth rate in both three-year and five-year systems of industrial education (4.7 percent for three-year and 16 percent for five-year). This percentage had been used to project enrollment in agricultural and commercial education as well.

Table No. 13

Additional Teacher Requirements
in Secondary Technical Education

1976/77 - 1980/81

	<u>Enrollments</u> (000)		<u>Pupil/Teacher</u> <u>Ratio</u>	<u>1980/81</u> <u>Additional Requirements</u>	
	<u>Actual</u> <u>1976/77</u>	<u>Projected</u> <u>1980/81</u>		<u>Total</u>	<u>Av. Annual</u>
<u>Secondary</u>					
(Grades 10-12)					
Industrial	102,874	151,716	10	4,884	1,221
Agricultural	41,745	61,564	12	782	196
Commercial	258,931	381,866	25	<u>4,752</u>	<u>1,183</u>
				10,418	2,605
<u>Technician Training</u>					
(Grades 10-14 & 13-14)					
Industrial (10-14)	4,060	15,000	10	750 ^{2/}	185
Extended Studies (13-14)	11,227	16,558	15	<u>355</u>	<u>89</u>
				1,105	274

^{1/} Pupil/Teacher ratio is based on 1976/77 data of MOE.

^{2/} Additional enrollments will be gained by converting 7 of the existing 3-year schools into the 5-year schools with no increase in enrollment. Many instructors will remain for the new curriculum therefore reducing the need for new instructors by an estimated 50 percent.

USAID

Table No. 14

Quantitative Growth of Teachers inFormal Technical Education

1972/73 - 1976/77

	72/73		73/74		74/75		75/76		76/77		A.A.G.R.
	F	Total	F	Total	F	Total	F	Total	F	Total	
<u>Secondary</u> (Grades 10-12)											
Industrial	621	7,412	741	7,667	769	9,846	808	10,798	912	10,755	10.4%
Agricultural	11	2,096	12	2,055	19	2,543	39	3,481	63	3,592	16.0%
Commercial	2,128	6,752	2,264	7,043	2,550	7,963	2,942	9,585	3,735	10,341	11.4%
<u>Technician Training</u> (Grades 10-14 and 13-14)											
Industrial (10-14)	-	-	7	214	16	365	20	430	27	527	16
Extended Studies (13-14)	-	-	-	-	-	-	-	-	-	-	(Average of last 2 yrs.)

Cost Analysis

1. Capital Costs

Detailed data about cost of construction of technical schools and cost of equipment were not available.

Capital expenditures on technical education has decreased from LE 4,908,000 in 1973 to LE 3,304,000 in 1976, but the proportion of capital expenditure allocated to secondary technical education has increased from 31.4 percent in 1973 to 41.3 percent in 1976, or an increase of 10 percent in four years, as shown in the following table:

Table No. 15

Capital Expenditure on Technical Education

1973 and 1976

Year	Secondary Education	Secondary Technical Edu.	Technical
1973	15,609,000	4,908,000	31.4
1976	8,000,000	3,304,000	41.3

In accordance with the attitude of MOE towards expanding technical education and limiting the growth of secondary general education, the capital expenditures on technical education in 1977 reached LE 4,950,000 for construction

and LE 2,436,100 for equipment, ^{1/} while the amount allocated to secondary general education amounted to LE 735,000.

In 1978 total capital expenditures on secondary technical education is LE 8,070,000 compared with LE 758,000 for secondary general education.

The MOHE capital expenditure on technical institutes in 1976 was LE 220,000 which represents 5.3 percent of the total capital expenditures of MOHE.

2. Recurrent Expenditures

The following table shows the recurrent expenditures of MOE and MOHE on secondary technical education and technical institutes.

Table No. 16

Recurrent Expenditures
on Technical Education (LE 000's)
1976

	Salaries	Total	Salaries
MOE	23,465	19,639	63.94
MOHE	1,968	1,252	63.64
Total	25,433	20,891	62.14

^{1/} Source: "Technical Education," A Report, MOE: Office of the Undersecretary,
1977

As expected in most educational cases, the recurrent costs of technical education is outweighing annual capital costs by a wide margin (LE 19,369,000 for recurrent costs compared with LE 3,524,000 for capital costs in 1976).

Teachers' salaries, although very low and follow the public system of salaries, take up over 82.0 percent of the recurrent budget leaving only 18 percent for other operational purposes.

Projection of public recurrent expenditure in 1981 is shown in Table No. 19. Since the allocations to MOE as a proportion of the national budget are unlikely to be appreciably increased, the question of the balance in growth between various types of technical education is to be considered.

Table No. 17

Public Capital Expenditure on Education
by Level of Education - 1973 and 1976

	1973		1976	
	LE '000	%	LE '000	%
<u>Ministry of Education</u>				
1. Primary education	7,504	28.6	2,172	8.4
2. Preparatory education	2,205	8.5	2,304	9.0
3. Secondary education:				
- general	1,463	5.7	925	3.6
- agricultural	553	2.1	330	1.3
- commercial	1,067	4.1	820	3.2
- industrial	1,845	7.3	1,229	4.8
4. Teacher training	885	3.5	98	0.4
5. Special for handicapped	197	0.8	32	0.1
6. Adult literacy	49	0.2	50	0.2
7. Administration, sports, culture	61	0.2	40	0.2
Subtotal	15,609	61.0	8,000	31.2
plus: Loans			869	3.3
<u>Ministry of Higher Education</u>				
Technical Institutes			220	0.8
Other			4,160	16.2
Subtotal	2,757	10.8	4,380	17.0
<u>Universities</u>	7,066	27.7	6,391	24.9
<u>Ministry of Industries</u>	98	0.4	569	2.2
<u>Ministry of Housing</u>	18	0.1	5,475	21.4
Total	25,548	100.0	25,684	100.0
<u>Ministry of Health</u>	150		n.a.	
<u>Ministry of Agriculture</u>	40		n.a.	
TOTAL	25,738		n.a.	

Table No. 18

Public Recurrent Education Expenditure and Unit Costs by Level of Education
1973 and 1976 and Unit Costs

	1973					1976				
	Salaries	Other	Total	X	Unit Cost L	Salaries	Other	Total	X	Unit Cost L
<u>Ministry of Education</u>										
1. Primary education	46,792	5,642	52,434	30.8	13	71,879	9,719	81,598	28.1	26
2. Preparatory education	22,206	2,188	24,394	14.1	24	33,977	4,301	38,278	13.7	21
3. Secondary education:										
- general	14,800	1,935	16,735	9.8	52	22,527	5,574	28,101	10.0	70
- agricultural	3,300	694	4,004	2.4	117	4,201	844	5,045	2.1	148
- commercial	3,600	458	4,058	2.4	23	5,771	841	6,612	2.2	27
- industrial	6,227	2,099	8,326	4.7	6	9,009	1,761	10,770	3.7	117
Subtotal secondary	<u>27,927</u>	<u>5,186</u>	<u>33,113</u>	<u>19.6</u>	<u>198</u>	<u>41,508</u>	<u>8,980</u>	<u>50,488</u>	<u>17.7</u>	<u>172</u>
4. Teacher training	4,301	881	5,182	2.9	100	5,771	841	6,612	2.2	27
5. Special for handicapped	400	95	495	0.2		500	150	650	0.2	
6. Adult literacy	318	172	490	0.2		547	270	817	0.3	
7. Administration, sports, culture, etc.	<u>13,305</u>	<u>2,084</u>	<u>15,389</u>	<u>9.0</u>		<u>21,106</u>	<u>2,995</u>	<u>24,101</u>	<u>8.6</u>	
Total Ministry of Education	<u>115,221</u>	<u>15,042</u>	<u>130,263</u>	<u>74.5</u>		<u>177,025</u>	<u>27,279</u>	<u>204,304</u>	<u>72.1</u>	
<u>Ministry of Higher Education</u>										
Technical Institutes	-	-	n.a.	-	n.a.	1,252	716	1,968	0.7	63
Other	-	-	n.a.	-		<u>1,835</u>	<u>983</u>	<u>2,818</u>	<u>1.0</u>	
Total Ministry of Higher Education	<u>5,545</u>	<u>1,629</u>	<u>7,174</u>	<u>4.2</u>		<u>3,087</u>	<u>1,699</u>	<u>4,786</u>	<u>1.7</u>	
<u>Universities</u>	23,173	8,284	31,457	18.5	161	43,209	22,260	65,469	23.7	n.a.
<u>Ministry of Industries</u>	-	-	1,267	0.7	n.a.	-	-	1,393	0.5	174
<u>Ministry of Housing</u>	-	-	265	0.1	n.a.	-	-	2,791	1.0	115
Total			<u>170,406</u>	<u>100.0</u>				<u>200,263</u>	<u>100.0</u>	
<u>Ministry of Health</u>			809		n.a.			n.a.		-
<u>Ministry of Agriculture</u>			299		n.a.			n.a.		-
TOTAL			<u>171,694</u>							

Table No. 19

Projection of Public Recurrent Education Expenditure, 1981

	Enrollments			Unit Cost (R)			Total Recurrent Cost (in million R)	
	1974/75	1975/76	1980/81	74/75	75/76	80/81	1976	1981 ^{/1}
Ministry of Education								
Primary education	4,075,000	4,105,000	5,029,000	15	20	24	81,598	120,700
Preparatory education	1,202,000	1,343,000	1,874,000	24	29	35	28,294	65,600
Secondary-general	340,000	380,000	395,000	65	78	90	28,101	35,550
- agricultural	28,400	35,500	70,100	123	149	172	5,836	13,430
- commercial	213,200	226,200	320,000	23	27	33	6,273	10,560
- industrial (3 yrs.)	95,800	98,500	201,900	93	111	130	11,306	26,200
- industrial (5 yrs.)	900	3,500	13,500	n.a.	150 ^{/3}	150		2,020
Teacher training	35,300	33,100	45,400	150	232	270	7,586	12,260
Other							1,559	(2,500)
Admin., sports, culture							24,101	(30,000)
Subtotal							204,504	315,820
Min. of Higher Education								
Administration							2,818	(4,000)
Technical institutes ^{/2}	30,000	31,350	63,610	123	63	(80)	1,958	(5,000)
Higher institutes	49,700		(370,000)				188	215
Universities	268,300			185				
Min. of Industries								
Vocational training	(7,000)	(6,000)	(12,320)	170	180 ^{/4}	200	1,393	2,460
Min. of Housing								
Vocational training	-	-	-	-	115		2,791	9,350 ^{/5}
Total							280,263	419,630

/1 In constant 1976 prices.

/2 Industrial and commercial.

/3 Institute based on actual cost of a typical center of 1,200 students.

/4 Institute based on actual cost of a typical center of 200 students.

I. Curricula:

Programs of Study:

Courses of study for technical education are of four groups:

- General Culture - This group includes:

Religion, Arabic language, a Foreign Language, Science and Mathematics, Labor Legislations, Vocational Fitness, First Aid, Industrial Psychology, National Preparation and Physical Education

- Scientific principles for vocational and technical subjects

- Practical vocational and technical subjects

- Workshop drill and field experience

Schools for preparing skilled workers differ from schools in which technicians are prepared in the scope of study and its duration.

1. The Level of Preparing Skilled Laborers:

The period of study in all different schools is three years after the preparatory stage. Branches of study are:

Industrial Education for Boys includes the following branches:

- Mechanics, electricity and automotive engineering
- Air conditioning and refrigeration
- Marine (motors)
- Metals
- Construction and transport
- Textiles

Industrial Education for Girls includes:

- Fur and leather industries
- Metal industries

- Electronic composition
- Mechanical instruments
- Beauty and hairdressing
- Laboratory specialists
- Clothes (mass-production)
- Decoration and arrangement

Agricultural Education includes the following branches:

- General agriculture
- Production of sugar cane and upkeep of agricultural machines and tractors
- Production of orchards and upkeep of agricultural machines and tractors
- Production of vegetables and upkeep of agricultural machines and tractors
- Animal production
- Plant production

Commercial Education is carried out in one main branch for boys and girls and includes the following subjects:

- Religion, Arabic Language, First Foreign Language and Translation, Second Foreign Language, Accounting, Financial and Commercial Math, Applied Secretarial Work, English and Arabic Typing, General Knowledge, Elected Professional Subject, Economic Geography and History, Citizenship and Physical Education.

2. The Level of Preparing Technicians:

The course of study is five years for every branch of specialization.

This includes:

In Industrial Education there are the following divisions and branches:

- Mechanical Engineering Division, Machine Operation Branch and Motor Car Engineering Branch
- Electricity Engineering Division, Electricity Power and Network, and Wire and Wireless Communications

In Agricultural Education there are the following divisions:

- General agricultural studies with the purpose of preparing the agricultural supervisor helper
- Specialized agricultural studies in some fields with the aim of preparing the specialized technicians in this field. Students are given more opportunities of practical experience in-school and out-of-school farms and institutions. Such field practice would enable the technician or the specialist to relate school studies to community activities and to raise the standard of his skills. The general cultural background helps the technician to understand the scientific basis on which specific practical processes are built. Program of study consists of the following areas and subjects:
 - a. General education
 - b. Scientific basis for technical subjects and their application
 - c. Technical and practical subjects
 - d. Practical drill and experience

Commercial Education - This type of education prepares the necessary manpower needed in a developing society now and in the future in the areas of business management, financing and banking, accounting and secretarial work.

To fulfill this aim, the programs were planned to provide a rich general education mixed with the professional subjects. The students also study some theories of economic, commercial and labor legislations and social systems to qualify them for employment in the government or other institutions.

The secondary technical schools generally cater to the less academic students and curricula are heavily oriented toward the craft rather than the technician objective. Graduates have little chance to proceed to higher education; in addition they are not considered of the standard for entry to the labor force as skilled workers and accordingly have initial placement problems. Student/teacher ratio and average class size are 17 and 34 respectively. A large proportion of teachers are not pedagogically qualified -- 71 percent, 78 percent and 49 percent respectively for industrial, agricultural and commercial schools. Successful students in the final examination (1975) comprised 25,420 industrial, 10,547 agricultural and 53,828 commercial, representing 67.5 percent, 71.8 percent and 72.4 percent passes, respectively.

II. Teachers

Short as they are in quantity, they lack not only the pedagogical qualifications but also the up-to-date technical knowledge. Widespread curriculum reform in the schools to introduce technical education will be useless unless the reform can be implemented -- that is unless qualified teachers are prepared.

Egypt has to take serious measures for the institution of new programs for the preparation of technical and vocational teachers. The existing facilities and the newly established ones could accomplish the job if sufficient and highly qualified instruction for the teacher training centers are prepared, another serious problem that deserves immediate action.

III. Equipment:

Lack of data about equipment, machinery, tools (types, how many, age, adequacy, appropriateness, condition, maintenance, use factors) made it impossible to assess exactly the current situation. Interviews with certain officials have revealed the fact of serious shortage in equipping workshops of the technical schools. Equipments are imported from different sources. Maintenance is lacking due to the shortage in maintenance skills. The overall situation in this area is not encouraging. Something has to be done. Perhaps the first step would be to undergo an in-depth assessment of workshops in technical education.

Wastage

The main wastage is the "unemployment" of graduates.

No follow-up of graduates is done by MOE or other agencies. The only effort in this regard is the effort of MOM to match the needed manpower from different establishments and factories with the output of technical schools and the assignment of graduates to specific jobs through the placement offices resulting in the delay of employment of graduates for almost three years, despite the continuous flow of the latter.

The main reasons for wastage or unemployment are:

1. Lack of information on the actual needs of different specializations of manpower in the production and services sector. This resulted in the distribution of manpower in a way that resulted in the assignment of certain specializations of manpower to jobs not related to their field of training, thus causing a sort of "surplus manpower."
2. The delay in the implementation of the developed agricultural policy which aims at agricultural mechanization and agricultural industrialization has resulted in the preparation of manpower that require skills not relevant to what is needed in the job market, constituting as such an unemployment or surplus labor force.
3. The delay in the implementation of social and economic plans, hence the limitation in job opportunities for new manpower, in spite of the continuing flow of graduates from the schools.
4. The system of employing the graduates of schools through the placement offices of MOM after almost three years following graduation.
5. Emigration of needed technicians to other Arab countries.

The Link Between Technical Education and the Sectors of Production and Services

The importance of the link between education and the state multiple organizations has led MOE to cooperate with a number of production and services sectors to establish schools and technical specialized branches. Several specialized schools were established in collaboration with MOM, MOEMR, MOHR, MOP, MOSAI, MOTC, MOJ, MOC, MOT and MOEC. Some of these schools are mentioned below:

In the Industrial Field:

- Secondary-Industrial School for Transport in Wardan (Agreement with MOFC)
- Secondary-Industrial Metallurgical School in Helwan (with Egyptian Iron and Steel Company)
- Secondary-Industrial School in Abu-Zabal (with MOIMR)
- Secondary-Industrial School in Kanater El Khayria (with MOIMR)
- Secondary-Industrial School in Dar Al Salam (with MOIMR)
- Secondary Spinning Sections in certain schools (with MOIMR)
- A branch for Forging in Helwan
- Secondary School at Zein Al Aabidin (with Military Factory 54, Madi)
- A Branch for Plastics in Secondary Industrial School in Shoubra Al-Kheima (with Plastics Factory in Shoubra Al-Kheima)

In the Commercial Field:

- Commercial secondary branches in commercial dealings (salesmanship) for males and females agreed upon with MOCS.
- A school and secondary commercial branches specialized in legal affairs agreed upon with the MOJ.
- Commercial secondary schools for hotel affairs agreed upon with MOF.
- Commercial secondary branches for purchases and storing, agreed upon with MOF.
- Commercial secondary branch for commercial insurance agreed upon with the MOEC

- Commercial secondary branch for commercial insurance agreed upon with the MOEC
- Commercial technical branches for social insurance (with MOSAI)
- Commercial technical branches for commercial insurance (MOEC)
- Commercial technical branches for banking and accounting (with Central Bank)

Preparation and Training of Handicrafts

The objective of the policy of MOE is to assist production and services sectors in preparing and training handicrafts either through its schools or by participation in the preparation and implementation of training programs in the centers associated with these sectors. This assistance is shown in the following:

1. The preparation of handicrafts in the construction field through cooperation between MOF and MOHR for three-month training schools. 10,400 handicrafts were prepared in 16 industrial schools during the last two years, distributed over all governorates in the following specializations.
 - Construction: Building, whitewashing, concrete, carpentry, sanitary work
 - Construction Aids: crystal, electrical installations, paints
2. Cooperation between MOE and MOMVT in elaborating the training programs for the latter's centers to prepare handicrafts in the

following trades:

- Mechanics
- Electricity
- Textile
- Construction
- Decoration

3. Cooperation with the Higher Council of Youth Care in preparing programs of study and the plan for training handicrafts in the council's centers all over the Republic of Egypt, and the follow-up of the implementation of these programs.

4. Assisting certain companies from the public sector in training their workers in certain trades in the industrial schools. Most important are:

- Welding
- Automobiles and motors

PROJECTS:

1. Project of Continuous Capital

Started in 1960 to serve the program of education, student training and improving their vocational level and providing the teachers with skills and experience.

The initial capital was LE 60,000 divided into LE 40,000 for industrial schools and LE 20,000 for agricultural schools. During the period from the start of the project until the end of 1976 the project capital increased to LE 1,292,934 for industrial schools and LE 479,409 in agricultural schools

2. To improve the educational level of the students through additional practical training and providing the teachers with more experience.

3. To utilize students' activities during spare time and vacations.

4. To increase the income of students and teachers by rewarding them according to their work and production. The average wage for students and teachers in certain schools is shown below.

- LE 15-20/month for the students
- LE 40-80/month for teachers

5. To reduce the need for foreign labor in agricultural schools and the administration and operation of its facilities and dorms through the project.

6. The MOE became self-satisfied in certain needs like blackboards.

7. The project has taken the burden of the rent of agricultural lands, the cost of animals, the expenses of production and maintenance in agricultural schools which used to be paid for by the state budget and amounts to LE 0.5 million.

8. To utilize the funds of the project in:
- a. Educational, social and physical activities for students
 - b. Maintenance of equipments and school facilities
 - c. Initiative bonuses for supervisors of the project.

Production of Industrial and Agricultural Schools through the Continuous
Capital Project:

Industrial Schools:

- Wood furniture
- Metal Furniture
- Tourism Industries
- Textile
- Rugs and carpets
- Leather

Agricultural Schools:

- Field crops (cotton, sugar cane, beans, vegetables, grains, animal food fibers)
- Fruit Crops (different kinds)
- Animal Production (sheep, milk and its products, fertilizers)
- Chickens (chicken production, chicken husbandry, egg production)
- Food Industries (juices, jams, sweets, pickles)
- Bee Husbandry (honey, queens, bee packages)

2. IBRD Project - The Preparation of Technicians

According to the Technical Report of the Undersecretary,^{1/} the objective of the MOE is to increase the number of the five-year technical schools to prepare technicians in cooperation with certain countries and international organizations and the IBRD in the vital industrial fields.

The MOE started the establishment of this type of school in 1970 because of the need for this category of workers in the implementation of social and economic plans.

The following schools have already been established:

- Galal Fahmy Technical School in Shoubra (in cooperation with OBR)
- Moharam Bay Technical School in Alexandria (in cooperation with UK)
- Cairo Technical School in Kouba (in cooperation with UNDP)
- Architectural Technical School in Dar Al Salam (in cooperation with MOHR/Egypt)

In March 1977, the Egyptian Government signed an agreement with IBRD in which the latter will provide the former with \$25 million loan as a first increment to implement the educational, technical and vocational projects of the MOE, MOHE, MOHR and MOIMR. The objectives of this project are:

- To expand, diversify and develop primary, secondary and technical-vocational education in the locations agreed upon including (a) establishment and equipping of the schools and institutes included in the project, (b) the increase in the number and improvement of the quality of the primary level teachers and the practical technical teachers in the schools and institutes of the project, (c) the experimentation

^{1/} Technical Education, A Report. MOE, Office of the Undersecretary for Technical Education, 1977.

of comprehensive preparatory and secondary education with concentration on practical studies.

- Improvement of educational and training plans and the development of labor force through suitable studies.

The amount allocated to the MOE in the IBRD loan is \$5.8 million for equipment and technical assistance as follows:

1. \$5 million for equipment needed to:

a. Convert five secondary industrial and agricultural schools into the five-year system to prepare technicians. These schools are:

- School of Spinning and Weaving in Shoubra (weaving industries, 1100 pupils)
- School of Spinning and Weaving in Tanta (weaving industries, 1100 students)
- Aswan Mechanic School (electricity and electrical equipment, 1100 pupils)
- Musturud Agricultural School (food industry, 900 pupils)

b. Three Comprehensive Schools:

- One comprehensive preparatory school in the city of Tanta (480 pupils)
- One comprehensive secondary school in Tanta
- One comprehensive secondary school in Sohag

These comprehensive secondary schools will accommodate 2,160 pupils.

2. \$0.8 million for Technical Assistance experts for curricula development and equipment lists in the trades of:

- a. Petroleum and petrochemicals
- b. Ship building and marine engineering
- c. Diesel and heavy mechanics

15 man/months will be involved in the above activities to prepare for the schools that will be converted using the second increment of the loan.

d. Short-term missions (400 man/months) for guidance of educational authorities in the different sectors (governorates) and school directors, associate directors, first class teachers and teachers in the different specializations of industrial, agricultural and comprehensive schools.

The MOE has taken the necessary measurements to construct the buildings or expand the converted schools and an international bid was announced for importing equipment. Training sessions in the English language have been held for the selected personnel from the leading directors of schools and their associates, first-class teachers and teachers who will study abroad. Measurement has been taken also to bring the necessary experts. Study in these schools will start in the next school year 1978/1979.

The Government of Egypt will sign the second part of the loan agreement during 1978. The amount allocated for MOE in this second loan increment will be used to transfer six industrial and agricultural schools from the three-year system to the five-year system for preparation of technicians in the mechanical, electrical, electronic, petroleum and petrochemical, shipbuilding, marine engineering, tractors and agricultural machines, land reclamation and agricultural mechanization trades.

Concerning the preparation of technicians in the commercial field, the MOE has started, beginning the school year 1976/77 converting urban

secondary commercial schools in Cairo, Assuit and Tanta to the five-year system in the following specializations:

- Social Insurance
- Commercial Insurance
- Banking and Accounting

It is decided to sign an agreement with the French Government to establish a commercial technical school (five-year system) in Port Said to prepare technicians specialized in international trade, customs, hotel management, business management. Study has already started in the school year (1976/77).

CHAPTER II

NON-FORMAL

VOCATIONAL TECHNICAL EDUCATION

(ON-THE-JOB TRAINING)

Non-Formal Technical Education

(Vocational Training Centers)

There are some educational institutions which are under the jurisdiction of others ministries or organizations (MOIMR, MOHR, MOSA, MOM, Armed Forces), yet MOE supervises the instruction of subject matter. These institutions follow the same system of education in similar formal schools except for certain specialized programs commensurate to its objectives.

Some of these institutions are the vocational training centers under the jurisdiction of MOIM, MOHAR, MOAG, the Armed Forces, mailing schools and wireless training centers under the jurisdiction of Ministry of Communications, nursing schools and midwifery institutes, and x-ray laboratories under the jurisdiction of MOPH (Ministry of Public Health), Navy or Military schools under the jurisdiction of the Ministry of Defense.

The above are the authorities responsible for planning education on the central level where the policies, the evaluation and the research are put. But the processes of executing the plans are carried out by the educational zones at all levels in the governorates.

Ministry of Industry and Mineral Resources (MOIMR) (Annex IV)

The "Department of Productivity and Vocational Training" which was established in 1956 within MOI is responsible for training specialists and/or to raise the level of productivity in industry, and preparing skilled and semi-skilled workers needed for the industrial companies.

The experience of the department extends over 15 years. The department operates 47 vocational training centers and an institute for teacher training. These centers are:

- 36 centers affiliated to the Department (double shift)
- 10 centers administered by the industrial organizations of MOIMA
- 9 centers under the responsibility of other ministries and organizations
- 2 centers under construction in the Fourth Five-Year Plan (1976-80)
- 1 teacher-training center to provide teachers for the 53 centers

The annual output of the 47 centers is 4,000 skilled workers and 2,000 semi-skilled workers.

I. Vocational Training Systems

1. Apprenticeship System (On-the-Job Training, OJT)

- To provide skilled workers
- Basic training for one year in the training centers
- OJT for two years in the industrial companies according to a present plan of the skill required and training hours needed
- Training covers: metal trades, electrical trades, chemistry, electricity and metallurgy trades in Melwan complex, textile trades, glass trades, leather and printing
- Students are recruited from holders of the general preparatory certificate, 5,000/year

2. Accelerated Training System

- To provide semi-skilled workers
- Training period differs according to trade and ranges between four months to 12-1/2 months

- Training covers steel and steel metal works, electricity and power tools
 - Trainees are recruited from holders of the primary school certificate
3. Upgrading Training System
- To raise the technical level of workers and foremen working in industry
 - Training period ranges between four weeks to sixteen weeks
 - Upgrading trades are: fitting, turning, welding, heat treatment, tool and die making, mechanical maintenance, resharpening, automotive and electrical maintenance
 - Trainees must read and write, have an experience of five years in the trade and in handling manual tools, machines and measuring apparatus

II. Equipment

Much of the equipment in the DPVT centers needs replacement. Other additional equipment is necessary to keep abreast of current industrial practice.

Ministry of Housing and Reconstruction (MOHR) (Annex IV)

Training is the responsibility of the Agency for Training in Construction and Building established in 1975. The following centers are associated with the agency:

- 8 Centers for handicrafts (plus utilizing 18 industrial secondary schools for evening sessions)
- 1 Center for technical supervisors
- 5 Training centers of the contractors companies
- 1 Training center for Arab Contractors

The MOHR has much less experience in the training field. Formal apprenticeship method is not common in building trades, only short periods of training either on-the-job (OJT) or in building trade centers. Training in these centers is as follows:

- Training of technical supervisors and model training. Period of training ranges between two to four months.
- Accelerated training on building trades. Period, 3 months.
- Handicraft training to improve skills. Period, 6 months.
- Candidates should be able to read and write
- Refresher and upgrading courses will be introduced when more accommodations become available.

MOHR has purchased and plans to further purchase a number of existing buildings for conversion to training centers. The plan of the Agency for Training in Construction and Building calls for the establishment of 62 centers to prepare 50,000 handicraft annually, and three centers for preparing 2,000 trainees annually.

Ministry of Agriculture and Land Reclamation (MOAG&LR)

In Egypt, 45 percent of the labor force is engaged in agriculture. The current development strategy lays emphasis on horticulture and animal husbandry, agricultural mechanization and food and fiber processing.

Since there is a large supply of agricultural graduates and veterinarians from the universities, minimal effort is given to farmer training programs.

Agricultural training is administered by MOAG&LR except for 53 secondary technical agricultural schools controlled by the MOE. Of the 11 MOAG training centers, only five provide for training of farm leaders. Agricultural advisory services are provided by 5,000 higher graduates of agricultural colleges.

The curricula of the agricultural training centers are poorly developed and not sufficiently relevant. Practical training for higher and middle-level personnel is not enough.

Ministry of Social Affairs and Insurance (MOSAI)

The main concern is the "Expansion of Productive Families" for the development of economic resources and the utilization of spare time of the family members in the environmental industries.

The following training centers are under the supervision of the MOSAI:

200 Training centers for skills; admission requirements are reading and writing.

(Most of the students in these centers are dropouts from primary level.)

3 Training centers for skills

1 Center for technician training

24 Main centers for technical preparation. Training covers 23 trades including auto mechanics, furniture, carpentry, electricity, etc.

48 Main centers and specialized offices for social adaptation for handicapped

3,500 students are enrolled in the 24 two-year pre-vocational main training centers. Graduates are supposed to return to work in their home communities.

CHAPTER III

MANPOWER IN EGYPT

MANPOWER IN EGYPT

A. Planning in Egypt:

Egypt is considered foremost in the abundance of human resources. These human resources if well planned in accordance with the economic and social objectives would certainly guarantee to a larger extent the fulfillment of these objectives.

Nasser's National Charter of 1962 was the first attempt at comprehensive planning. National goals in the charter were stated in broad terms and persisted until his death.

The October paper of Sadat in 1973 represents the new government's respecification of national goals.

Four sets of comprehensive plans have been formulated since planning was put into action in Egypt. These plans are:

1. First Five-Year Plan: (1960/61 - 1964/65)

The plan simply assigned a target of 17 percent increase of employment over the plan years but without taking into consideration demographic and other aspects (rural/urban migration, interstate movement, migration of skilled labor).

The characteristics of the first Five-Year Plan are well documented and are available at the Ministry of Planning (MOP).

2. Second Five-Year Plan (1965/66 - 1969/70)

The second Five-Year Plan was scheduled to begin on July 1, 1965. But the results of the first Five-Year Plan led to a decision to replace the second Five-Year Plan with a new, more ambitious seven-year plan. The former was not implemented; the latter was never formulated.

3. Emergency Three-Year Plan (1976/68 - 1969/70)

In 1967 a new emergency three-year plan for the period 1967/68-1969/70 was introduced. The war of 1967 generated a new situation. National objectives were revised to accommodate defense expenditures that accounted for more than 30 percent of the country's GNP during that year. Shortly after its announcement the plan was put aside entirely.

4. National Action Program (1973-1982)

(a) The Third Five-Year Plan (1973-77)

(b) The Fourth Five-Year Plan (1976-80)

In mid-1972 the government announced its intent to begin a new ten-year plan, the National Action Program, beginning 1973 through 1982, comprising two five-year plans. In 1975 the first period plans were cut short, and a new plan from 1976 to 1980 was announced.

B. Manpower Planning Authorities

1. Long-Term Manpower Planning

In Egypt, the principal organ responsible for the process of long-term manpower planning is the Central Department for Manpower Planning with MOP. This department operates with other concerned organs.

On the Supply Side:

It solicits the cooperation of MOE, MOHE. The Central Agency for Public Mobilization and Statistics estimates projection for the supply of labor force by occupation for periods of five to ten years.

On the Demand Side:

The department cooperates with MOAG&LR, MOISMR, as well as other ministries and government organizations involved.

Within the national development plan, the Department for Manpower Planning makes estimates of the supply and demand of labor force for periods ranging from 10 to 15 years.

Projections of supply are constructed as the basis of certain available variables such as population, education, graduation and drop-out rates, and the like.

The demand projections are reviewed by the ministries concerned, and approved. Then the department proceeds with laying down the detailed plan on a project-by-project basis within each sector, coordinating it with plans for the other sectors.

2. Short-Term Manpower Planning

MOM is supposed to be the principal organ responsible for this process. As a matter of fact, MOM efforts are mainly restricted in performing the

role of a labor office. MOM has many employment offices distributed all over the country. Applicants seeking jobs should sign in the labor office. The latter in turn provides the companies with the appropriate lists to help them select their needs.

C. Manpower in Egypt (The GOE Fourth Five-Year Plan 1976-80)

Population:

Population in the first year of the plan was estimated, according to the 1976 general census, by a nearly 38 million assuming a decrease in population growth rate. The average annual growth rate is 1.85 percent. In 1980, the total population will amount to about 42 million.

Table No. 21 shows the distribution of population in and out of the labor force. In 1976, 69.4 percent of the total population was outside the labor force and 30.6 percent was in the labor force. In 1980 the percentage of in and out of the labor force to the total population will be 68.3 percent and 31.7 percent respectively.

The Labor Force:

1. The supply side of the labor force:

- Graduates of the education and training systems at different levels
- Dropouts of the education and training systems
- Illiterate or unskilled people, mostly migrants from the rural to the urban areas
- Non-Egyptian labor force

2. The Labor Force of the Age Group (12-64)

This will increase from 11,707,000 in 1976 to 13,250,000 in 1990, an increase of 13.2 percent. This increase is based on the fact of increasing population in this age group, the growth of enrollments and the increasing participation of women in the economic activities.

3. The Demand Side of the Labor Force

In the Fourth Five-Year Plan (1976-80), the local demand of manpower was estimated as the total demand of the existing production and services units during the plan period for both public and private sectors, together with the government sector. The main sectors of the economy are:

- a. Agriculture
- b. Minerals and petroleum
- c. Industry
- d. Electricity
- e. Construction
- f. Transport and communication
- g. Services

Methodology of Assessment:

1. The occupational structure (Tables 33 and 34) was determined on the national level and for each sector of the economy using the following occupational categories:

- Directors
- Higher positions
- Technical and intermediate positions
- Clerical and assistance positions

- Skilled labor
- Unskilled labor

2. From the available figures on total production and labor statistics in 1976, the productivity levels (LE/worker) for each economic sector in 1976 was determined.

3. From the available data on the national product and the seven economic sectors and their estimated level of productivity, the total demand of manpower and the additional labor force needed was projected in the future.

4. A suitable "attrition rate" (substitution due to retirement, death, immigration, work accident, occupational diseases, retirement, and the like), was computed. This ratio was estimated at 2 percent (attrition rate for most developing countries is 5 percent of the total job opportunities) and restricted to immigration, death and disability, since workers who quit their jobs usually fill another position in the same sector.

Based on this 2 percent attrition rate the number of future replacements in manpower for the main economic sectors was estimated.

5. Summing up, the total annual demand on manpower was estimated on the national level (Table No. 23) and the economic sectors (Tables 24-30).

Estimates of Manpower:

1. Manpower Demands:

The total labor force in 1976 was estimated at 11,707,000 workers,

expected to increase to 11,250,000 in 1980. This includes manpower that have emigrated to Arab and foreign countries.

A sample survey of the labor force by educational status and sex in the urban and rural areas, conducted by MOM in 1974, have revealed the following: (See Table No. 35)

- Nearly 60 percent of the total labor force in the country was illiterate; 24.8 percent of them were in the urban areas and 75.2 percent in the rural areas
- Another 25 percent were only able to read and write, 57.7 percent of them were in the urban areas and 42.3 percent in the rural areas
- A very low 1.6 percent of the labor force had post secondary level education
- A surprisingly high 3.8 percent had a university or post-graduate degree
- 7.6 percent of the total labor force has secondary level education
- 1.9 percent of the total labor force has primary and/or preparatory education
- The proportion of females in the total labor force is less than 7 percent

2. Manpower Supply:

No information is available as to the capacity of current educational institutions and whether the output of the educational and training systems would be in line with the manpower demand. One problem facing the fulfillment of this task is that forecasts are built on broad categories and occupational levels which makes it very difficult to match it with the output of the

specific type of education, or to spell the demand figures into specific education plans.

The following table gives a general idea about the supply side of manpower from the educational and training systems.

Table No. 20

Number of Students and Graduates in Different
Levels of Education and Training in Egypt (1960 - 1975) ^{1/}

Educational Level and Training Centers	Admitted (000's)	Graduated (000's)
Primary	600 ^{2/}	250
Preparatory	240	200
General Secondary	90	85
Secondary Commercial	55	32
Secondary Agricultural	10	8
Secondary Industrial	24	17
Teachers Institutes	10	8
Centers of Vocational Training (MOSAI)	-	10
Training Agency for Construction and Building (MOHR)	-	14
Training Centers (MOIMR and DPVT)	-	9
Other Training Centers	-	12
Universities	55	50
Total	1,084	695

1/ Source: National Council of Education, Scientific Research and Technology
A Study on Education and Technical Training.

2/ Number of students of school age in 1960 was 850,000. These figures are based on the assumption that students have been admitted to the primary level in 1960 and continued in other levels until 1975.

The report concludes from these data that there is a total imbalance in the structure of the Egyptian labor force as shown by the percentage of graduates from each level of education and training to the total number of graduates in 1975:

University Graduates about 7 percent
 Technical School Graduates about 8 percent
 Vocational Training Graduates about 7 percent
 Drop-outs or unskilled labor about 78 percent

Employment and Migration:

GOE is the major employer of professional, technical and administrative workers. Sixty to 90 percent of the labor force is employed by GOE.

The GOE Five-Year Plan (1976-80) estimated the number of job opportunities in 1976 at 9,628,000 increasing to 11,135,000 in 1980, with an average annual increase of 3.7 percent.

Unemployment (open and disguised) was estimated at 1,479,000 in 1976 or 13.3 percent of the total labor force in Egypt at the time. This percentage will decrease in 1980 to about 10.6 percent due to the expected increase of the participation of women in the labor force.

Open unemployment is heavily concentrated in the urban areas as shown from the labor force sample survey conducted by MOM (Table No. 36).

As to migration, data available at the Ministry of Manpower (MOM&VT) merely provides information on the number of work permits issued during a certain period of time.

Table No. 37 shows migrant workers from Egypt to Kuwait, Libya, Lebanon and United Arab Emirates (UAE) from the period 1968 to 1973, data about

other countries were not available. Such irregular and incomplete data makes it impossible to make any meaningful analysis of flows and complicates the problem of manpower forecasts.

According to the GOE Five-Year Plan, an estimated 600,000 workers will demand employment abroad in 1976 (5.1 percent of the total labor force at this year increasing to 820,000 in 1980 or 6.2 percent of the estimated total labor force in Egypt).

Problems Facing the Manpower Plan:

What are the main problems facing the manpower plan in Egypt could be summarized as follows:

1. Data base:

The lack of adequate data base stems from:

a. The problem of cross classifications. Statistical information is not classified in a manner that provides all the necessary specific data (information) needed to plan for certain predetermined objectives. Classifications available in Egypt are so broad to check for accuracy, and the degree of detail cannot serve the purpose of a manpower plan.

Statistical information on manpower is not classified by occupation, skill, type of education, and data about certain specializations, like technicians, is lacking.

b. The irrelevancy between occupational classifications and the educational level and most important, the type of education.

c. Lack of information about migration. Statistical information available about immigration and emigration is irregular, full of gaps. Data on migrants

(non nationals) is cross-classified by dividing non-residents into Arabs and non-Arabs without identifying individual nationalities. Emigration and immigration statistics by occupation, level and type of education, and the skill of the emigrants are not available.

2. Job Specifications

The serious problem that faces manpower planning is identifying and matching job titles with levels of educational requirement and training. Job titles are not spelled according to the job specification in each specialization based on the actual job performance, but on certification.

3. Imbalance between supply and demand of labor force.
4. The non-harmony between manpower planning and educational planning.
5. The non-introduction of cost/benefit in designing alternative plans, if any, for manpower and education development.
6. The non-introduction of cost-effectiveness analysis for the best utilization of the available resources and their appropriate allocation.
7. The non-introduction of new techniques for quantitative assessment of manpower and educational needs.
8. The non-fulfillment of the economic goals spelled in the GOE plans.

9. The complete lack of new management techniques.

The net result is that there is no manpower plan in Egypt.

Table No. 21
Population and Labor Force

1976 - 1987

(000's)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Total Population ^{1/}	38,228	39,099	39,971	40,870	41,761	42,675	43,893	44,517	45,447	46,388	47,334	48,290
Those outside labor force ^{2/}	26,521	27,018	27,516	28,017	28,519	28,976	29,441	29,895	30,354	30,811	31,255	31,978
Population-12 yrs.	11,774	11,976	12,178	12,379	12,591	12,781	12,982	13,181	13,380	13,578	13,779	13,956
Students in Schools, Instits. & Univ.	2,811	3,037	3,281	3,546	3,832	4,142	4,477	4,840	5,232	5,658	6,118	6,617
Housewives not willing to work and handicapped	10,866	10,910	10,938	10,948	10,895	10,815	10,718	10,583	10,371	10,183	9,938	9,656
Population-65 yrs and over	1,070	1,095	1,119	1,144	1,211	1,238	1,264	1,291	1,363	1,392	1,420	1,449
Labor Force ^{3/}	11,707	12,081	12,463	12,853	13,250	13,699	14,152	14,622	15,093	15,577	16,071	16,612
Demand for Employment Abroad ^{4/}	600	680	740	780	820	850	875	900	925	950	975	1,000

- ^{1/} Total population in 1976 census is based on the assumption of continuing rate of increase in the rate of population growth during the period 1976-87 based on the rate of the period 1966-76.
- ^{2/} Population age 12 and 64 were estimated by amending the age structure percentages in 1976 census. The age structure of the population living outside Egypt on the day of census was taken into consideration. These percentages were projected according to the rate of development between the censuses of 1960-1976.
- ^{3/} The labor force was estimated by projections of female labor force according to its rate of increase between the 1960 and 1976 censuses until 1980. Then the rate was increased by 4.5 percent annually until the year 1987 due to the increase of females in education and labor. The percentage of male labor force to total population was projected based on the censuses of 1960-1976.
- ^{4/} Demand for employment abroad was based on estimations of Organization for Arab and Foreign Investment of numbers working abroad. This was projected so that number of exported labor would reach 1 million by 1987.

Population and Labor Force (Continued)

1976 - 1987

(000's)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Available Labor Force in Egypt ^{5/}	11,107	11,401	11,723	12,073	12,430	12,849	13,277	13,722	14,168	14,627	15,104	15,612
Labor force needed in Egypt	9,628	9,988	10,359	10,738	11,135	11,642	12,166	12,729	13,325	13,957	14,617	15,324
Unemployment (Appar- ent and Disguised)	1,479	1,413	1,364	1,335	1,325	1,207	1,111	993	843	770	487	288

^{5/} The actual enrollments in 1976 were taken as the base for further projections. Projections were based on the average yearly increase in the three years preceding the base year.

For Prep. 7.2 percent annually
 General Sec. 8.5 percent annually
 Sec. Tech. 8.5 percent annually
 Teachers 7.8 percent annually
 Universities
 Higher Insts. 10.0 percent annually

Source: Book II of the Five-Year Plan - Egypt 1978-1982

Table No. 23

Total Production in 1975 Prices.Total Labor Force and the Expected Annual IncreaseIn the Labor Force During 1977 - 1987

(On the National Level)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Total Production, 1975 Prices (Million LE)	10,049	10,716	11,784	12,934	14,372	16,025	17,932	19,769.9	22,437	24,417	27,207	30,291.6
Total Demand for Labor (Thousand Workers)	9,628.2	9,987.6	10,738.2	10,738.2	11,135.4	11,642.1	12,165.9	12,729	13,325.4	13,956.7	14,617.2	15,324
Annual Increase in Labor Force (Thousand Workers)	-	359.5	371	379.6	397.2	506.7	523.8	563.1	596.4	631.3	660.5	706.8
Annual Increase in Replacement workers (thousand workers)	-	192.7	198.8	207	214.7	222.8	232.7	243.3	254.5	266.4	279.1	292.3
Total Annual Increase in Labor Force (Thousand Workers)	-	552.2	569.8	586.6	611.9	729.5	756.5	806.4	850.9	897.7	939.6	999.1

Note: 1. This table sums up the following tables (4 - 10)

2. Differences were observed between the objective production figures in these tables and the number included in the five-year plan 1976-1980 based on the estimates of the different localities. These differences are the outcome of the different bases of estimation in each case. The difference does not exceed 3 percent.

Source: Book II of the Five Year Plan - Egypt 1978-1982

Total Labor Force, and Expected Annual Increase

In the Labor Force During 1977 - 1987

(Agricultural Sector)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Total Production (1975 Prices) (Millions LK)	2,126	2,196	2,270	2,350	2,432	2,517	2,605	2,708.7	2,818	2,933.1	3,048.7	3,169.5
Productivity Levels (LE/Worker)	503.3	511.8	520.4	531.2	541.9	549.4	555.4	566.5	577.8	589.4	601.2	613.2
Total Demand of Labor Force (Thousand Workers)	4,223.9	4,290.9	4,361.7	4,423.8	4,487.8	4,561.2	4,689.5	4,781.4	4,877.1	4,976.5	5,071.1	5,168.2
Annual Increase in Labor Force (In Thousands)	-	67	70.8	62.1	64	93.4	108.3	91.9	95.7	99.4	94.6	97.7
Annual Increase in Replace- ment Manpower (Thous. Workers)	-	85.4	86.7	88.1	89.4	90.7	92.5	94.3	96.1	98	100	101.9
Productivity Growth Rates (%)	-	1.7	1.7	2	2	1.4	1.1	2	2	2	2	2
Total Annual Increase in Labor Force (in thousands)	-	152.4	157.5	150.2	153.4	184.1	200.8	186.2	191.8	197.4	194.6	198.6

Table No. 25
Total Production in 1975 Prices, Productivity Levels,
Total Labor Force and Expected Annual Increase
In the Labor Force During 1977 - 1987
(Petroleum and Mining Sector)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Total Production (1975 Prices) - (Million LE)	530	643	835	1,016	1,323	1,736	2,255	2,563.3	2,982.2	3,429.6	3,944	4,535.6
Productivity Levels (LE/Worker)	11,372	13,368	16,437	18,885	23,251.3	29,155.4	36,547.8	38,590.7	42,724.9	47,100	52,000	573.40
Productivity Growth Rate (%)	-	17.9	23	15	23	25.4	25.4	5.6	10.7	10.3	10.4	10.3
Total Demand of Labor Force (Thousand Workers)	46.2	48.1	50.8	53.8	56.9	59.2	61.7	67.2	69.8	72.7	75.8	79.1
Annual Increase in Labor Force (in Thousands)	-	1.9	2.7	3	3.1	2.3	2.5	5.5	2.6	2.9	3.1	3.3
Annual Increase in Replacement Manpower (in Thousands)	-	.8	.8	.8	.9	1	1	1.1	1.2	1.2	1.3	1.4
Total Annual Increase in Labor Force (in Thousands)	-	2.7	3.5	3.8	4	3.3	3.5	6.6	3.8	4.1	4.4	4.7

Total Production in 1975 Prices, Productivity Levels,
Total Labor Force and Expected Annual Increase
In the Labor Force During 1977 - 1987

(Industrial Sector)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Total Production (1975 Prices) - (Millions LE)	3,494	3,716	4,049	4,464	4,949	5,485	6,079	6,639.8	7,471.3	8,281.5	9,178	10,171.8
Productivity Levels (LE/Worker)	3,003.5	3,098.5	3,191	3,325.4	3,485	3,605.2	3,730.4	3,861	3,996	4,136	4,281	4,431
Productivity Growth Rates (%)	-	3.2	3	4.2	4.8	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Demand of Labor Force (In Thousands)	1,163.3	1,199.3	1,268.9	1,342.4	1,420.1	1,521.4	1,629.6	1,745.6	1,869.7	2,002.3	2,143.9	2,295.6
Annual Increase in Replacement Manpower (Thousand Workers)	-	23.9	24.6	26	27.4	29	31	33.2	35.5	38	40.6	43.5
Total Annual Increase in Labor Force (In Thousands)	-	59.9	94.2	99.5	105.1	130.3	139.2	149.2	159.6	170.6	182.2	195.2
Annual Increase in Labor Force (In Thousands)	-	36	96.6	73.5	77.7	101.3	108.2	116	124.1	132.6	141.6	151.7

Total Production in 1975 Prices, Productivity Levels,

Total Labor Force and Expected Annual Increase

In the Labor Force During 1977 - 1987

(Electricity Sector)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Total Production (1975 Prices) - (Million LE)	98	119	135	153	173	193	217	243	272.4	305.4	342.1	405.1
Productivity Levels (LE/Workers)	2,085.1	2,306.2	2,428.1	2,550.1	2,673.9	2,793.1	2,944.4	3,091.6	3,246.2	3,408.5	3,578.1	3,757.9
Productivity Growth Rates (%)	-	10.6	5.3	5	4.9	4.5	5.4	5.8	5	5	5	5
Total Demand of Labor Force (Thousand Workers)	47	51.6	55.6	60	64.7	69.1	73.7	78.6	83.9	89.6	95.6	107.8
Annual Increase in Labor Force (In Thousands)	-	4.6	4	4.4	4.7	4.4	4.6	4.9	5.3	5.7	6	12.2
Annual Increase in Replacement Manpower (Thousand Workers)	-	.9	1	1.1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.6
Total Annual Increase in Labor Force (In Thousands)	-	4.5	5	5.5	5.8	5.6	5.9	6.3	6.8	7.3	7.7	14.

Table No. 28

Total Production in 1975 Prices, Productivity Levels,

Total Labor Force and Expected Annual Increase

In the Labor Force During 1977 - 1987

(Construction Sector)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Total Production (1975 Prices) (Million LE)	520	630	735	807	940	1,093	1,295	1,451	1,672.7	1,926	2,215.1	2,545.9
Productivity Levels (LE/worker)	1,193.2	1,275.3	1,366.2	1,381.8	1,482.9	1,588.7	1,689.9	1,799.7	1,916.7	2,041.3	2,147.	2,315.3
Productivity Growth Rates (%)	-											
Total Demand of Labor Force (Thousand Workers)	434	493	537.7	584.4	634.4	688.1	745.4	806.7	872.8	943.5	1,018.1	1,079.9
Annual Increase in Labor Force (In Thousands)	-	59.7	44	46.7	50	53.7	57.3	61.3	66.1	70.7	75.4	80.7
Annual Increase in Replace- ment Manpower (Thousand Workers)	-	11.4	12.6	13.4	14	15.4	16.5	17.6	18.8	20.2	21.6	23.1
Total Annual Increase in Labor Force (In Thousands)	-	71.1	51.6	60.1	64.4	69.1	73.8	78.1	84.1	90.1	97	103.8

Table No. 29

Total Production in 1975 Prices, Productivity Levels,

Total Labor Force and Expected Annual Increase

In the Labor Force During 1977 - 1987

(Transport, Communications and Suez Canal Sector)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Total Production (1975 Prices) - (Million LE)	519	580	668	739	857	995	1,154	1,351.4	1,583.1	1,791.9	2,173.6	2,547.1
Productivity Levels (LE/Worker)	1,229.6	1,227.5	1,339.8	1,404.7	1,543	1,674	1,813.3	1,971.1	2,142.5	2,328.9	2,531.6	2,751.8
Productivity Growth Rates (%)	-	-	9.2	4.8	9.9	8.5	8.3	8.7	8.7	8.7	8.7	8.7
Total Demand of Labor Force (In Thousands)	422.1	472.5	498.6	526.1	555.4	594.5	636.4	685.6	738.9	716.4	858.6	925.6
Annual Increase in Labor Force (In Thousands)	-	50.4	26.1	27.5	29.3	39.1	41.9	49.2	53.3	57.5	62.2	67
Annual Increase in Replacement Manpower (Thousand Workers)	-	8.5	9.5	10	10.6	11.2	11.9	12.8	13.8	14.8	16	17.2
Total Annual Increase in Labor Force (In Thousands)	-	58.1	35.6	38.5	39.9	50.3	53.8	62	67.1	72.3	78.2	84.2

Table No. 30

Total Production in 1975 Prices, Productivity Levels,

Total Labor Force and Expected Annual Increase

In the Labor Force During 1977 - 1987

Services Sector

(Trade, Finance, Facilities, Housing and Other Services)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Total Production (1975 Prices) - (Million LE)	2,759	2,912	3,092	3,405	3,698	4,016	4,363	4,781.9	5,444	5,749.5	6,305.6	6,916.6
Productivity Levels (LE/Worker)	838.2	848.6	862.4	908.6	944.3	972.7	1,003.1	1,043.2	1,085	1,128.3	1,173.5	1,220.4
Productivity Growth Rates (%)	-	1.2	1.6	5.4	3.9	3	3.1	4	4	4	4	4
Total Demand of Labor Force (Thousand Workers)	3,291.7	3,431.5	3,585.2	3,747.7	3,916.1	4,128.6	4,349.6	4,583.9	4,833.2	5,095.7	5,373.3	5,667.5
Annual Increase in Labor Force (In Thousands)	-	139.8	153.8	162.4	168.4	212.5	221	234.3	249.3	262.5	277.6	294.2
Annual Increase in Replacement Manpower (Thousand Workers)	-	61.8	64.5	67.6	70.9	74.3	78.5	82.9	87.6	92.6	97.9	103.4
Total Annual Increase in Labor Force (In Thousands)	-	201.6	218.3	230	239.3	2,868	299.5	317.2	336.9	355.1	375.5	397.6

Table No. 31

Additional Labor Force Needed Annually
Distributed According to Occupational Level

1977 - 1987 - National Level

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Managers	-	19,324	19,943	20,531	21,417	25,532	26,477	28,224	29,781	31,419	32,886	34,969
Higher Positions	-	24,292	25,071	25,810	26,923	32,098	33,286	35,482	37,440	31,500	41,342	43,960
Technical and Intermediate Positions	-	34,782	35,897	36,956	38,550	45,958	47,660	50,803	53,607	56,555	59,195	62,943
Clerical and Assistants Positions	-	34,230	35,328	36,369	37,938	45,230	46,903	49,997	52,756	55,657	58,255	61,944
Skilled Workers	-	109,316	112,820	116,147	121,156	144,441	149,787	159,667	168,478	177,745	186,041	197,822
Non-Skilled Workers	-	330,156	340,741	350,787	365,916	439,241	452,387	482,227	508,838	536,824	561,881	597,462
Total	-	552,000	569,800	586,600	611,900	729,500	756,500	806,400	850,900	897,700	939,600	999,100

Table No. 32

Number of Additional Labor ForceDistributed According to Occupational Levels and Relative Educational Levels1977 - 1987

Educational Level	Relative Occupation Level	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Univ. Educ.	Directors and Higher Positions	43,616	45,014	46,341	48,340	57,630	59,763	63,706	67,221	70,919	74,228	78,929
Mid. Educ.	Technical and Mid-Positions, Clerical and Assistance Positions, Skilled Workers	178,328	184,045	189,472	197,644	235,629	244,350	260,467	274,841	280,957	303,491	322,709
Primary & Prep. Education	Unskilled Workers	330,156	340,741	350,787	365,916	436,241	452,387	482,227	508,838	536,824	551,881	597,462
	TOTAL	552,100	569,800	586,600	611,100	729,500	756,500	866,400	850,900	897,700	939,600	499,100

Table No. 33

Number of Employees Distributed OverMain Economic Sectors and Occupational LevelsYear 1976

(Thousand Workers)

	Agriculture	Mining & Petrol.	Industry	Electricity	Construction	Transp., Communications & Suez Canal	Services: Commerce, Finance, Facils., Housing, Other	Total
Professions								
Managers	12.7	1.0	32.6	2.0	20.0	14.4	266.6	349.3
Higher Positions	15.3	1.3	50.0	4.5	21.7	34.2	299.5	436.5
Med. Technical Positions	38.0	2.0	88.4	4.7	38.6	74.7	365.4	612.2
Technical and Clerical Positions	42.2	1.9	58.2	3.9	15.2	44.7	451.0	617.1
Skilled Workers	101.4	17.1	531.6	17.7	167.5	134.2	931.6	1,900.6
Non-Skilled Workers	4,004.3	22.5	462.5	14.7	171.0	119.9	977.6	5,712.5
TOTAL	4,223.9	46.2	1,163.3	47.0	434.0	422.1	3,291.7	9,628.2

Labour Force by Educational Status & Sex

(Urban, Rural) May 1974.

Ministry of Manpower and Vocational Training
General Department of Statistics

Table No. 35

Numbers in Hundreds

Urban Rural	Sex	Educational Status								Total
		Illiterate	Read & Write	Below Intermediate certificate	Intermediate Certificate	Above Intermediate certificate	University Certificate	Post Graduate Certificate	Not indicated	
Urban	M.	12 460	12 798	1 373	4 105	527	2 426	141	35	33 863
	F.	1 044	329	79	1 522	533	630	23	17	4 177
	T.	13 504	13 127	1 452	5 627	1 060	3 056	164	52	38 040
Rural	M.	39 647	9 554	238	1 108	347	204	18	60	51 176
	F.	1 241	57	—	155	70	20	—	—	1 543
	T.	40 888	9 611	238	1 263	417	224	18	60	52 719
Total	M.	52 107	22 350	1 611	5 213	874	2 630	159	95	85 039
	F.	2 285	386	79	1 677	603	650	23	17	5 720
	T.	54 392	22 736	1 690	6 890	1 477	3 280	182	112	90 759

Table No. 37

TABLE 21: MIGRANT WORKERS BY ORIGIN AND DESTINATION

Origin \ Destination	Date	PDR Yeoch	Egypt	Syria	Palestine	Lebanon	Jordan	Oman	Other Arab Countries	All Arab Countries	Non-Arab Countries	Unknown	
Saudi Arabia	1970	200 000 250 000	n.a.	(40 000)	(50 000)	(30 000)	n.a.	n.a.	n.a.	(335 000)	n.a.	(65 000)	(400 000)
Kuwait	1970	6 508	17 714	12 653	*	8 412	41 299	10 493	24 467	121 514	53 325	-	175 439
Libya	1973	-	60 752	6 162	4 324	6 324	4 324	-	24 215	108 100	20 300	-	128 000
Lebanon	1970	n.a.	4 500	13 500	8	-	n.a.	n.a.	n.a.	40 000	n.a.	21 000	69 000
U A E	1965	n.a.	11 100	6 600	6 600	n.a.	6 600	6 600	4 430	35 450	6 600	n.a.	44 000
Qatar	1970	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	(24 000)	(16 000)	n.a.	(40 000)
Bahrain	1971	(2 000)	n.a.	n.a.	(2 000)	n.a.	(2 000)	(5 600)	(4 000)	(15 600)	(6 000)	(751)	(22 351)
Oman	1973	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	(2 000)	(3 000)	n.a.	(5 000)
	1970 circa	233 328	94 000	99 261	91 064	46 743	34 263	22 723	57 112	452 089	107 702	87 351	683 549

SOURCE: Parag, A.M. Migration Between Arab Countries, in Manpower and Employment in Arab Countries, Some Critical Issues, I.L.O., Geneva, 1976. Pp. 84-108.

Notes: * included with Jordanians
n.a. is not available
figures in brackets denote rough estimates.

ANNEXES

ANNEX I

FORMAL INDUSTRIAL EDUCATION IN THE A.P. EGYPT

1. Objectives

Law No. 75/1975 has specified the objective of technical education as follows: "The goal of technical education is to improve the general preparation of students mentally, physically, characterally and socially, to prepare the socialist citizen who is aware of his duties towards God, his family, his nation and the whole humanity, and to provide the students with relative quantity of study to raise them to the level of technicians and skilled laborers in the different technical fields." ^{1/}

2. Structure of the System:

The following organization chart shows the structure of the system (Chart No.1.1). There are three types of industrial schools following the general preparatory level.

a. Industrial-Technical Schools (five-year system, Grades 10-14) for the preparation of technicians

b. Industrial-Secondary Schools, male and female (three-year system, Grades 10-12) for the preparation of skilled workers.

c. Secondary-Industrial Schools, extended studies (two years, Grades 13-14) to train industrial secondary school graduates (male and female) as workshop teachers for the secondary industrial schools.

First: Industrial Technical Schools (Grade 10-14)

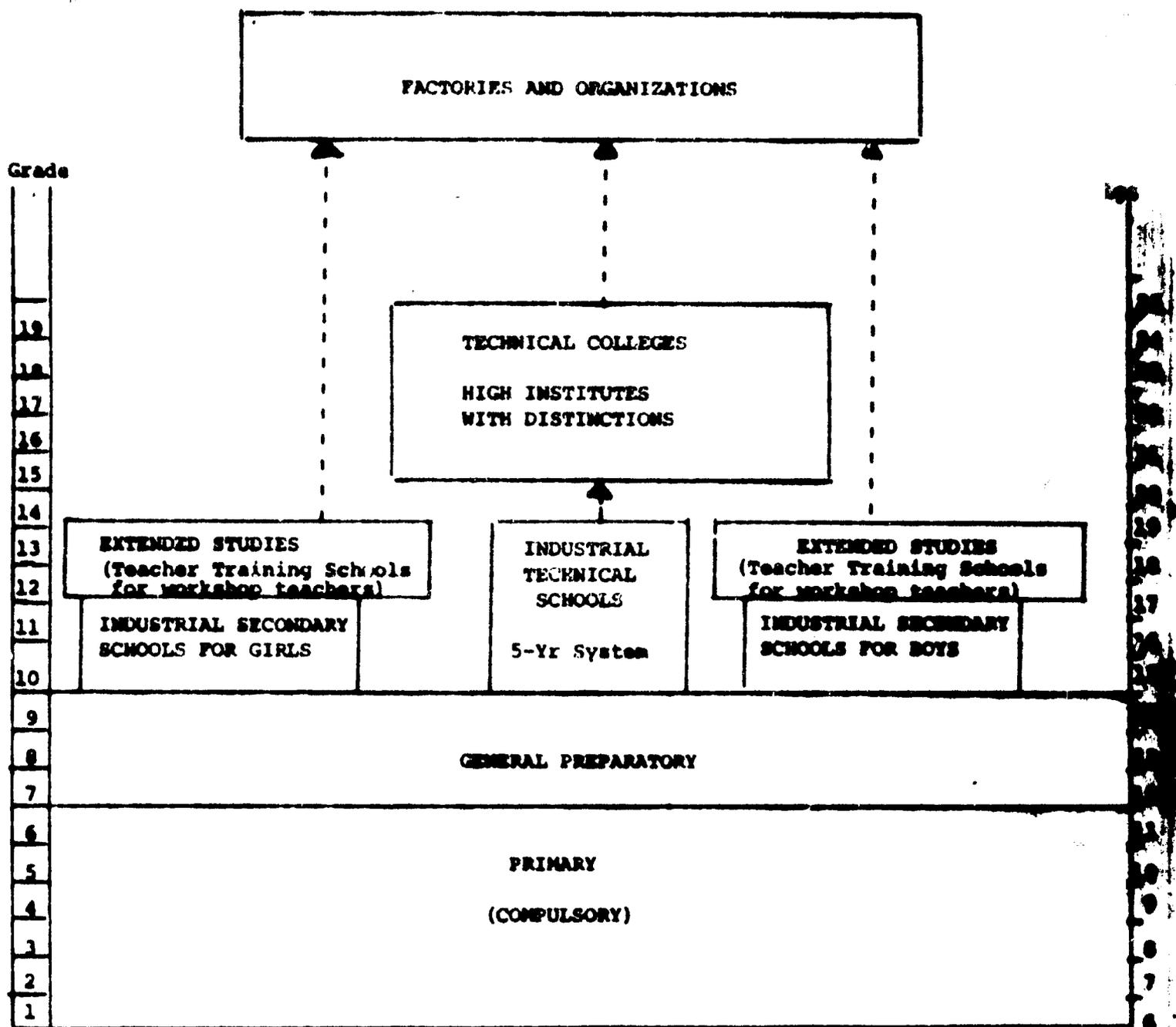
Table No. 1.1 shows the development of industrial technical education since the first school was established in 1970/71 until 1976/77.

^{1/} Source: MOE, General Administration for Industrial Education, "A Report on Industrial Education," June 1977.

Chart 1.1

FORMAL

INDUSTRIAL EDUCATION IN EGYPT



**Development of Industrial-Technical Education
(5-Year System)**

1970/71 - 1976/77

		70/71	71/72	72/73	73/74	74/75	75/76	76/77
Number of Schools & Sections	Schools	1	1	3	3	4	4	4
	Sections	-	-	-	-	-	-	-
New Enrollments Grade 10	Female	-	-	-	-	30	29	29
	Total	300	292	490	836	1,015	989	882
Total No. of Classes	Classes	10	20	44	63	98	123	142
Total No. of Students	Male	300	587	1,129	1,857	2,795	3,440	3,971
	Female	-	-	-	-	30	59	89
	Total	300	587	1,129	1,857	2,825	3,499	4,060
Directors and Principals	Female	-	-	-	-	-	-	-
	Total	-	1	-	2	3	5	8
Deputies	Female	-	-	-	-	-	-	-
	Total	-	3	-	8	12	17	21
Senior Teachers & Teachers	Female	-	-	-	7	16	20	27
	Total	-	69	-	214	365	430	527
Other Staff	Female	-	2	-	-	2	5	16
	Total	-	17	-	-	42	92	122
Workers	Technical	-	20	-	-	19	35	51
	Non Tech	-	29	-	-	41	50	68
	Total	-	49	-	-	60	85	119

Source: MOE Statistical Division, Development and Flow of General Education Since the Middle of the 20th Century 1950/51 - 1976/77: Cairo, 1977.

1. Schools

In accordance with Law No. 75/1970, four of the three-year system schools were converted into the five-year system with foreign and local assistance.

a) Galal Fahmy Secondary Industrial School has been converted into a technical school with the assistance of GDR. Study started in 1970/71 in the following specializations:

- Mechanical engineering
- Auto - Engineering
- Electrical Engineering
- Electronics

Graduation started in 1975

b) Far Al Salam Secondary Architectural School was converted to a technical construction school with the assistance of local specialists in construction and building in A.R. Egypt (MONR). Study started in 1972/73 in the following specializations:

- Construction and Building Engineering
- Utilities and Sanitary Work Engineering

c) Moharam Bay Mechanical School in Moharam Bay was converted into a technical school with the assistance of U.K. Study started in 1973/74 in the following specializations:

- Mechanical engineering
- Auto - engineering
- Electrical Engineering
- Electronics

Students are admitted each year proportionately as follows:

60 percent for the governorate of Alexandria, 35 percent for other

governorates, and 5 percent for students gaining 85 percent or more in mathematics, science and English language.

d) Cairo Secondary Mechanical School at Kobba was converted to a five-year technical school with the assistance of UNESCO to prepare the workshop trainers. Study started in 1974/75 for both sexes in the following specializations:

- Mechanical engineering
- Electrical engineering
- Electronics
- Auto Engineering
- Fine Mechanics Engineering

e) Places are reserved in each specialization for each governorate. MOE will provide housing and meals for students of other governorates.

2. Admission Requirements:

- a) To hold the General Preparatory Certificate
- b) Should not be more than 18 years old. Three months' exemption if vacancies are available
- c) To pass the physical test
- d) To pass the personal test
- e) Students qualifying are admitted according to the following percentages:
 - 75 percent for the governorate citizens in which the school exists
 - 20 percent for students from other governorates on condition that the total marks of the student allow him to be enrolled in the general secondary education.

3. Specializations: (Trades)
- a) Mechanical Engineering
 - b) Automotive Engineering
 - c) Electrical Energy Engineering
 - d) Telecommunication Engineering
 - e) Electronics Engineering
 - f) Construction and Building
 - g) Utilities
 - h) Operation Mechanics
 - i) Shaping Mechanics (forge, welder, models, alloys)
 - j) Fine Mechanics

Table 1.2 shows expansion of specializations in industrial schools.

4. Pupils:

a) Enrollment - The number of students admitted to the first technical school was 300 students in 1970/71 (Table No. 1.1). Enrollment increased gradually until the total number of students enrolled reached 4,060 in 1976/77. Girls did not enter industrial technical education until the school year 1974/75. Since then their number increased from 30 students in 1974/75 to 89 in 1976/77 or nearly tripled. The ratio of females to males in 1976/77 is 1:45. Percentage of females to the total number of students in 1976/77 is only 2.2 percent. This feature leads to the conclusion that any development in industrial technical education must be based on the increase of the number of girls admitted to this area.

A second important feature shown by the data in the same table is that new enrollment in industrial technical education was continuously decreasing since 1974/75, a drop of 2.6 percent in 1975/76 and 10.8 percent in 1976/77.

Table No. 1.2

Expansion and/or Revival of Specializations

During the School Year

1976/77 and 1977/78

In the Industrial Schools

Branch	Specialization	Number of Schools
Mechanics	Turning	3
	Welding	3
	Machine Operation	1
	Blacksmithing	1
Marine	Ship Building	1
Electrical	Electronics	3
	Electrical Tools and Equipments, Repair and Maintenance of Electrical Equipment	2
Automobile	Auto Mechanics	1
	Auto-Electricity	1
Construction	General	1
	Sanitary	1
	Woodwork	3
	Building and Whitewashing	16
	Stonecutting	1
	Cabinet Maker	1
	Decoration and Advertisement	2
	Office Furniture	1
	Wood Carving	1
Textile	Weaving	1

Source: MOE: Office of the Undersecretary of Technical Education. 1977.

The reasons for this drop could be accounted for by the shift of students to a more easier area, i.e., to commercial education. Anyway, whatever the reason is, there must be an action to avoid this in the future.

The following table shows enrollment in the successive grades in 1976/77.

Table No. 1.3

Enrollment in the Successive Grades

1976/77

	G R A D E					Total
	10	11	12	13	14	
Enrollment	907	1,016	998	735	400	4,056

It will be seen from the above table that the number of students in the 10th grade in 1976/77 was 907 while the number of new enrollments in the same year was 882 students, i.e., 15 students of those who were admitted in 1975/76 has repeated, that is to say 1.7 percent of those enrolled in the 10th grade in 1976/77 are repeaters, which we think does not constitute a major problem.

- The average student/class in the last four years was 29 students/class
- Incentives for 10th grade students according to their rank (percentage degrees) in the prep level
- Incentives for following grades (11-14) according to their rank (percentage degrees) in the first exam
- LE 3.00/month for those acquiring 80 percent or more of the total marks
- LE 2.00/month for those acquiring 75-80 percent of the total marks

b) Graduates - The total number of graduates in 1976/77 was 390 technicians. No correlation could be made between this number and the additional technician needed in the future because the manpower plan used broad classifications and categories that do not match with the educational output.

5. Teachers:

a) Teachers for industrial technical schools are recruited from:

- Engineers for theoretical technical material
- Holders of Diploma of Extended Industrial Studies for Workshop Training
- Graduates of industrial technical schools (five-year system) for the laboratories

b) The number of teachers has increased from 214 in 1973/74 to 527 in 1976/77.

Table No. 1.4 shows the additional teacher requirements during the period of the fourth Five-Year Plan (1976-80). 750 teachers are needed or an average of 185/year.

c) Salaries and promotion are determined at the national level under the government civil service system. Teachers are appointed by MCE and are subject to the same grading system as all other GOE employees. Promotion is based on teaching experience and level of education certification.

Teachers receive a bonus of 25 percent of the monthly salary, not exceeding LE 10.00/month for the actual period of study not exceeding seven months.

The following tables show the scales for all levels of qualifications.

Table No. 1.4

Additional Teacher Requirements

Industrial Technical Education (Grades 10 - 14)

1976 - 80

ENROLLMENTS					Average Annual Growth Rate A.A.G.R.	Pupil/Teacher Ratio	1980/81 Additional Teacher Requirements	
Actual 1976/77	PROJECTED						Total	Average Annual
	1977/78	1978/79	1979/80	1980/81				
4,060	4,474	4,930	5,433	5,987	10.26	10	750	185

USAID

TABLE 1.5
SALARY SCALE FOR
TEACHERS AND ADMINISTRATORS

TABLE 1:

Qualifications:

1. General Secondary Certificate
2. Technical Secondary Diploma
3. Industrial Secondary Diploma
4. Commercial Secondary Diploma
5. Agricultural Secondary Diploma

Appointment Level or Grade	Monthly Salary	Promotion Requirements and Increments	Total Value Increments
8	15 LE	Promotion begins after 6 years from initial appointment	Monthly increase each year up to 2 years 1.5 LE
7	20 LE	Promotion after 5 years at Level 8	Monthly increase each year after 5 years 1.5 LE

1. Promotion to grade 2 takes 32 years from initial appointment

2. Salary ceiling LE 120 monthly

1. Primary or preparatory certificate holders as beginning at the 9th level or grade. 2. Beginning monthly at LE 13.5. 3. Yearly increments of LE .75 per month. 4. From to level 8 after 2 years experience. Salary increase to LE 15 monthly. 5. Promotion possible up to grade IV.

Source - Cairo governate, Compiled by Education Directorate of Cairo-West School District.

TABLE 1.6
SALARY SCALE FOR
TEACHERS AND ADMINISTRATORS

TABLE 2

Qualifications:

1. 5 year Teacher Education System beginning after Preparatory School
2. 2 years beyond General Secondary Diploma

Appointment Level or Grade	Monthly Salary	Promotion Requirements and Increments	Total Yearly Increments
8	LE 17	Begins 2 years after initial appointment	Monthly increment LE 1.
7	LE 20	Promotion after 6 years from initial date of appointment	LE 1.5
6	LE 27.5	After 5 years at level 7	LE 1.5
5	LE 30	After 5 years at level 6	LE 2
4	LE 45	After 5 years at level 5	LE 3
3	LE 57	After 5 years at level 4	LE 4
2	LE 73	After 26 years from date of initial appointment. Level 2 is the highest level Educators can obtain without a university degree	LE 5

6. Curriculum:

Syllabi and curricula are prepared with the assistance of friendly foreign experts and local ones. "Preparation of these curricula should take into consideration providing students with basic studies in science and technology, general and specific. The practical side is dealt with in specialized laboratories to enable students at the end to develop details and implementation drawings of specific products and to specify the technological methods of production and development of such products." ^{1/}

The following table shows the number of student hours for different study groups in industrial education. (three- and five-year systems).

Table No. 1.8

Number of Hours for Different Study

Groups in Industrial Education in Egypt

<u>Study Groups</u>	<u>Industrial Secondary (3 Years)</u>	<u>Industrial Technical (5 Years)</u>
<u>General</u>		
No. of Hours	780	1,260
Percentage	19.7	18.27
<u>Principal</u>		
No. of Hours	480	1,140
Percentage	12.12	16.52
<u>Theoretical Technical</u>		
No. of Hours	960	2,460
Percentage	24.24	35.65
<u>Vocational Training</u>		
No. of Hours	1,740	2,040
Percentage	43.94	29.56
<u>Total No. of Hours</u>	<u>3,960</u>	<u>6,900</u>

^{1/} Source: A Report on Industrial Education, MOE, General Administration for Industrial Education, June, 1977.

^{2/} Source: A Report on Industrial Education, MOE, General Administration for Industrial Education, June, 1977.

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1/ Source: A Report on Industrial Education, MOE, General Administration for Industrial Education, June, 1977.

2/ Source: A Report on Industrial Education, MOE, General Administration for Industrial Education, June, 1977.

Table No. 1.9
Program of Study for Industrial Technical Schools
(5-Year System)

Courses	Hours/Week					Remarks
	GRADE					
	10	11	12	13	14	
<u>General</u>						
Arabic Language	3	3	3	3		
Religion	1	1	1			
Foreign Language	4	4	4	2		
History	2					
Geography	2					
Society	1	1	1			
Total General	13	9	9	4		
<u>Principal</u>						
Mathematics	4	4	5	5		
Physics	3	3	3	3		
Chemistry	2	2	2			
Technical Drawing	2					
General Technology	6					
Total Principal	17	9	10	8		
General and Special Technical Materials (Including practical training)	-	13	11	20	32	
Workshop	8	8	8	8	8	
Physical Education	3	3	3			
Total Hours/Week	41	42	41	40	40	
Practical OJT	160	160	240	240		

Source: MOE: Office of Undersecretary for Technical Education, December 1977.

7. Evaluation System: (Exams)

Evaluation of pupils under Law 75/1970 is based on:

- a) Marks on performance during the school year
- b) Marks in the term exams
- c) Marks in the written, oral and practical final exam

8. Textbooks and Educational Aids:

No information available as yet

9. Equipment:

Equipment was provided by the foreign agencies involved in the establishment of the schools, therefore diversification of type of technology is expected. Hence, how far the machines and equipment in the workshop and laboratories coincide with their counterparts in industry is not known. For this particular reason and because of the fact of the shortage in equipment available for these schools compared to the increasing number of students, this item is considered the second bottleneck in technical education and vocational training. A thorough and on-the-spot study on this subject should be done by USAID, something we could not accomplish in this very short period for several reasons.

MOE Plan:

- a) To increase the capacity of the schools of technical education from the present 52.9 percent to 61 percent in 1980
- b) To expand the number of industrial technical schools (five-year system) with the assistance of friendly countries and certain international organizations. Measurements are now under way to:
 - Establish an Industrial Technical School for Petroleum in the City of Suez. One million dollars was allocated to it, granted by the

Late King Faysal of Saudi Arabia.

- Three industrial secondary schools (three-year) are to be converted to industrial technical schools (five-year) in collaboration with the IBRD. Another five technical schools will be established by IBRD.

- Other suggested technical schools (five-year) are:

(1) Conversion of Mustafa Kamel Basha Industrial Secondary School for girls in Alexandria to a five-year technical school in cooperation with GDR (still under consideration)

(2) Establishment of Aswan Technological School with the assistance of USSR in the specializations of:

- Maintenance and repair of automobiles
- Technology of metal cutting
- Refrigeration and air condition
- Electrical Engineering

It is agreed between the three partners that a three-year section will be included in the school to produce skilled workers in the specializations of maintenance and operation of diesel motors and building of fishing boats (still under consideration)

(3) The Republic of Czechoslovakia has expressed its willingness to assist MOE in converting two industrial secondary schools to the five-year systems. The following two schools were selected: Alexandria Decorative School to specialize in the technology of chemicals and Giza Electrical School to specialize in Fine Mechanics of Optometrics and Automation.

Second: Industrial Secondary Education (Grades 10-12)

1. Purpose

The purpose of this school is to prepare skilled labor to participate in developing production in the industrial sectors to achieve the economic objectives.

Table No. 1.10 shows the development of industrial secondary education from 1970/71 to 1976/77. The school year 1970/71 was chosen as the base year being the school year in which industrial technical education (five-year systems) started.

1. Schools:

Table No. 1.10 indicates that the number of industrial secondary schools has increased from 101 schools in 1970/77 to 114 schools in 1976/77 or an average of two schools/year.

According to the report of the General Administration for Industrial Education published in June 1977, the number of industrial schools is as follows:

a) Industrial Secondary for Boys:

93	Formal Industrial Secondary Schools
3	Formal Industrial Secondary Schools - Connected with establishment
2	Sections connected with industrial technical schools (in the process of being liquidated)
98	Total

b) Industrial Secondary for Girls:

20	Formal Industrial Secondary Schools
----	-------------------------------------

The following table shows the industrial secondary schools in Egypt distributed

Table No. 1.10

**Development of Industrial-Secondary Education
(3-Year System)**

1970/71 - 1976/77

		70/71	71/72	72/73	73/74	74/75	75/76	76/77
Number of Schools and Sections	Schools	101	101	105	104	108	108	114
	Sections	15	2	1	2	3	2	2
New Enroll- ments Grade 10	Female	2,299	2,421	2,441	3,008	3,194	3,567	3,737
	Total	25,058	25,137	25,836	27,867	29,165	32,740	34,008
Total No. of Classes	Classes	2,439	2,505	2,583	2,694	2,807	2,800	3,004
Total No. of Students	Males	75,007	76,369	78,287	82,137	83,662	88,076	91,000
	Female	7,128	7,420	7,402	8,655	9,524	10,275	11,000
	Total	82,135	83,789	85,689	90,792	93,186	98,351	102,000
Directors and Principals	Female	15	18	16	15	17	17	20
	Total	100	99	100	102	102	103	111
Deputies	Female	-	-	1	2	8	17	28
	Total	248	280	245	273	316	374	387
Senior Teachers & Teachers	Female	519	554	621	741	769	808	912
	Total	6,300	6,472	7,412	7,667	9,046	10,798	10,798
Other Staff	Female	118	153	155	163	200	262	279
	Total	1,135	1,306	1,348	1,340	1,824	2,357	2,881
Workers	Technical	550	627	715	698	945	1,000	1,004
	Non-Tech.	1,250	1,254	1,523	1,363	1,581	1,500	1,404
	Total	1,800	1,881	2,238	2,061	2,466	2,500	2,408

Source: MES Statistical Division, Development and Flow of General Education Since the Middle of the 20th Century, 1950/51 - 1976/77; Cairo, 1977

over the 21 governorates according to different type of technical specialisation. The total number of schools is 114 schools distributed as follows:

60	Mechanics and Electricity
22	Electronics
22	Automotive
2	Refrigeration and air conditioning
<u>8</u>	Spinning and weaving
114	Total

There are also 16 additional schools for ready-made clothes.

Table No. 1.11

Industrial Secondary Schools^{1/}Distributed According to Type of Specialization

1. ELECTRICITY AND MECHANICS

Governorate	School Location	Governorate	School Location
Cairo	Shoubra Med. Sc. Ghamra Acbat Helwan	Sharkia	Zakazik Bilbeis Darb Minya-El-Kamb Fakous Abu-Named
Alexandria	Alexandria El-Shahid Ismail El-Ras Alrawia ²	Canal	Port Said Ismailia Suez
Beheira	Damanhour Kafr-el-Dawar	Guiza	Guiza Imbaba
Gharbia	Tanta Samaanoud Zifta	Fayoum	Fayoum Sinuris
Kafr El Sheikh	Kafr El Sheikh	Bani-Suef	Bani-Suef El Wasta El Fasha
Monoufia	Shebin-El-Kom Ashmoun Tala Mounouf	Minya	Minya Abu-Kurkeas Bani-Masar Deir-Mouwas
Kalubia	Banha Shoubra El Kheima	Assuit	Assuit Dairut
Dakahlia	Mansoura Sherbin Manzala Meatghamr Agsa Senbelaween	Sohag	Sohag Toma Baliana
Dumiat	Dumiat Farscor	Kena	Kena Nagaa Namadi Igna

^{1/} Source: MOE, Office of Undersecretary for Technical Education

Governorate	School Location
Aswan	Aswan Idfu Kom-Ombo
Kharga	Kharga

2. ELECTRONICS

Cairo	Manial
Alexandria	Moustafa Kamel
Beheira	Damanhour
Gharbia	-
Kafr-El-Sheikh	
Monoufia	Shebin-El-Kom
Kalubia	Benha
Dakahlia	Mansoura
Dumiat	Dumiat
Sharki	Zakasik
Suhag	Suhag
Alexandria	Alex-Mechanical
Gharbia	Tanta-Mechanical
Monoufia	Monouf

Governorate	School Location
Albahr Alahmar (Red Sea)	Ras-Gharab
TOTAL	60 Schools
Canal	Port Said - Suez
Giza	-
Payoum	Payoum
Bani-Suef	Bani-Suef
Minya	Minya
Assuit	Assuit
Kena	-
Aswan	Aswan
Kharga	-
Albahr Alahmar	-
TOTAL	16 Schools
Canal	Ismailia
Giza	Giza
Assuit	Assuit
TOTAL	6 Schools
TOTAL ELECTRONICS	22 Schools

3. AUTOMOTIVE

Governorate	School Location
Cairo	Shoubra
Alexandria	Alexandria
Beheira	Damanhur
Gharbia	Tanta
Kafr-El-Sheikh	Kafr-El-Sheikh
Monoufia	Shebin-El-Kom
Kalubia	Benha Shubra-El-Kheima
Dakahlia	Mansoura A. Manzala
Dumiat	Dumiat
Sharkia	Zakazik

Governorate	School Location
Canal	Port Said Ismailia
Fayoum	Fayoum
Bani-Suef	Bani-Suef
Minya	Minya
Assuit	Assuit
Sohag	Sohag
Kena	Kena
Aswan	Aswan
Gharqa	Gharqa
TOTAL	22 Schools

4. AIR CONDITIONING & REFRIGERATION

Alexandria	Alexandria

Aswan	Aswan
TOTAL	2 Schools

5. SPINNING AND WEAVING

Cairo	Shoubra
Alexandria	Alexandria

Gharbia	Tanta
	Mahala El Kobra

5. SPINNING & WEAVING (CONT.)

Governorate	School Location
Kalubia	El Kanater El Khairia
Dakahlia	Meet-Ghamr

Governorate	School Location
Dumiat	Dumiat
Kena	Kena
TOTAL	8 Schools

6. READY-MADE CLOTHES

Cairo	ElSayda-Zewah
Alexandria	Moustafa Kamel
Beheira	Damenhour
Gharbia	Tanta
Monoufia	Shebin-El-Kom
Kalubia	Banha
Dakahlia	Mansoura
Cairo	Ghamra

Dumiat	Dumiat
Sharkia	Zakazik
Guiza	Guiza
Fayoum	Fayoum
Bani-Suef	Bani-Suef
Minya	Minya
Assuit	Assuit
TOTAL	14 Schools
Alexandria	Alexandria
TOTAL	2 Schools
TOTAL READY-MADE CLOTHES	16 Schools

2. Admission Requirements

Admission requirements for both sexes according to Law No. 75/1975 are:

- a) To hold the general preparatory certificate
- b) Should not be more than 18 years old on October 1
- c) To pass the physical test

Exceptions are:

- a) The Minister of Education could issue a decree regulating the exemption from the age requirement, whenever there are vacancies
- b) Without abiding by these requirements, sons and brothers of those who died in the war or during the performance of their duties could be admitted
- c) A percentage not exceeding 5 percent of total enrollments in the governorate could be accepted from the sons of MOE employees or those who worked before for MOE more than 10 years.

It has been noticed that most of the applicants for industrial secondary education stem from the ranks of those who gained the lowest marks in the general preparatory final exam.

Students are distributed over various branches and specializations according to their total marks rather than their activities and preparedness.

3. Specializations: (Trades)

Has nine branches, eight for males including a branch for the Ministry of Transportation and another for the Iron and Steel Factory, and one branch for females. Specialization in each branch is shown in Table No. 1.12.

Table No. 12 shows expansion and/or revival in specializations in 1976-1978.

Table No. 1.12

Expansion and/or Revival of Specializations

During the School Year 1976/77 and 1977/78 in the Industrial Schools

Branch	Specialization	No. of Schools
Mechanics	Turning	3
	Welding	3
	Machine Operation	1
	Blacksmithing	1
Marine	Shipbuilding	1
Electrical	Electronics	3
	Electrical tools and equipment, repair and maintenance of electrical equipment	2
Automobile	Auto Mechanics	1
	Auto Electricity	1
Construction	General	1
	Sanitary	1
	Woodwork	3
	Building and Whitewashing	16
	Stonecutting	1
	Cabinet Maker	1
	Decoration and Advertisement	2
	Metal Furniture	1
	Wood Carving	1
Textile	Weaving	1
	Ready-made Clothes	1

Source: MOE, Office of the Undersecretary for Technical Education

4. Pupils

The following table shows the number of students distributed over the three grades of industrial secondary education in 1976/77.

Table No. 1.13

	GRADE			Total
	10	11	12	
Number of Male Students	32,006	28,320	29,864	90,190
Number of Female Students	3,818	3,507	3,540	10,865

Source: MOE, General Administration for Industrial Education. A Report on Industrial Education, 1977.

It is apparent from the table that the ratio of female/male students is 1:9. Table No. 1.1 shows that this ratio did not change substantially since 1970/71.

Table No. 1.14 shows the number of enrollments and graduates (male and female) in the different branches and specializations in secondary technical education during the period 1973/74 - 1976/77.

The shortage in certain specializations is quite obvious:

1. In the branch of mechanics:

- a) Serious shortage in all kinds of maintenance (general, fine equipment and mechanical equipment maintenance), especially in the maintenance of fine equipment (only one graduated in 1976/77) and in general maintenance

(only 11 graduated in 1976/77)

- b) Serious shortage in blacksmithing. Only two graduated during the period of four years 1973/74 - 1976/77, and one in the last three years.
- c) Shortage is also noticed in the field of shipbuilding and marine fishery.

2. In the Branch of Electricity:

- a) Serious shortage in skilled workers specialized in electrical networks and installation (no graduates in 1976/77) and electrical machines and stations (only 2 graduated in 1976/77)
- b) Serious shortage in TV electronics (only 17 graduated in 1976/77)
- c) Serious shortage in refrigeration and airconditioning skills. Only 124 skilled workers have graduated in the last four years or an average of 81/year. If distributed over the 21 governorates, the share of each governorate would be only 4/year. There are only two industrial schools for refrigeration and airconditioning in Egypt, one in Alexandria, the other in Aswan.

3. In the Branch of Automotive Engineering:

- a) Serious shortage in auto electricity. The output in the last four years is one skilled worker per three governorates.
- b) Shortage in auto mechanics

4. In the Construction Branch:

Main shortage in the skills of building, whitewashing and serious shortage in stone-cutting skills. Only seven stone cutters have graduated in the last four years, none in 1976/77.

5. In the Branch of Decoration:

Shortage in leather works and printing

6. In the Branch of Transport:

Serious shortage in all specializations, construction of buildings and bridges, railway engineering and block system.

7. In the Branch of Metals:

Serious shortage in all skills.

Table 1.14.1

ENROLLMENTS AND GRADUATES IN DIFFERENT SPECIALIZATIONS IN INDUSTRIAL EDUCATION:

1973/74 - 1976/77

(Under Law No. 75/1970)

1. Male Students

BRANCH	SPECIALIZATION	ENROLLMENT				Total Enrollment	GRADUATES				Total Graduates
		73/74	74/75	75/76	76/77		73/74	74/75	75/76	76/77	
MECHANICS	Filing	27,227	26,814	27,509	28,115	109,665	7,093	6,435	7,859	7,439	28,826
	Metal Turning	8,701	8,606	9,018	9,358	35,683	2,596	2,199	2,540	2,529	9,864
	Machine Operation	1,371	1,376	1,503	1,544	5,794	376	353	414	425	1,568
	Welding (Gas and Electr)	2,470	2,610	2,822	1,970	9,872	648	562	754	811	2,775
	Forging	12	30	52	31	127	3	2	17	5	27
	Founding	789	816	866	780	3,251	203	183	291	215	892
	Model Carpentry	502	456	501	476	1,935	113	83	142	117	455
	Keep-Up and Maintenance of Fine Equipment	102	59	30	1	192	36	29	29	1	95
	Keep-Up and Maintenance of Mechanical Equipment	-	-	164	319	483	-	-	45	136	181
	General Maintenance	99	87	150	11	347	28	21	19	11	79
	Plastics	123	111	132	92	464	25	30	43	15	113
	Blacksmithing	2	-	-	-	2	2	-	-	-	2
	Mechanical Motors	34	-	-	-	34	26	-	-	-	26
	Total		41,432	40,867	42,753	42,891	167,849	11,149	9,897	12,153	11,704

Table 1.14.2
ENROLLMENTS AND GRADUATES IN DIFFERENT SPECIALIZATIONS IN INDUSTRIAL EDUCATION

1973/74 - 1976/77

(Under Law No. 75/1970)

1. Male Students

BRANCH	SPECIALIZATION	ENROLLMENT				Total Enrollment	GRADUATES				Total Graduates
		73/74	74/75	75/76	76/77		73/74	74/75	75/76	76/77	
MARINE	Ship Building	143	52	54	51	300	11	16	22	12	61
	Marine Motors	-	187	210	222	619	-	32	64	62	158
	Marine Fishery	76	84	90	89	339	21	23	24	18	86
	TOTAL	219	323	354	362	1,258	32	71	110	92	305
ELECTRICITY	Electrical Tools and Equipment	13,847	14,669	15,725	16,751	60,992	3,669	3,883	3,999	4,888	16,439
	Keep-Up and Maintenance	-	273	292	261	826	-	37	42	32	111
	Electrical Networks and Installations	219	139	39	-	397	39	28	38	-	105
	Electrical Machines and Stations	109	50	35	2	196	32	39	32	2	105
	Electronics (Radio)	441	190	406	567	1,604	196	128	184	129	637
	Electronics (TV)	-	379	176	17	572	-	47	37	17	101
	Refrigeration and Air Conditioning	291	327	384	415	1,422	80	55	85	104	324
	TOTAL	14,909	16,027	17,057	18,016	66,009	4,016	4,217	4,417	5,172	17,823

Table 1.14.3

ENROLLMENTS AND GRADUATES IN DIFFERENT SPECIALIZATIONS IN INDUSTRIAL EDUCATION

1973/74 - 1976/77

(Under Law No. 75/1970)

1. Male Students

BRANCH	SPECIALIZATION	ENROLLMENT				Total Enrollment	GRADUATES				Total Graduates
		73/74	74/75	75/76	76/77		73/74	74/75	75/76	76/77	
AUTOMOTIVE	Auto Mechanics	4,279	4,397	4,502	4,596	17,774	1,203	1,277	1,203	1,312	4,995
	Auto Electricity	-	-	-	167	167	-	-	-	30	30
	Tractors and Agricultural Machines	1,631	1,652	1,726	1,805	6,814	444	376	531	472	1,823
	TOTAL	5,910	6,049	6,228	6,568	24,755	1,647	1,653	1,734	1,814	6,848
CONSTRUCTION	General Construction	1,944	2,231	2,642	2,918	9,735	580	514	525	820	2,439
	Sanitary Work	1,058	1,129	1,340	1,448	4,975	236	261	263	326	1,091
	Reinforced Concrete	251	93	200	445	990	151	23	51	120	345
	Carpentry	919	1,116	1,271	1,404	4,710	226	204	286	238	954
	Building	356	332	193	225	1,106	235	239	29	49	552
	White-Washing	7	-	99	110	216	7	-	23	27	57
	Stone Cutting	8	5	18	34	65	3	3	1	-	7
	TOTAL	4,543	4,907	5,763	6,584	21,797	1,438	1,244	1,183	1,580	5,445

Source: Ministry of Pedagogy and Education (MOE). Office of Undersecretary of Technical Education

Table 1.14.5

ENROLLMENTS AND GRADUATES IN DIFFERENT SPECIALIZATIONS IN INDUSTRIAL EDUCATION

1973/74 - 1976/77

(Under Law No. 75/1970)

1. Male Students

BRANCH	SPECIALIZATION	ENROLLMENT				Total Enrollment	GRADUATES				Total Graduates
		73/74	74/75	75/76	76/77		73/74	74/75	75/76	76/77	
TEXTILE	Weaving	5,315	5,247	4,868	5,201	20,631	1,219	1,259	1,606	1,297	5,381
	Dyeing and Print of Fabrics	464	496	461	532	1,953	108	152	161	127	548
	Carpets and Rugs	247	298	676	373	1,594	50	63	108	72	293
	Ready-made Clothing and Tailoring	-	111	118	115	364	-	40	40	44	124
	Cotton Spinning	858	780	754	827	3,219	242	226	170	23	661
	Tailors	114	-	-	-	114	18	-	-	-	18
	TOTAL	6,998	6,954	6,877	7,048	27,877	1,637	1,740	2,085	1,563	7,025
TRANSPORT	Construction of Buildings and Bridges	-	74	85	-	239	-	6	28	28	62
	Railway Engineering	-	64	74	-	206	-	2	23	26	51
	Block System	-	55	70	-	164	-	3	15	27	35
	TOTAL	-	193	229	-	629	-	11	66	71	148

Source: Ministry of Pedagogy and Education (MPE). Office of Undersecretary of Technical Education

Table 1.14.6

ENROLLMENTS AND GRADUATES IN DIFFERENT SPECIALIZATIONS IN INDUSTRIAL EDUCATION

1973/74 - 1976/77

(Under Law No. 75/1970)

1. Male Students

BRANCH	SPECIALIZATION	ENROLLMENT				Total Enroll- ment	GRADUATES				Total Gradu- ates	
		73/74	74/75	75/76	76/77		73/74	74/75	75/76	76/77		
METALS	Ovens	-	-	-	-	-	-	-	-	15	15	
	Transformers	-	-	-	-	-	-	-	-	12	12	
	Metal Treatment	-	-	-	342	342	-	-	-	11	11	
	Precision and Control Equipment	-	-	-	-	-	-	-	-	27	27	
	Metal Coefficient	-	-	-	-	-	-	-	-	14	14	
	TOTAL		-	-	-	342	342	-	-	-	79	79
	TOTAL OF ALL TRADES	81,639	83,472	87,780	91,152	344,043	21,803	21,026	23,941	24,544	91,314	

Source: Ministry of Pedagogy and Education (MOE). Office of Undersecretary of Technical Education

5. Teachers:

There are three types of teachers in secondary industrial schools:

- a) Teachers of general and principal education. These are recruited from teachers of general secondary education and trained through the educational directorates.
- b) Teachers of scientific technical material who are graduates of high industrial institutes and colleges of engineering, applied arts and fine arts.
- c) Teachers of practical technical material (workshop teachers) are graduates of "extended studies" and prospect graduates of Technical Teacher Training Institutes (TTTI) at Kabba, Cairo.

The total number of teachers in 1976/77 was 10,755 teachers. The lack of workshop teachers in secondary industrial education is one of the major problems in industrial education.

Based on 1974 figures the estimated number of technical teachers in these schools is about 3,500 (in the fields of mechanics, automobile, tractors, electricity, wireless and refrigeration). Also an additional 550 technical teachers are required to be trained to fill existing vacancies, especially in the mechanical, electrical and automotive engineering fields.

Pupil/teacher ratio is 1:10. Additional teacher requirements are shown in Table 13, page 46.

6. Curriculum:

Program of study and curricula of this level of education is prepared by a committee including experts of industrial education, representatives from industrial establishments, and deans and professors from the universities and higher institutes. The last development in programs and curricula was completed and implemented in the school year 1972/73.

Table No. shows the number of hours of study for the different study groups in secondary technical education.

The following tables show the program of study in secondary industrial schools:

7. Evaluation Systems:

According to Law No. 75/1970 evaluation is based upon:

- a) Marks on performance during the school year
- b) Marks on term exams
- c) Marks on written, oral and practical final exams

The rates regarding the evaluation system were included in the Ministerial Issue No. 231/1973.

8. Textbooks and Educational Aids:

a) Textbooks:

- (1) Textbooks for general and principal courses are available in sufficient quantities, and are good in content.

Table No. 1.15

Program of Study
In Secondary Industrial Schools^{1/}

Courses	WEEKLY HOURS		
	Grade 10	Grade 11	Grade 12
<u>General</u>			
Religion	1	1	1
Arabic Language	2	2	2
Foreign Language	2	2	2
History	1	-	-
Geography	1	-	-
National Socializa- tion	1	1	1
Industrial Psychology	1	-	-
<u>Principal</u>			
Mathematics	4	2	2
Physics	1	1	1
Chemistry	1	1	1
Commercial Dealings and Work System	-	1	-
Profession Hygiene, First Aid and Indus- trial Security	-	-	1
Vocational Training	26	31	33
Physical Education	2	2	1
TOTAL	44	44	44

^{1/} Source: MOE, Office of the Undersecretary for Technical Education, 1977

- (2) Out of the 300 technical courses, textbooks are available only for 51 courses.
- (3) The general administration for industrial education has proposed a "Teacher's Guide" for vocational training in the trades of filing, metal turning, electricity, sanitary work, and cabinet making.

b) Educational Aids:

Available educational aids do not satisfy the needs.

They are:

- (1) Illustrative boards prepared by the Bureau of Drawings and Production of the General Administration of Industrial Education.
- (2) Complete models or sections of machines
- (3) Old models of motors, available only in old schools
- (4) Movie projectors and slide projectors in certain schools plus some films for certain industrial material. They are usually

stored in the section of education aids at the educational directorate and are taken by the school on a loan basis.

9. Libraries:

The libraries of secondary industrial schools are poor in textbooks, magazines and technical references needed for the students and teaching staff to keep in pace with new developments in technology and industry. The reason is simple -- lack of funds.

10. Equipments:

Capital expenditures allocated for equipment for secondary technical education developed in the last six years are as follows:

70/71	LE 400,000
72/73	LE 883,000
73/74	LE 350,000
76/77	LE 2,436,100

Within the limits of these amounts, the General Administration for Equipment within MOE has provided the schools with the necessary new machines and tools and equipment. In most cases this equipment does not match with its counterparts in the production sites, which led the MOE authorities to train students in the factories and establishments, a hard task encountered by many obstacles including the reluctance on the part of the industrial firms to

accept those trainees, on grounds that their presence does affect the quantity and quality of production.

Problems Facing Industrial Education

1. Cost/pupil is very low compared with other Arab countries. Cost/pupil in Egypt is 45 percent and 37 percent is the cost/pupil in Lebanon and ^{1/} Iraq respectively.
2. The negative attitude of holders of general preparatory certificate towards industrial education.
3. Absence of vocational guidance.
4. Opportunities for industrial secondary school graduates to continue their higher education is very limited.
5. Lack of teachers of theoretical material because of the refusal of engineers to participate in the teaching profession.
6. Measurements taken by the local governments contradictory to the plans of MOE and without even consulting the latter, such as:
 - a) The conversion of industrial schools to colleges
 - b) Addition of new specializations to certain industrial schools, no matter whether it is a necessity or not and without consulting MOE and without providing the necessary teaching staff and equipment.
 - c) Pupil/class ratio is higher than the real capacity of the class.

Third: Industrial Secondary Schools, Extended Studies

Since the establishment of industrial secondary schools, it recruited its need of workshop teachers from the ranks of the graduates of these schools.

^{1/} Source: MOE, General Administration of Industrial Education, A Report on Industrial Education, 1977.

In 1970/71 extended studies (Grades 13 and 14) were started for graduates of industrial secondary school to prepare them as workshop teachers for industrial secondary schools in the specializations that suffered from shortage in the teaching staff (filing, metal turning, machine operation, automobiles, electricity and telecommunications). Period of study is two years.

In 1974/75, admissions policy in these schools was amended to allow workshop teachers in industrial secondary schools and new graduates and students who have finished the mandatory military period to join these extended studies.

In 1974/75 Cairo Secondary Mechanical School in Kabba was converted to a technical teacher training institute (TTTI) with the assistance of UNESCO to prepare workshop teachers (male and female) in the branches of mechanical, electrical, electronic, automotive and fine mechanical engineering.

Extended studies for graduates of the secondary industrial schools are carried in the three main big cities in Egypt -- Cairo, Alexandria and Assuit. Studies take place in the schools shown in the following table:

Table No. 1.16

Schools and Types of Specializations
in Secondary Industrial Schools, Extended Studies

<u>Location</u>	<u>School</u>	<u>Specialization</u>
Cairo	Dar El Salam Kouba	Architecture Electrical Mechanics, Electronics and Automotive
	Shoubra Ahmed Maher Industrial	Textile Metal Furniture, Decorative

(Continued)

Location (Continued)	School	Specialization
Alexandria	Shatbi Decorative	Decorative and Architectural
	Mechanical Industries	Mechanical and Electrical
Assuit	Assuit Secondary Industrial	Electrical, Electronics and Automotive

The following table shows the development of schools and enrollments in "Extended Studies" (Grades 13 and 14). The total number of students admitted in 1976/77 was 418 students, only 4.1 percent of these were girls.

Table No. 1.17

Development of Industrial - Secondary Education
(Extended Studies)

1970/71 - 1976/77

		70/71	71/72	72/73	73/74	74/75	75/76	76/77
Number of Schools and Sections	Schools	-	-	-	-	-	-	-
	Sections	3	3	3	3	4	4	4
New Enrollment (Grade 10)	F	-	-	19	13	13	-	17
	Total	598	376	362	368	449	438	418
Total No. of Classes	Classes	21	29	28	22	29	35	37
Total Number of Students	M	617	918	876	742	877	891	913
	F	6	-	19	32	33	14	17
	Total	623	918	895	774	910	905	930

Source: MOE Statistical Division, Development and Flow of General Education Since the Middle of the 20th Century, 1950/51 - 1976/77; Cairo, 1977.

ANNEX II

FORMAL AGRICULTURAL EDUCATION

1. Objective

To prepare skilled workers and technicians in different agricultural fields.

2. Structure of the System

Following the general preparatory stage, there are two levels of agricultural education:

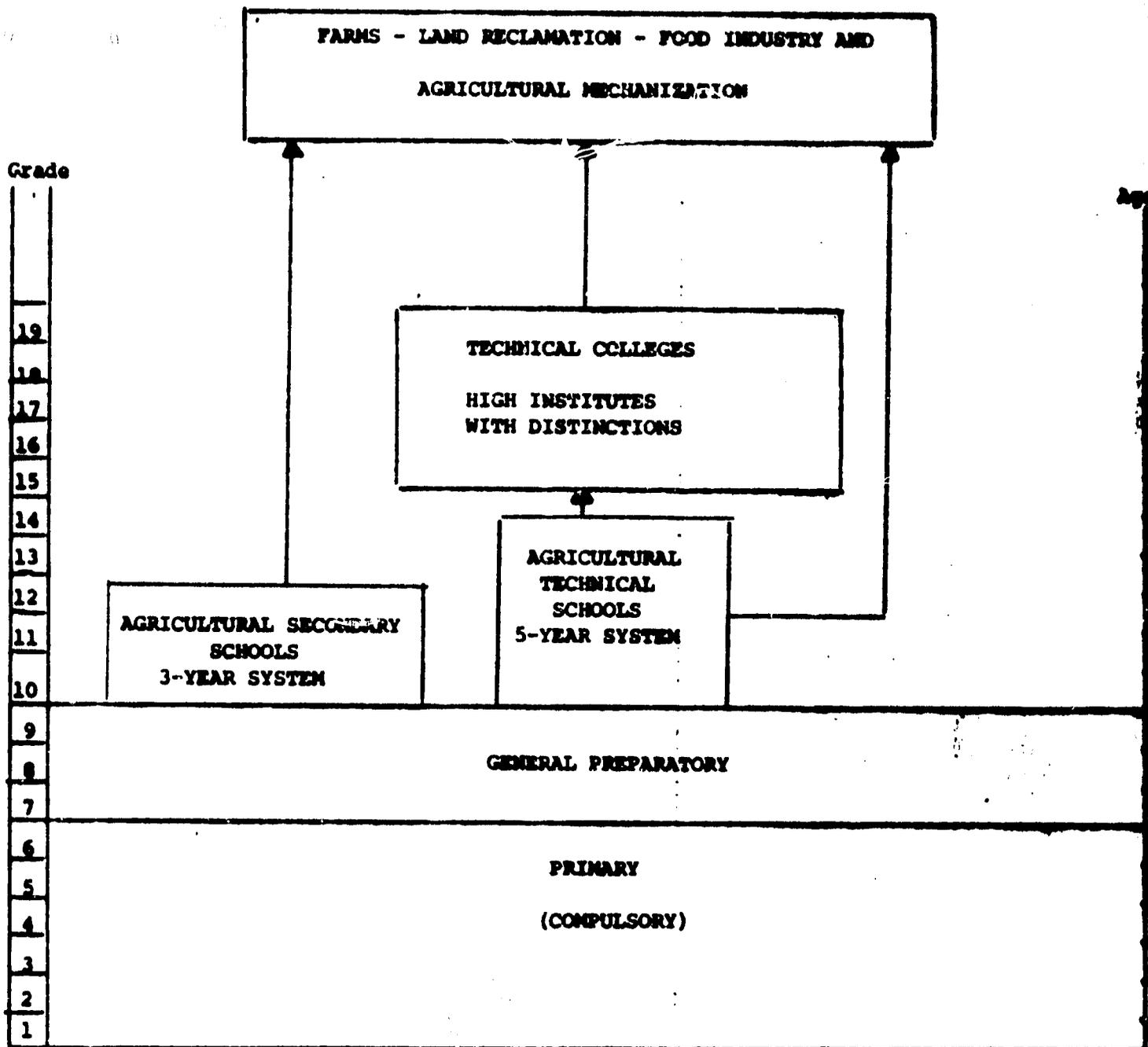
- a) The level of agricultural secondary schools (3-year system), grades (10-12), to prepare skilled workers.
- b) The level of agricultural technical education (5-year system), grades (10-14), to prepare technicians.

The following chart illustrates the structure of the system.

Chart 2

FORMAL

AGRICULTURAL EDUCATION IN EGYPT



3. Schools

The number of agricultural secondary schools (3-year system) is 55 schools distributed over the governorates of the Arab Republic of Egypt. (See table no. 2.1)

No agricultural technical schools are operating, but two schools will be established under the terms of agreement with IBRD:

- Conversion of the agricultural secondary school in Musturud to an agricultural technical school to prepare agricultural technicians specialized in Food Processing.
- An agricultural technical school in the governorate of Ismailia to produce technicians specialized in land reclamation and agricultural machines.

4. Admission Requirement

The same as in industrial secondary education.

5. Specialization

These are general agricultural education, grapes and mango, sugar cane, vegetables, animal products, fruits and forests, and plant products.

6. Pupils

The following table shows the quantitative growth in agricultural education since 1951-1952.

Table 2.1

**Comparative Statistics on the
Quantitative Growth in Agricultural
Secondary Education**

school year	number of schools & sections	number of classes	enrollment	number of graduates
1951/52	11	155	4,159	323
1955/56	12	141	3,735	610
1960/61	21	338	10,413	2,657
1965/66	47	557	17,415	4,176
1970/71	51	969	31,904	8,054
1975/76	55	1,127	39,518	10,613
1976/77	55	1,217	41,745	11,932

Total enrollments in agricultural secondary education has increased in the last seven years from 31,904 students in 1970/71 to 41,803 in 1976/77, or an average annual growth rate of 5.2 percent.

Source: MOE, General Administration for Agricultural Education, A Report on Agricultural Education.

Girls were not admitted to agricultural secondary school until 1975/76. In this year, 616 girls were admitted; the number increased to 947 in 1976/77, or 2.3 percent of the total enrollments in agricultural education.

The following table shows enrollment and graduates by type of specialization in formal agricultural education.

Cost/student is about L.E. 100.00

7. Teachers

Teachers are recruited from:

- Graduates of Faculties of Agriculture in the universities.
- Graduates of Agricultural College in Mushtuhur (Pedagogical).

The total number of teachers in 1976/77 was 3,592 senior teachers and teachers. Pupil/teacher ratio was 12.

8. Curriculum

According to the report on agricultural education of the General Administration of Agricultural Education, the program of study includes:

a) General Courses

Constitutes 30.7 percent of the total hours of the program.

b) Basic Sciences

Constitutes 9.45 percent of the total hours of the program.

Table 2.2

Specializations in Agricultural Education

Number of Students and Graduates

1973/74 - 1976/77

(Law No. 75/1970)

Branch	ENROLLMENTS				Enroll.	GRADUATES				Grad.
	73/74	74/75	75/76	76/77		73/74	74/75	75/76	76/77	
General	14,208	14,895	14,582	14,622	58,307	9,317	10,547	10,613	11,932	42,409
Grapes & Mango	32	36	26	-	94	32	37	26	-	94
Sugar Cane	62	62	86	-	210	62	59	86	-	207
Vegetables	50	57	70	-	177	50	57	70	-	177
Animal Prods.	23	36	29	-	88	23	36	29	-	88
Fruits and Forests	27	37	37	-	71	27	36	37	-	70
Plant Prods.	28	58	29	-	115	28	57	29	-	119
TOTAL					59,062					43,159

Source: ICR: Institute for Technical Education

c) Theoretical Technical Courses

Constitutes 24.41 percent of the total hours of the program.

d) Practical Training

Constitutes 35.44 percent of the total hours.

The following table shows the program of study in agricultural secondary schools.

Table No. 2.3

Program of Study in Agricultural
Secondary Schools ^{1/}

Courses	Grade 10		Grade 11		Grade 12	
	T ^{2/}	P	T	P	T	P
Religion	2	-	2	-	2	-
Arabic Language	3	-	3	-	2	-
Foreign Language	3	-	2	-	2	-
Social Studies	2	-	-	-	-	-
Psychology	-	-	1	-	-	-
Agriculture	2	6	2	3	2	2
Horticulture	2	5	2	4	2	2
Botany	1	1	1/2	1	-	-
Zoology	1	1	-	-	-	-
Antimology	-	-	1/2	1	-	-
Physics and Ag-Chemistry	2	2	1	2	-	-
Husbandry	-	-	1	2	1	2
Animal Hygiene	-	-	1	1	1	1
Food Productries	-	-	-	-	2	3
Milk Products	-	-	-	-	2	3
Plant Disease	-	-	-	-	1	1
Diseases of Insects	-	-	-	-	1	2
Honey Bee Breeding	-	-	-	-	1	1
Agricultural Economy	-	-	2	-	2	-
Health Care Engineering and First Aid	1	3	2	2	-	-
Political Socialization	1	-	1	-	1	-
Military Education	-	3	-	3	-	3
Physical Education	-	1	-	1	-	1
TOTAL	21	22	21	20	22	21
	43		41		43	

^{1/} Source: MOE, Office of the Undersecretary for Technical Education.
^{2/} (T) stands Theoretical, (P) for Practical.

9. Evaluation System

The same as in industrial secondary schools.

10. Agricultural Education and Production

The physical facilities and human resources of the agricultural secondary schools are utilized for producing crops, vegetables, fruits, seeds, animal husbandry, breeding of honey bees, etc. Products are distributed locally by the schools themselves at prices lower than that of the market.

The wages of students and other staff participating in this project - "Project of Continuous Capital" - represent 50 percent of the profits. Another 2 percent of the profits is allocated for student services.

The project of continuous capital started in the agricultural schools - 1960.

11. Problems Facing Agricultural Education

- a) Lack of information about the manpower needed in different specializations.
- b) Negative attitude of preparatory level graduates with high grades in joining agricultural education.
- c) Seizure of the farms by the governorates.
- d) Reluctance on part of the agricultural establishments and factories in training the students.

ANNEX III

FORMAL COMMERCIAL EDUCATION

1. Objective

To prepare skilled workers in the fields of specialization.

2. Structure of the System

The following organization chart illustrates the structure of formal commercial education as follows:

a) Commercial Secondary Schools (3-year system)

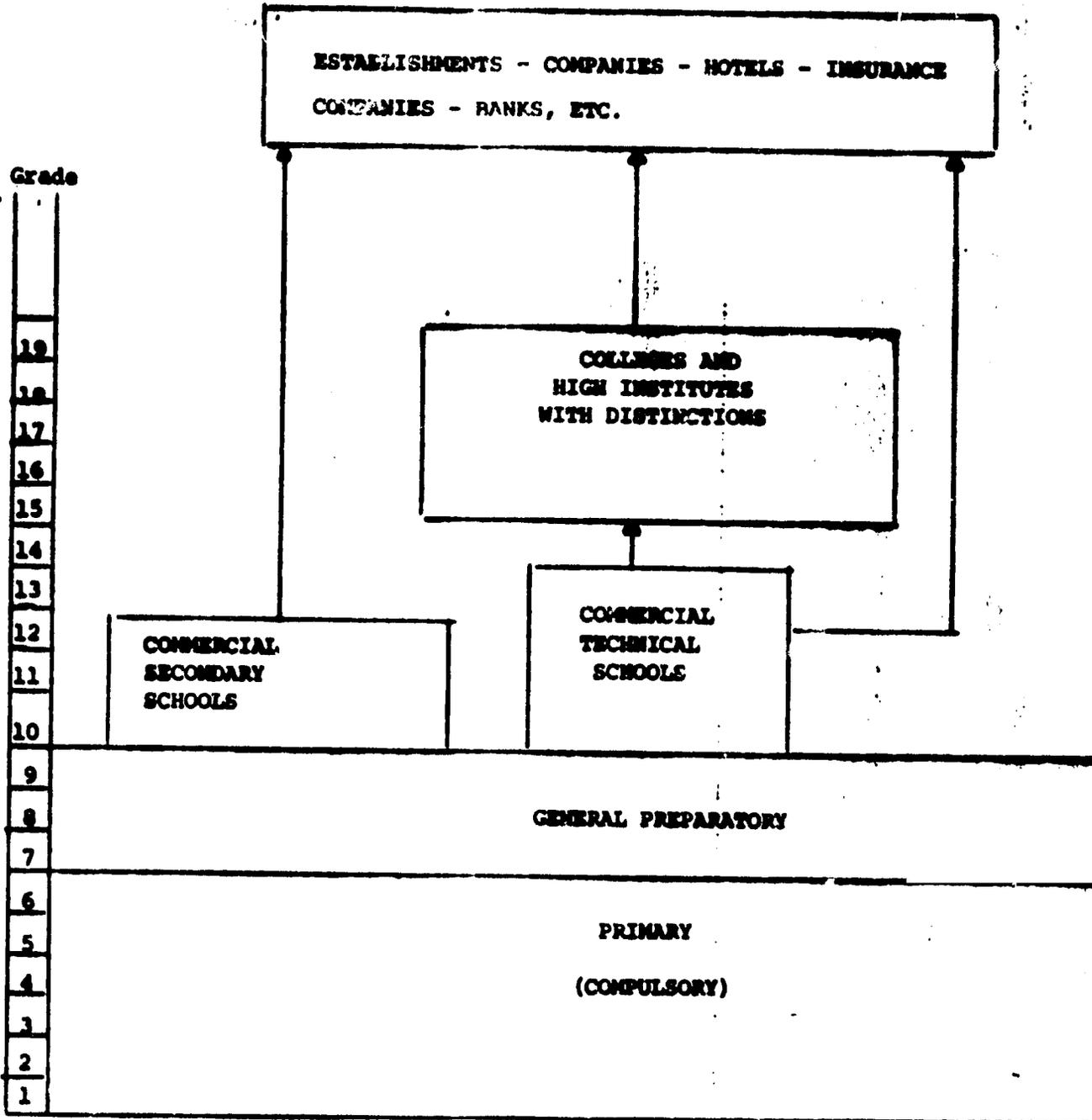
Following the general preparatory level, grades 10-12, to prepare skilled workers in the specialization of salesmanship, legal affairs, hotel management, commercial insurance, and purchase and storage.

b) Commercial Technical Schools (5-year system)

In 1970, the law No. 75/1970 of technical education was issued. According to this law, commercial technical schools were to be established. This initiated extensive studies as to the real need for such schools. No decision was taken and no technical schools were established until 1975. In February 8, 1976, according to an agreement between MOE, MOSA&I, and the Central Bank of Egypt, a ministerial decree was issued (issue No. 156/76) to establish 3 pilot commercial

CHART 3.2

FORMAL
COMMERCIAL EDUCATION IN EGYPT



technical schools (5-year system) to prepare commercial technicians specialized in social insurance and bank affairs in the governorates of Cairo, Gharbia, and Assiut.

3. Schools

The total number of commercial secondary schools is 169 schools divided into:

- a) Formal and assisted commercial secondary schools: (156 schools) in 1976/77.
- b) Private commercial schools: with fees, under the supervision of MOE, 13 in 1976/77.

In addition to the schools mentioned above, the Arab Socialist Union (ASU), the political ruling party in Egypt, has established the so-called "Classes for Services" (130 schools and 1,060 classes in 1971/72) resulting in a tremendous increase in the number of commercial schools and enrollments, intensifying as such the problem of commercial education and the surplus of labor.

The following table shows the development of commercial schools from 1971 - 1974.

Table No. 3.1
Development of Formal Commercial
Secondary Education, and
Services Sections Affiliated
with Arab - Socialist - Union
1971/72 - 1974/75 1/

School Year	Official Schools & Sections Connected With The Gen. Secondary Schools			Services Sections "Socialist Union"		
	Schools	Classes	Enrollment	Schools	Classes	Enrollment
1971/72	154	3,695	126,914	130	1,060	39,514
1973/74	180	4,374	149,450	130	1,110	38,100
1974/75	199	4,799	162,780	130	1,310	45,720

Source: Abdel-Karim, Mohamed El-Saeed, Former General Director of Commercial Education. Commercial Education in Egypt, 1975.

Studies are underway to establish:

A school for hotel management and tourism in Cairo, according to the request of Ministry of Tourism (MOT).

- A branch for commercial insurance affiliated with the Ministry of Economics (MOEC), according to the request of the insurance companies.

- A branch for store-keepers, to fulfill the request of the Ministry of Commerce (MOC).
- Branches for salesmen, store-keepers, legal affairs in governorates of Alexandria, Kena and Subag.

4. Admission Requirements

The same as in industrial and agricultural education.

5. Specializations

a) The 3-year system

- General
- Salesmanship
- Legal Affairs
- Hotel Management
- Commercial Insurance
- Purchases and Storage

b) The 5-year system

- Banks
- Social Insurance
- Commercial Insurance

6. Pupils

a) Enrollments

Total enrollments in commercial secondary education is over 60 percent of the total enrollments in formal technical education. The number of students has increased from 172,264 in 1971/72 to 258,931 (not

including the number of students in the schools of Arab Socialist Union, 45,720 in 1974/75).

The average annual growth rate for enrollment in commercial education in the last five years is 9.9 percent, compared to 5.3 percent and 5.2 percent in industrial and agricultural education respectively.

The average student/class is 34.

b) Graduates

The following table shows the enrollment and graduates in the different branches of commercial secondary education during the period 1973/74 - 1976/77.

The total number of graduates in commercial education is 223,085 in 1976/77, compared with 101,990 graduates from industrial secondary education in the same year (about two-fold), and 43,159 graduates from agricultural education (5.5-fold).

7. Teachers

One of the problems facing commercial education is that university graduates of the commercial colleges do not accept the positions to which they have been assigned, others quit commercial education and prefer to work in other establishments and ministries. The following table shows the number of teachers who have turned down the assignment positions from 1970 - 1973.

Table 3.2

Specialization in Commercial Education

Enrollments and Graduates

1973/74 - 1976/77

(Law No. 75/1970)

Branch	ENROLLMENTS				Total Enroll.	GRADUATES				Total Grad.
	73/74	74/75	75/76	76/77		73/74	74/75	75/76	76/77	
General	139,451	163,209	173,598	188,317	664,575	47,517	53,828	53,381	67,846	222,572
Commercial Dealings (Art of Selling)	188	380	560	578	1,706	-	-	186	173	359
Legal Affairs	-	192	384	511	1,087	-	-	-	154	154
Total					667,368					223,085

Source: NOE, Undersecretary of Technical Assistance

**Number and Percentage of Teachers Rejecting Their Assignment
in Commercial Schools (1970/71 - 1973/74)**

	New Assignment	Not Accepting the Position	
1970/71	791	372	47%
1971/72	506	422	83%
1972/73	620	87	14%
1973/74	787	341	43%

Source: Abdel-Karim, Mohamed El-Saeed, Former General Director of Commercial Education. Problems of Commercial Education.

The total number of senior teachers and teachers has increased from 5,944 in 1971/72 to 10,341 in 1976/77, or almost doubled in the period of 5 years.

The teacher/student ratio in 1976/77 was 1:25.

The General Administration for commercial education is organizing training programs for the teachers of commercial education to provide them with new development in their fields of specialization.

8. Curriculum

a) The 3-Year System

The following tables show the program of studies in different branches of commercial education.

Table No. 3.4
Program of Study
in Commercial Secondary
Schools (3-Year System), Grades 10-12 ^{1/}

Courses	G R A D E S		
	10	11	12
1. <u>"General" Commercial Schools</u>			
General	17	17	15
Technical	9	11	15
Vocational Training	3	6	5
Basic Sciences	7	3	2
Total	36	37	37
2. <u>Salesmanship Schools</u>			
General	18	14	13
Technical	-	9	9
Basic Sciences	16	11	-
Merchandise	-	-	6
Physical Education	2	2	2
Visits and Excursions	-	-	6
Total	36	36	36
3. <u>Legal Affairs</u>			
General	20	18	16
Technical	3	8	10
Basic Sciences	12	10	10
Physical Education	1	1	1
Total	37	37	36

^{1/} Source: MOE, Office of the Undersecretary for Technical Education.

Program of Study in Commercial Secondary Schools
(3-Year System) Grades 10-12 (Continued)

4. Hotel

Courses	GRADE								
	10	11				12			
General	21	19				20			
		Kitchen Branch	Restaurant Branch	Front Desk	Supervision	Kitchen	Restaurant	Front Desk	Supervision
Hotel Science	8	10	10	10	10	10	10	10	10
Technical and Assisting Courses	7	7	7	7	7	6	6	6	6
Physical Education	2	2	2	2	2	2	2	2	2
Total	38	38	38	38	38	38	38	38	38

5. Commercial Insurance

Courses	GRADE		
	10	11	12
General	18	14	13
Technical and Behavioral	-	9	9
Basic Sciences	16	11	6
Physical Education	2	2	2
Visits	-	-	6
Total	36	36	36

Program of Study in Commercial Secondary Schools
(3-Year System) Grades 10-12 (Continued)

6. Purchasing and Storage

Courses	GRADE		
	10	11	12
General	18	14	13
Technical	-	9	15
Basic	16	11	-
Physical Education	2	2	2
Visits	-	-	6
Total	36	36	36

b) The 5-Year System

The following table shows the program of study to be undertaken in the commercial technical schools (5 years), grades 10-14.

Program of Study in Commercial Technical
School (5-Year System), Grades 10-14

1. Banks

Course	GRADE				
	10	11	12	13	14
General	15	15	15	15	15
Technical & Vocational Training	14	18	13	5	3
Technical (Specific)	-	-	5	12	20
Basic	7	3	3	4	3
Total	36	36	36	36	36

Program of Study in Commercial Technical Schools
(5-Year System), Grades 10-14 (Continued)

2. Social Insurance

Courses	GRADES				
	10	11	12	13	14
General Technical and Vocational Training	15	15	15	15	10
Technical (Specific)	14	18	13	5	3
Basic	-	-	5	12	20
	7	3	3	4	3
Total	36	36	36	36	36

3. Commercial Insurance

General Technical & Vocational Training	15	15	15	15	10
Technical (Specific)	14	18	15	5	3
Basic	-	-	3	12	20
	7	3	3	4	3
Total	36	36	36	36	36

9. Textbooks

"The majority of the textbooks used in commercial education are 20 years old. Although they have been amended yet they do not keep in pace with commercial development." ^{1/}

^{1/} Source: Abdel-Karim, Mohamed El-Saeed, Former General Director of Commercial Education. Problems of Commercial Education.

10. Equipment

Because of the fact of the insufficient number of classes in commercial education and the will of the local authorities in the governorates to admit increasing numbers of students in commercial education, the administrators of commercial schools were forced to store calculating machines and typewriters to provide space for new enrollments.

ANNEX IV

NON-FORMAL TECHNICAL VOCATIONAL EDUCATION

(ON-THE-JOB TRAINING)

A. Vocational Training with MOIMR

The Department of Productivity and Vocational Training was established within MOI in 1956 to provide technical services for the industrial sector in two areas:

1. Productivity:

The departments provide the following services to raise the level of productivity.

a) Prepares specialists in new methods of administration, especially in production engineering, costing, marketing, evaluation of performance, financial control and training on supervision and leadership (52 short programs with an annual output of 1,000 experts)

b) Perform applied studies in the economic units to simplify the process of work and remove bottlenecks

c) Train industrial consultants in the Institute of Administrative Consultations

2. Vocational Training (On-the-Job Training):

The DPVT uses the facilities of the industrial firms to run 47 vocational training centers distributed over the majority of the 21 governorates in Egypt. The capacity of these centers is about 6,000 students/one period of study, and the annual output is nearly 4,000 skilled workers and 900 semi-skilled workers. The vocational training within DPVT includes three types of training:

a) The Accelerated System:

Duration 16-24 weeks to prepare semi-skilled workers.

b) The Upgrading System:

Period of study 11-12 weeks depending on the trade, to upgrade semi-skilled workers to the level of skilled ones.

c) The Apprenticeship System:

Period of study three years, to prepare skilled workers (see organization chart)

First: The Accelerated Training System (OJT)

1. Purpose:

To provide workers who could read and write with certain skills to raise their standard to the level of semi-skilled workers. It also serves the purpose of transferring a worker from one trade to the other.

2. Training Centers are:

- Wadi Hoof Metals, within El Nasr Automotive Company, operated in 1969
- Helwan Electricity, operated in 1969

3. Trades:

Training covers:

- Filing
- Welding
- Metal Sheets
- Electricity

Other trades could be added according to the needs.

4. Training Period:

16-24 weeks depending on type of training

5. Admission Requirements:

Read and write

Age 17-27

6. Trainees:

No data were available about enrollments in this system, but the number of graduates in the last five years (15,783 graduates) distributed over the trades is shown in Table No. 4.3

Second: The Upgrading System (OJT)

1. Purpose:

To raise the skills of semi-skilled workers to the level of skilled ones.

2. Training Centers:

Four training centers affiliated with the industrial firms:

- Shoubra El Khema Metals, operated in 1965
- Imbaba Automotive, operated in 1966
- Hagar Al-Navabia Metals, 1970
- Koun-Ombo Metals, 1969

3. Trades:

- Filing
- Turning
- Welding
- Machines
- Mechanical Maintenance

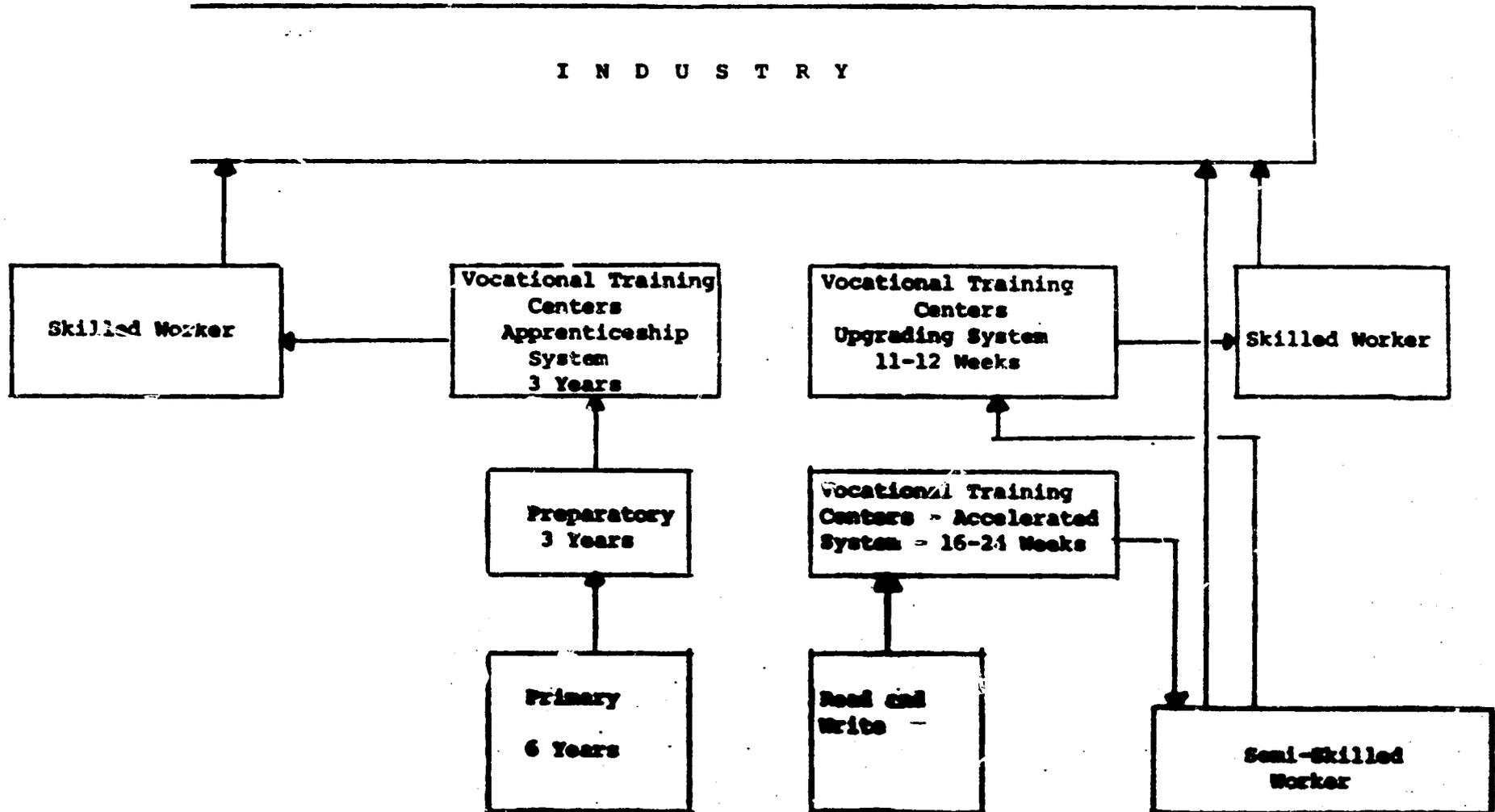
Chart No. 4.1

MOIMR - EGYPT

Department of Productivity and Vocational Training (DPVT)

Vocational Training (OJT)

Organization Chart



Other trades could be added according to the needs.

4. Training Period:

11-22 weeks depending on trade

5. Admission Requirements:

Read and write

6. Trainees:

No data available about enrollments. The number of graduates in the last five years was 804 graduates distributed over eight trades as shown in Table No. 4.4.

Third: The Apprenticeship System

1. Purpose

To prepare skilled workers in the trades involved

2. Training Centers:

On-the-job training centers using the facilities of the industrial factories. There is a total of 47 OJT centers distributed as follows:

- 36 centers under the jurisdiction of DPVT (MOINR)
- 10 centers affiliated with industrial organizations of MOINR
- 9 centers affiliated with other ministries and organizations
- 2 under construction

In addition to the 47 centers the DPVT runs an "Instructor Training Institute" located in Cairo.

Table 4.1 shows the capacity of each center/one shift in different trades, and the type of assistance rendered to the center by the International Bank for Reconstruction and Development.

3. Administration of Apprenticeship System

The DPVT has established an internal "apprenticeship statute" for the vocational training centers affiliated to it and to the different organizations. The responsibilities of this statute are: ^{1/}

- Setting up trade specifications for each specialization for the different levels in the centers after consulting the representatives of industrial organizations with the aim of developing these specifications in the light of real needs.
- Supervising the application of these specifications and training programs to reach these levels either in the centers or in the firms through the inspection and follow-up staff.
- Providing apprentices with social psychological care during their apprenticeship period in the centers or in the firms.
- Setting up a social fund in every training center
- Forming a board of directors in every training center to deal with the apprentices' affairs. This board consists of: the supervisor of the center as a chairman and the directors of the periods, the vice-director, the social specialist, the chief instructor, the theoretical studies supervisor, the follow-up engineer or instructor and the representatives of the apprentices chosen through election.

The board meets once per month and can be called to meet when need arises.

Resolutions are issued by the majority of votes.

^{1/} Source: MOHR: Department of Productivity and Vocational Training, Industrial Vocational Training System, 1971.

4. Trades:

**First: Training takes place in the centers affiliated to the Department
on the following trades:**

A. Metal Trades:

- Fitter
- Fitter machinist
- Turner
- Blacksmith
- Machinist
- Welder
- Sheet Metal Worker

B. Automotive and Refrigeration

- Auto mechanic
- Auto electrician
- Refrigerating and air conditioning mechanic
- Diesel mechanic
- Aero mechanic
- Aero frames fitter

C. Electrical trades

- General electrician
- Motor generator and transformer electrician

D. Fine Instruments:

- Radio and television electrician
- Electronic control instrument electrician

- Fine mechanic
 - Thermal control instrument
 - Repairing and maintaining thermal control instrument
- E. Chemical trades
- Chemical lab assistant
 - Pumps and compressors labor
 - Fitters on control measuring instruments
 - Coal preparation section
 - By-products on coke products including:
 - a. Ammonia sulphate section
 - b. Benzol section
 - c. Sulphoric acid section
 - d. Section of tar distillation
 - e. Naphtaline section
 - f. Tar section
- F. Steel and Foundry trades
- Blast furnace operator
 - Steel converter operator
 - Rolling mill operator
 - Physical metallurgical laboratory operator
 - Heat treatment operator
 - Tool and die maker
 - Mechanical forger

- Carpentry models operator
- Manual foundry operator

G. Mining Trades:

- Compressor installation operator
- Scraper winch operator
- Pump and fan attendant
- Driller for prospecting teams
- Driller and dresser and sharpener
- Fitter for the repair and mounting mining
- Driller
- Loader operator
- Excavator driver at open casts
- Air-powered locomotive driver
- Timberman
- Workmen for laying and repairing of mine track. (underground)

Secondly: Training trades in the centers affiliated to the organizations of the Ministry of Industry, Petroleum and Mineral Wealth.

a. Textile trades:

- Spinning preparer
- Spinning, doubling, twisting and reeling frames
- Yarn preparer
- Weaving preparer
- Weaving
- Spinning mechanic
- Weaving mechanic

- Spinning, doubling, twisting and reeling frames mechanic
- Dobby and non-dobby looms mechanic
- b. Glass trades
 - General glass operator
 - Glass scientific apparatus operator
- c. Leather training trades
 - Leather tanning
- d. Printing trades
 - Hand composition
 - Mechanical composition
 - Monotype
 - Monotype keyboard operator
 - Letter press printing
 - Photo process operation
 - Retoucher
 - Lithographic plate preparer
 - Photo engraver
 - Photo litho press man
 - Book binding

4. Training Period:

Study in this system is twofold:

- 1) Basic training for one year during which the apprentice receives practical training for four days per week besides theoretical subjects for two days per week
- 2) On-the-job training for two years. This training is carried out in industrial companies according to a pre-set plan and trade classifications

which decide the level of skill required for each trade and the training hours needed.

5. Admission Requirements

- 1) Age should be between 14 and 18
- 2) Obtaining general preparatory certificate (9 years general education)
- 3) Passing psychological, personal and medical tests to decide the apprentice's mental capacities and personal abilities for the trade.

6. The Apprenticeship Contract

The productivity and vocational training department estimates the number of apprentices needed by the various firms through its follow-up section. Accordingly, the Department selects the required number of apprentices needed and then distributes them to these firms.

A contract then is concluded between the firm and the apprentice according to which the apprentice joins the firm for a certain period (usually two years) to be trained in a certain trade. The first six months are considered a probation.

The contract determines the daily premium given to apprentices. They are given 15 piastres per day in the second year and 25 piastres per day in the third year. Some apprentices can obtain more premiums during their training period if they work per piece or perform additional work. Some apprentices earn 80 piastres per day.

The contract also determines holidays, days of absence, vacations and

examinations besides the other items determining the relation between the apprentice and his firm. Contracts are prepared in three copies and are sent to the follow-up and registration section within the first six months of training.

7. Conditions Required in Factories Which the Apprentices Will Join for Training

- 1) They must be equipped with tools and equipments necessary for the trade
- 2) They must employ specialized and trained supervisors who have practical experience in training and in vocational guidance
- 3) They must be ready to train the apprentice in the production workshop so that the apprentice might feel that he really participates in production
- 4) They must follow the training plan set up by the Department besides registering skill hours and cooperating with the follow up and supervisory section in following up the apprentices.

8. Trainees

The total number of trainees in the apprenticeship system of the 36 vocational training centers affiliated to DPVT was 16,419 trainees.

Table No.4.2 shows the distribution of these trainees in the training centers of DPVT, and Table No. 4.5 shows the number of graduates distributed over all trades.

The shortage in skills is quite obvious in the metal, metallurgical, electrical,

automotive, fine equipment, refrigeration, air conditioning and glass trades.

9. Program of Study

The program of study is divided into:

- a) Theoretical courses: constitutes 26.6 percent of the total hours of training in three years.

The courses include 23 percent general education, 27 percent scientific and 50 percent technical material distributed as follows:

- 672 hours in the first year
- 504 hours in the second year
- 336 hours in the third year

These programs are developed jointly between DPVT and the experts of production and maintenance in the factories involved. The programs were revised and developed in 1964, 1967 and 1974.

b) Practical Training:

Program of training constitutes 4,172 hours/three years or 73.4 percent of the total hours of the three-year program.

The program is divided into:

First Year Program:

1. A preparatory program - 6 weeks of training on measurement, tinsmithing, filing, sawing, riveting (clinching), and perforating
2. A relative program - 6 weeks of training on trades related to the workers' specialization, i.e., turning, workshop machines, metal sheets, welding, heat treatment and blacksmithing.
3. A specialized program - 30 weeks (24 hours/week). The total hours of training in the first year are 1,344 hours.

Second and Third Year Program

2,828 hours of practical training in the factories according to types of specialization following the international standards.

1. 1,288 hours in the second year (4 days/week)
2. 1,540 hours in the third year (5 days/week)

10. Teachers:

The Instructor Training Institute ^{1/}

The Institute was established in 1962 and was inaugurated in 1964 to train the instructors required for the vocational training centers of the department, the firms, the government and the industrial secondary schools. The Institute prepares also the directors of these centers.

The Institute's capacity is at present 1,000 instructors per year in the different programs which aim at:

- 1) Training instructors in governmental centers and in centers affiliated to the firms
- 2) Offering upgrading training for instructors (usually foremen and supervisors of the factories)
- 3) Offering supervisory training and management training for governmental centers and centers affiliated to the firms
- 4) Offering training on the upgrading system in the automotive and the electrical trades

^{1/} Source: MOIMR: Department of Productivity and Vocational Training, Industrial Vocational Training Systems, 1971.

- 5) Offering other training courses prepared according to industry's requirements and in the light of present potentialities.

The Institute's programs:

The following schedule shows the different programs of the Instructor Training Institute:

Program	Duration No.	No. of Sessions	Capacity
Basic for Instructors	45	1	150
Automotive foremen	10	3	25
Metal foremen	8	2	30
Textile foreman	12	3	30
Production Inspectors (Mechanics)	8	4	14
Mechanical draftsmen	20	1	22
Storemen	3	6	25
Elder Instructors	12	1	45
Centers directors	3	2	15
Electricity Maintenance Workers	6	4	24

Training in the Institute is carried out on the following specializations:

- a) Metal trades group: fitting, tool and die making, turning, machining, shaping, grinding, milling, blacksmithing, welding (gas-electricity) sheet metal works
- b) Automotive trades group: auto mechanic, auto electrician

- c) Electrical engineering group: general electrician (communications),
motor generator and transformer electrician
- d) Electronic trades group: radio and TV maintenance, maintenance and
repairing of measuring apparatus

The Institute welcomes the candidates from the Arab and the African countries after passing a certain examination. Study and training are carried out in the Arabic language.

Vocational Training Centers (Apprenticeship Systems)
Capacity of Each Center/Shift Distributed Over Trades

Name of Training Center	Location	Date of Operation	Total Capacity Per 1 Shift	Trades in the Center														Foreign Aid	Assistance Provided			
				Fitter	Maintenance Fitter	Heat Treatment	Tool and Die Maker	Turner	Machinist	Welder	Blacksmith	Sheetmetal Worker	Auto Mechanic	Auto Electrician	General Electrician	Motor/Generator	Transformer			Wiring	Refrigeration	
1. Dokky Metals Center	Giza	Oct. 58	152	90				14	12	14	6	16								IBRD	Equipment	
2. Imkaba Metals and Automotive Center	Giza	Oct. 58	152	45				14	12	14	6	16	30	15							IBRD	Equipment
3. Manial Shiha Metals	Giza	Oct. 74	132	75				15	15	12	5	10										
4. Shobra Metals and Refrigeration	Cairo	Oct. 60	182	90				14	12	14	4	18									30	
5. Abassieh Electrical Center	Cairo	Oct. 60	72												36	36						
6. Wady Hof Metals Center	Cairo	Oct. 61	159	90				15	15	20	4	15										
7. Wady Hof Motive Power Center	Helwan	Oct. 71	155	50				9	9				75	12								
8. El Amirieh Metals Center	Cairo	Oct. 75	132	75				15	15	12	5	10										
9. El Amirieh Electrical Center	Cairo	Oct. 75	75													25	25	25				
10. Tora Metals Center	Cairo	Oct. 76	132	75				15	15	12	5	10										

Source: MOIMP: Department of Productivity and Vocational Training, 1977

Table 4.1 (Continued)

Name of Training Center	Location	Date of Operation	Total Capacity Per 1 Shift	Trades in the Center													Foreign Aid	Assistance Provided			
				Fitter	Maintenance Fitter	Heat Treatment	Tool and Die Maker	Turner	Machinist	Welder	Blacksmith	Sheetmetal Worker	Auto Mechanic	Auto Electrician	General Electrician	Motor/Generator			Maintenance Electrician	Refrigeration	
11. Tora Electrical Center	Cairo	1976	75					15	15	12	5	10			25	25	25				
12. Shobra El Kheima Metals Center		Oct. 76	164	90	10	10		15	15	20	4										
13. Tanta Metals Center		Oct. 64	159	90				15	15	20	4	15									
14. Tanta Electrical Center	Lower Egypt	Oct. 64	50												25	25					
15. El Mansoura Metals Center	Lower Egypt	Oct. 64	179	90				15	15	20	4	15							IBPD	Equipment	
16. Damietta Metals Center	Lower Egypt	Oct. 64	87	45				8	8	16	6	2									
17. Port Said Metals and Automotive Center	Lower Egypt	Oct. 60	152	45				14	12	14	6	16	30	15							
18. Port Said Electrical	Lower Egypt	Oct. 60	75												40	35					
19. Moharrambey Metals	Alex.	Oct. 58	136	90				14	12	14	6								IBRD	Equipment	
20. Moharrambey Metals & Automotive Center	Alex.	Oct. 59	146	45				14	12	14		16	30	15							

Table 4.1 (Continued)

Name of Training Center	Location	Date of Operation	Total Capacity Per 1 Shift	Trades in the Center													Foreign Aid	Assistance Provided				
				Fitter	Maintenance Fitter	Heat Treatment	Tool and Die Maker	Turner	Machinist	Welder	Blacksmith	Sheetmetal Worker	Auto Mechanic	Auto Electric.	General Electrician	Motor/Generator Transfer Elec			Maintenance Electrician	Refrigeration		
21. Victoria Elect. Center	Alex	Oct. 61	72													36	36			IBRD	Equipment	
22. Hagar El Nawatiya Metals Center	Alex	Oct. 67	139	70				15	14	20			20									
23. Victoria Metals Center	Alex.	Oct. 67	135	70				14	15	14	6	16										
24. Moharran Bey Elec. Center	Alex.	Oct. 75	75	75												25	25	25				
25. Assiut Metals Center	Upper Egypt	Jan 65	159	90				15	15	20	4	15										
26. Kena Metals Center	Upper Egypt	Oct. 63	107	45				8	8	16	2	8							20	IBRD	Equipment	
27. Kom Ombo Metals	Upper Egypt	Oct. 63	87	45				8	8	16	2	8										
28. Aswan Metals Center	Upper Egypt	Sep 63	159	90				15	15	20	4	15										
29. Aswan Elec Center	Upper Egypt	Sept 63	50													25	25					
30. Instructor Training Institute	Cairo			36			6	14	12	12	8	12	10	10	12	12			10	Radio & TV	IBRD	Equipment

Name of Training Center	Location	Date of Operation	Total Capacity Per 1 Shift	Trades in the Center											Foreign Aid	Assistance Provided		
				Fiber Preparer	Spinning	Yarn Preparer	Weaving Mechanic	Textiles	Dobby and Non-Dobby, Looms, Weaving, Doubling & Twisting	Reeling Frames Mechanic	Spinning Mechanic	Dyeing						
1. Shobra El Kheima Spinning and Weaving Co.	Cairo	100	100	14	16	16	18	12	4	8	4	4	4					
2. Alexandria Spinning and Weaving	Alex		100	20	20	20	20	20	(7)	(8)	(8)	(9)	(7)	(35)				
TOTAL			200	34	36	36	38	32	4	8	4	4	4					

Table 4.1 (Continued)

Name of Training Center	Location	Date of Operation	Total Capacity Per 1 Shift	Trades in the Center													Foreign Aid	Assistance Provided
				Photo	Retoucher	Offset Preparer	Engraver	Hand Composition	Linotype	Monoperforating	Monocast	Offset Printing	Letter Press	Binding	Stereo			
1. Alexandria Printing Center	Alex		100	6	6	6	6	18	6	4	4	8	14	16	6			
2. Imbaba Printing Center	Giza		100	6	6	6	6	18	6	4	4	8	14	16	6			
TOTAL			200	12	12	12	12	36	12	8	8	16	28	32	12			

Table No. 4

EGYPT

Department of Productivity and Vocational TrainingEnrollment in Vocational Training CentersApprenticeship System - 1976/77

Ser.	Training Center	APPRENTICESHIP		
		First Year	Second Year	Third Year
1	Dokky Metals	321	315	322
2	Imbaba Metals & Automotive	336	322	304
3	Manial Shiha Metals	109	109	91
4	Shobria Metals and Refrigeration	182	190	185
5	Abassieh Electrical	72	190	150
6	Wady Hof Metals	159	185	164
7	Wady Hof Motive Power	155	290	314
8/9	El Amiria Metals and Electrical	207	132	211
10/11	Torra Metals & Electrical	207	224	235
12	Shobra el Kheima Metals	310	211	246
13/14	Tanta Metals and Electrical	228	211	246
15	El Mansoura Metals	182	162	199
16	Damietta Metals	102	196	270
17/18	Port Said	210	150	173
19	Moharram Bey Metals	514	344	370
20	Moharram Bey Metals and Automotive	-	-	3
21	Victoria electrical	159	163	221
22	Nagar el Nawatiya Electrical	245	252	212
23	Victoria Metals	150	126	123
24	Moharram Bey Electrical	45	-	-

Table No. 4.2 (Continued)

EGYPT

Department of Productivity and Vocational TrainingEnrollment in Vocational Training CentersApprenticeship System - 1976/77

Ser.	Training Center	First Year	Second Year	Third Year
25	Assuit Metals	159	173	151
26	Kena Metals	105	130	103
27	Kom Ombo Metals	87	120	154
28/29	Aswan Metals and Electrical	196	197	239
30	Cairo Printing	95	114	126
31	Alexandria Printing	88	27	35
32	Shobra Spinning and Weaving	135	326	196
33	Alexandria Spinning and Weaving	210	229	213
34	Dar el Salam Fine Instruments	103	119	86
35	Alexandria Fine Instruments	105	87	61
36	Kena Mining	71	80	76
Total		5,247	5,589	5,583

Table No. 4.3

EGYPT

Department of Productivity and Vocational Training (DPVT)
 Total Number of Graduates in Vocational Training Centers (Accelerated System)
 Distributed over Trade Groups - 1971-75

Specialisation	1971	1972	1973	1974	1975	Total (5 Years)
Filing	117	116	16	34		408
Turning	27	24	6	19		96
Welding	48	40	29	35	28	227
Metal Sheets	3	14	2	12		52
TOTAL	205	194	53	100		783

Table No. 4.4

EGYPT

Department of Productivity and Vocational Training (DPVT)
 Total Number of Graduates in Vocational Training Centers (Upgrading System)
 Distributed over Trade Groups - 1971-75

Specialization	1971	1972	1973	1974	1975
Filing	22	1	8	24	245
Turning	13	5	10	19	172
Welding	14	6	8	9	113
Machines	2	-	3	-	19
Tool Sharpening	9	-	10	-	45
Heat Treatment	8	-	8	-	81
Tools	4	-	-	-	50
Maintenance	11	1	-	4	79
TOTAL	83	13	47	56	804

Table No. 4.5

EGYPT

Department of Productivity and Vocational Training (DPVT)
Total Number of Graduates in Vocational Training Centers (Apprenticeship System)
Distributed Over Trade Groups - 1971-75

Trade Groups	1971	1972	1973	1974	1975
1. Minerals	1,957	2,212	2,678	1,611	1,823
2. Automobiles	220	183	701	275	250
3. Electricity	450	575	632	335	308
4. Refrigeration	17	-	39	46	21
5. Metallurgy	42	44	78	46	54
6. Fine Equipment	103	140	17	102	107
7. Coke Chemistry	54	30	11	18	8
8. Metals	124	162	248	129	21
9. Printing	138	148	142	120	140
10. Spinning	239	298	251	155	226
11. Glass	29	39	50	24	14
12. Leather	59	58	72	35	21
TOTAL	3,434	3,069	4,499	2,896	2,993

Table No. 4.5 (Continued)

EGYPT

Department of Productivity and Vocational Training (DPVT)
Total Number of Graduates in Vocational Training Centers (Apprenticeship System)
Distributed over Trade Groups - 1971-75

1. Minerals

Specialization	1971	1972	1973	1974	1975	Total (5 Years)
Filing	894	1,126	1,484	651	901	5,056
Turning	308	225	343	238	241	1,355
Welding	287	309	244	294	232	1,366
Workshop Machines	235	228	286	193	161	1,103
Metal Sheets	163	267	214	146	169	959
Blacksmithing	25	26	27	28	53	159
Plumbing	13	1	10	3	5	32
Heat Treatment	-	-	8	8	4	20
Tools	32	30	62	47	48	219
Maintenance	-	-	-	3	9	12
YEARS TOTAL	1,967	2,212	2,678	1,611	1,823	10,281

Table No. 4.5

EGYPT

Department of Productivity and Vocational Training (DPVT)
 Total Number of Graduates in Vocational Training Centers (Apprenticeship System)
 Distributed over Trade Groups - 1971-75

. Automobiles						Total (5 Years)
Specialization	1971	1972	1973	1974	1975	
Auto Mechanics	127	99	108	181	147	662
Auto Electricity	72	55	57	68	94	346
Tube Filing	-	29	35	26	9	99
Airplane bodies	21	-	1	-	-	22
TRADE TOTAL	220	183	201	275	250	1,129
3. Electricity						Total (4 Years)
General Electrician	195	314	310	165	176	1,160
Machine Electrician	245	248	292	151	130	1,066
Equipment Electrician	10	13	30	19	2	74
TRADE TOTAL	450	575	632	335	308	2,300

Table No. 4.5 (Continued)

EGYPT

Department of Productivity and Vocational Training (DPVT)
 Total Number of Graduates in Vocational Training Centers (Apprenticeship System)
 Distributed over Trade Groups - 1971-75

4. Refrigeration

Specialization	1971	1972	1973	1974	1975	Total (5 Years)
Refrigeration and Air Conditioning	17	-	39	46	21	123

5. Metallurgy

Mining Installations	3	9	7	-	-	29
Tractor Operator	5	7	8	9	8	37
Tester	4	-	9	5	6	24
Tool Sharpening	6	1	5	3	1	16
Diesel Mechanic	-	-	17	-	10	27
Aero Mechanic	-	-	1	7	7	15
Metallurgy	3	5	6	4	-	18
Air Pressure	4	6	-	7	12	-
Pumps and Fans	7	7	15	6	10	45
Loading	10	9	-	8	-	27
TRADE TOTAL	42	44	73	49	54	267

Table No. 4.5 (Continued)

BCVT

Department of Productivity and Vocational Training (DPVT)
Total Number of Graduates in Vocational Training Centers (Apprenticeship System)
Distributed over Trade Groups - 1971-75

4

6. Fine Equipments

Specialization	1971	1972	1973	1974	1975	Total (5 Years)
Radio and TV Electrician Maintenance & Electric/ Measurement Equipment	18	49	27	23	14	131
Maintenance of Heat Control Equipment	19	16	17	20	9	81
Maintenance of Electronic Equipment	12	14	18	15	11	70
Fine Mechanics	33	37	23	29	31	153
	21	24	12	15	42	114
TRADE TOTAL	103	140	97	102	107	549

7. Coke Chemistry

						Total (4 Years)
Pumps and Fans	14	10	11	18	8	69
Coal Preparation	9	1	-	-	-	10
Furnaces	11	1	-	1	-	13
Operator	20	-	-	-	-	20
TRADE TOTAL	54	20	11	19	8	112

Table No. 4.5 (Continued)

EGYPT

Department of Productivity and Vocational Training (DPVT)
Total Number of Graduates in Vocational Training Centers (Apprenticeship System)
Distributed over Trade Groups - 1971-75

3. Metals

Specialization	1971	1972	1973	1974	1975	Total (4 Years)
Mechanical Fitting	14	14	22	6		56
Filing	14	13	45	11		83
Model Carpentry	17	7	12	3		39
Blast Furnaces	23	23	26	16		88
Lab Technicians	21	18	20	-		59
Steel Converters	13	11	25	14		63
Rolling Mills	12	51	26	19		108
Heat Treatment	2	10	25	17		54
Founding	8	15	44	19		86
Assist. Lab Technician	-	-	3	18		21
TRADE TOTAL	124	162	248	129		663

Table No. 4.5 (Continued)

EGYPT

Department of Productivity and Vocational Training (DPVT)
Total Number of Graduates in Vocational Training Centers (Apprenticeship System)
Distributed over Trade Groups - 1971-75

9. Printing

Specialisation	1971/72	1972 /73	1973 /74	1974/75	1975 /76	Total (5 Years)
Hand Compositor.	5	15	10	13	16	59
Offset Preparations	11	4	10	7	9	41
Mechanical Composition	13	20	17	12	10	72
Offset Printing	21	28	31	27	25	132
Manotype Keyboard Operator	7	9	1	-	3	20
Binding	30	22	32	25	27	136
Photo Engraver	17	19	8	10	6	60
Stereotype	7	1	4	-	-	12
Intouchar	6	6	4	4	17	37
Lanotype	8	-	9	5	7	29
Manotype Keyboard Operator	-	5	1	2	1	9
Letter Press Printing	12	19	15	15	21	82
Total	138	148	142	120	142	690

Table No. 4.5 (Continued)

EGYPT

Department of Productivity and Vocational Training (DPVT)
 Total Number of Graduates in Vocational Training Centers (Apprenticeship System)
 Distributed over Trade Groups - 1971-75

10. Spinning and Weaving

Specialization	1971 /72	1972 /73	1973 /74	1974 /75	1975 /76	Total (5 Years)
Spinning	35	44	52	23	36	190
Spinning Preparation	38	65	40	18	39	200
Weaving	31	54	37	16	39	177
Yarn Preparation	45	45	19	13	28	150
Weaving Preparation	21	22	29	18	12	102
Spinning Mechanic	7	14	7	7	5	40
Weaving Mechanic	14	30	9	6	11	70
Spinning, doubling and twisting mechanic	-	-	4	5	10	19
Dobby and non-dobby looms mechanic	3	7	10	7	7	34
Textile Preparation Mechanic	15	17	40	38	48	158
TRADE TOTAL,	209	298	251	155	243	1,156

Table No. 4.5 (Continued)

EGYPT

Department of Productivity and Vocational Training (DPVT)
Graduates in Vocational Training Centers (Apprenticeship
Distributed over Trade Groups - 1971-75

	1971	1972	1973	1974
	59	58	72	35
	22	20	39	24
	7	9	11	-
	29	29	50	24

B. Vocational Training within MOHR

1. Administration

The Training Agency for Building and Construction (TABC), within MOHR and established in 1975, is the administrative organ responsible for overseeing the vocational training projects in building and construction to overcome the problem of shortage in skilled workers and craftsmen needed for the building trades.

2. Structure:

The Training Agency for Building and Construction is headed by a General Director who is at the same time member and rapporteur of the Building and Construction Training Board of which the Minister of MOHR is chairman.

The Agency is operating through five main departments, namely: (See organization chart)

- Planning and Supplies Department
- Training Centers Department
- Follow-Up and Evaluation Department
- Specialized Training Department
- Administration and Accounting Department

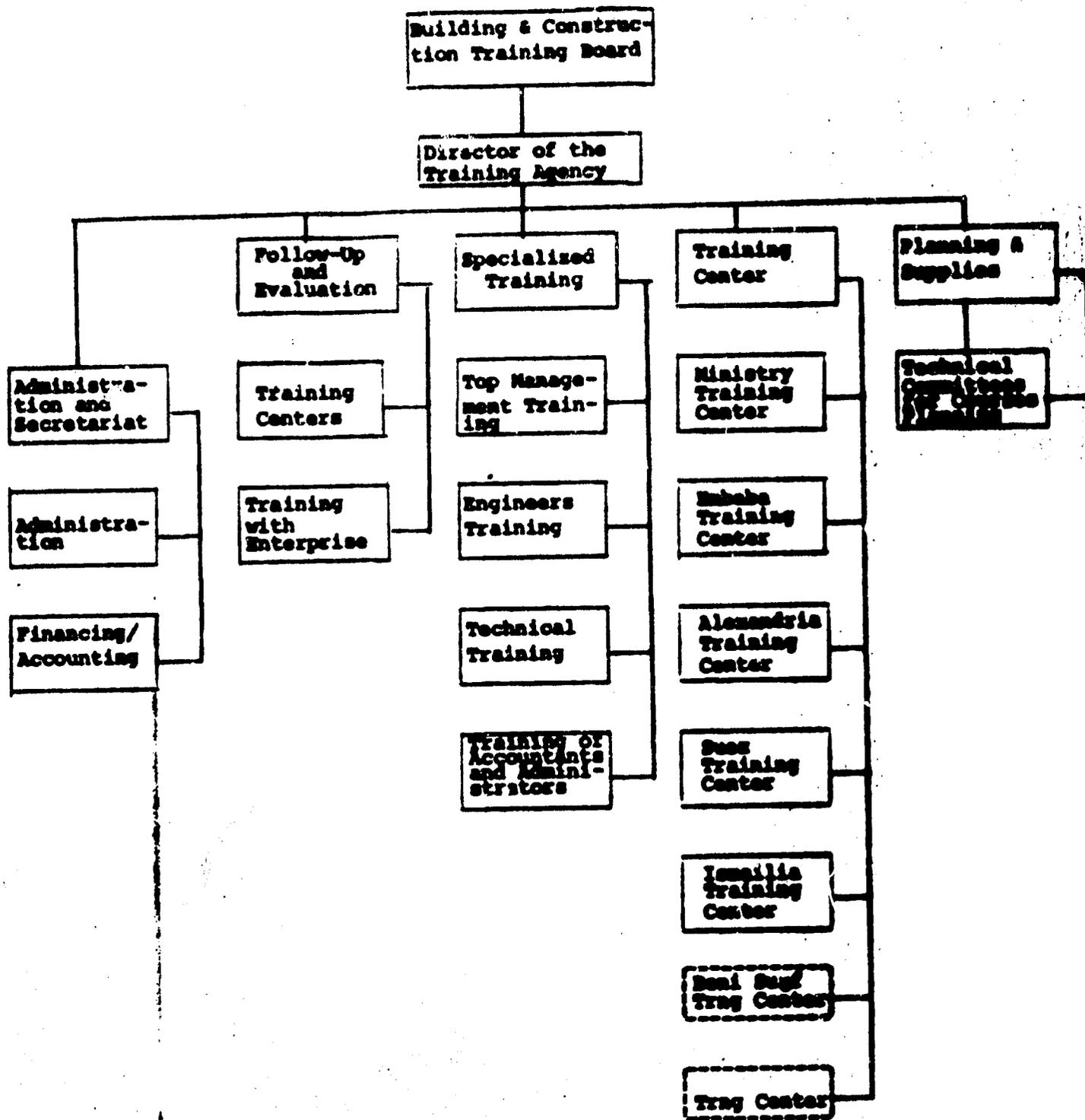
3. Trades:

- Mason (bricks and stones)
- Plasterer
- Reinforced steel worker
- Concrete worker
- Plumber

Chart No. L.2

Structure of Vocational Training Within MOET

(Organization Chart)



- Carpenter (shutters)
- Flooring
- Electrician
- Painter
- Metal worker

4. Training Centers:

8 Centers for handicrafts, besides using 16 industrial secondary schools for evening courses

1 Center for technical supervisors

5 Training centers of the contractor's companies

1 Training center for Arab Contractors

5. Admission Requirements

Read and write

6. Cost/Trainee:

	L.S.
Materials for Training	8.000
Supervision, stationary and depreciation	1.400
Incentives	31.300
Insurance	1.800
Working suit and shoes	6.000
Meals	12.000
Instructors	<u>14.500</u>
TOTAL	77.000

The average direct cost of training a craftsman is about 25 77 or 125%.

7. Future Plans:

The main objectives of TABC in the fourth Five Year Plan are: ^{1/}

- a. To train 253,000 semi-skilled workers for the building industry by the end of 1980
- b. To establish 65 training centers, out of which three centers will train instructors and the other 62 to train semi-skilled workers.
- c. To encourage the existing public enterprises to extend on-the-job training to the new generation being recruited and attached to skilled workers for a period of four months
- d. Running second-shift training programs in the MCE trade secondary schools with the cooperation and coordination between MCE and MOHAR
- e. Organizing top management, specialized, technical and refreshment courses, and seminars to improve and to raise the productivity in MOHAR and its associated bodies and enterprises.

8. The IBED Project

According to the contract signed between GOE and IBED, the latter will assist MOHAR in its vocational training program.

The project would include the construction and equipment for 20 new training centers and three instructor training centers, administered by the Ministry of Housing and Reconstruction, to provide urgently needed semi-skilled construction workers. The government is financing the purchase of suitable buildings in six locations and will finance the construction of the others which have already been designed.

1/ Source: A.R. Egypt: Ministry of Housing and Reconstruction, MOHAR Training Agency Project IV, December 1975.

By October 1979, the training centers would have an annual output of about 17,000 semi-skilled workers from three-month courses with 90 percent of the training time in practical work. As the supply of graduates begins to match industrial demand, the length of training courses would be increased to six months and later to 12 months with a corresponding increase in the level of skills. There would be no formal education entrance requirements, but trainees would have to be literate and at least 15 years of age.

The 600 required instructors would be recruited from industry, from the faculty of centers presently housed in temporary facilities, and from the early output of one of the three project instructor training centers which the government plans to have in operation by early 1977. Short-term pre-service and in-service pedagogical training would be provided by the instructor training centers for those skilled craftsmen recruited as instructors and who are not required to complete the full one-year instructor training course.

The three instructor training centers, with an annual output of 600 from one-year courses of trade theory and practice, pedagogy and practice teaching, would be attached to craft training centers to make possible demonstration teaching and to provide the instructor trainees with opportunities for observation and practice teaching. Entrance requirements would be a minimum of five-year experience as a skilled craftsman in the construction trades and the completion of secondary trade school or equivalent apprenticeship training. Inquiries have shown that sufficient qualified applicants would be available. When the supply of trained instructors begins to meet demand, two of the instructor training centers would be converted to

craftsmen training centers. Advanced courses for the continued upgrading of instructors would be organized at a later date.

The project would include financing for equipment and eight months of consultant services to develop, within the ministry's training department, a central data bank for the collection, processing and dissemination of information related to skilled and semi-skilled manpower needs in the construction sector, training courses, student records, and follow-up of graduates.

