

The Vocational School Fallacy Revisited
Technical Secondary Schools in Egypt

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Mediterranean Programme

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Abstract

Egypt based its development aspirations, more than most countries in Africa and Asia, upon the expansion of an extensive system of technical schools. This policy was directly linked to the Nasser experiment of centrally planned industrialisation. However, despite the gradually increasing role of private sector participation in the economy over the past 25 years, in both its formal and informal versions, no effort was made to adjust the system to the needs of these employers. Similarly, despite the dwindling role of manufacturing and the fall in investment, no effort was made to limit the expansion of the system to a size that would guarantee the absorption of graduates by industry. Instead, enrolments increased at a faster pace throughout the 1980s and early 1990s.

This paper documents the growth of technical education in Egypt and argues that the particular pattern followed had little to do with a rational planning exercise and was not focused on how to provide young people with workplace-relevant skills. Instead it was related to haphazard efforts that would divert students aspiring for higher education. Today technical secondary school graduates are the group of the population hit most by the inadequacies of the education system, as attested by their high unemployment rates.

INTRODUCTION

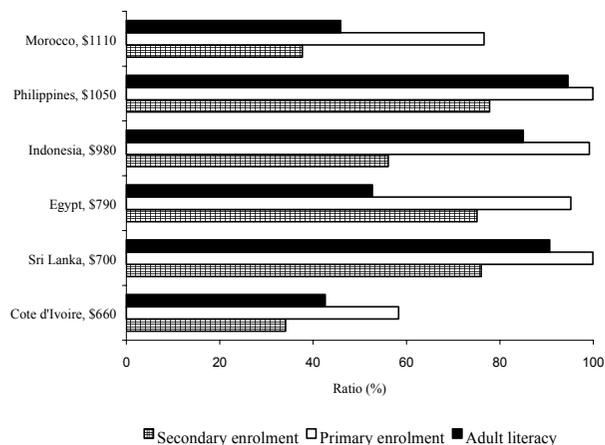
There has been intense interest recently amongst social scientists and historians in the development of industrial relations in Egypt since 1952¹. A unifying theme of several contributions in this field has been the search for underlying disputes between the state and labour organisations in what seemed to be a society set up along, what some researchers have called, corporatist lines. The process of rent division in a polity absorbed in patron-client relationships has been placed in the centre of such analyses. What has unfortunately been given secondary importance is that, for considerable periods of time, this bargaining was taking place over what actually was a shrinking pie. Domestic production activity, where the power struggle between labour and the state is supposed to be taking place, has only generated a fraction of the increases in income over the last half century². It is thus necessary to shift the focus toward factors that have prevented the *creation* of real wealth in the Egyptian economy, a problem that is at least as important as its subsequent *allocation* between wages and profits.

Among the prominent explanations proposed has been the failure of the education system to come up to the requirements of economic growth. The pressure to cast the state in a modern disguise and the effects of this effort on Egyptian education have preoccupied observers of the Middle East, at least since Morroe Berger (1957) and Malcolm Kerr (1965) first pointed to the crucial gaps between aspirations and realities in Egyptian society. The mission of the educational system for the largest part of this century has been to assist the recruitment to public sector jobs. With the exception of the last decade, an education certificate has been serving as passport to the civil service throughout the twentieth century. At times when the vast majority of the population was illiterate, successive governments were setting the wrong priorities by accommodating private demand for higher and, especially, university education. The revolutionary regime established in 1952 did not attempt to change this situation; in fact, it exacerbated the effect in 1963 when all qualified secondary school graduates were allowed to enter higher education institutions.

For comparative purposes, Figure 1 presents the educational achievements of selected countries at comparable levels of economic development to that of Egypt, in terms of their per capita income, which is reported next to the name of the country. Despite this similarity, the six countries had distinct patterns of educational development. Egypt has achieved close to universal primary education enrolment, thanks mainly to an active policy of infrastructure development in the 1990s. However, it has an unusually high secondary enrolment ratio matching only that of the Philippines and Sri Lanka. In both these countries, though, illiteracy is at less than 10% while in Egypt it is close to

50%. Figure 1 thus encapsulates the essence of the educational policy choice made in Egypt.

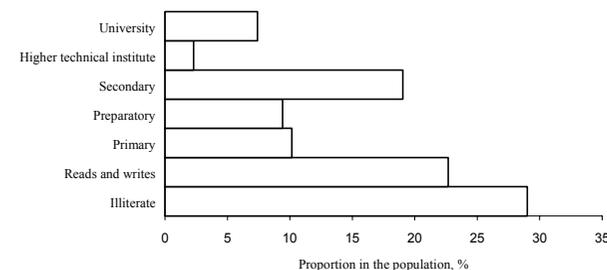
Figure 1
Comparison of educational achievements across selected countries, 1997



Sources: World Bank, 1998 World Development Report (income data); United Nations Development Programme, 1999 Human Development Report (education data)

Such an orientation was bound to distort the educational process in the other levels of the system. Technical secondary education stands out as a prime victim of the sustained growth in university enrolments. For forty years, industrial, agricultural and commercial schools were being portrayed as the embodiment of modern Egypt's embracing of technological progress, when they were actually being used as the dam to regulate the stream of university aspiring secondary education students. Figure 2 shows the educational composition of the male population above the age of ten, according to the 1996 Census. One would expect to observe a pyramidal shape, with a large section of the population being uneducated or completing the basic education stage and fewer students making it to each successive level of the educational hierarchy. However, the upper secondary education level is disproportionately large. Note that it is practically made up exclusively of technical schools graduates, as most general secondary school graduates proceed in one way or another to the tertiary level. The large number of university graduates relative to those without educational qualifications is another striking feature.

Figure 2
Distribution of male population above 10 years of age by educational level



Source: Central Agency for Public Mobilisation and Statistics, 1996 Population Census

This paper argues that the expansion of the technical secondary education system in Egypt was not the outcome of a genuine attempt to raise the skill level in the economy. On the contrary, it was a side effect of public policies that did not attempt to deal directly with the explosive demand for higher education that they themselves had caused in the first place. As a result, technical education has inherited a long array of problems that reduce its effectiveness. Moreover, the system is built upon certain assumptions about how education and production are to be linked that have ceased to be valid for almost twenty-five years. Policy planners themselves have been aware of the system's inability to deliver its proclaimed goals from the very early stages of its development. Yet, they have until recently stressed their faith that technical schools would ultimately inject the necessary skills into the production sector and have never ceased proposing their expansion at the expense of the general secondary track.

The analysis proceeds in the following steps. First, the system and its phases of development are presented. Second, the empirical evidence on schooling quality is put together, with special emphasis on industrial schools. Third, the ideas that led to the particular policy design are reviewed and alternative explanations for its persistence are discussed. Fourth, the paper concludes with references to the economic realities and the policy responses in the 1990s.

THE EXPANSION OF TECHNICAL SECONDARY EDUCATION

Technical secondary education has been assigned a central role in the expansion of the Egyptian schooling system. An observer of educational developments remarked in the mid-1970s that technical secondary schools were considered, aside from the literacy campaign, as “the most spectacular advance since the revolution” [Hyde (1978)] and this role was only to be strengthened in the period that followed. Expanding the number of technical secondary schools has been a constant policy objective of educational planners for at least the past twenty five years. Such a pattern of development is unique in the developing world for the sheer speed with which it has been established and the impressively high number of enrolments. According to the 1999 Human Development Report only twelve developing countries had a higher enrolment ratio at the technical secondary level in the early 1990s, eight of which were Latin American³.

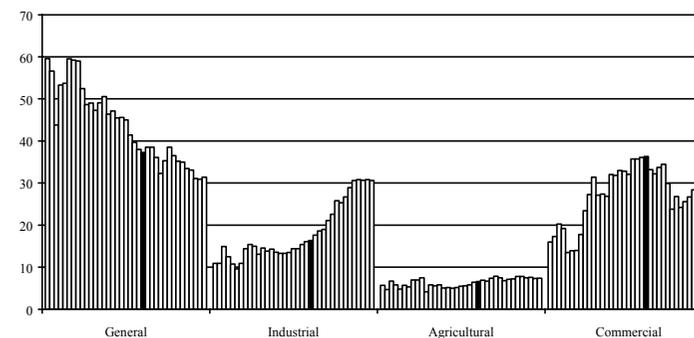
A unified law for technical education was first approved in 1970, but the educational system took its comprehensive and integrated form with Law 139/1981. At the end of the eight-year compulsory cycle students participate in nationwide exams, according to whose results they are allocated to two different types of three-year secondary schools : high achievers enter general schools and low achievers enter technical schools. There is still somehow an element of choice but this usually works the other way round. Academically able but poorer students must accept technical schools as a solution of last resort either to enter part time employment (as the technical school imposes lower study time requirements) or simply because they cannot afford the cost of preparing for the university entry exams at the end of the general secondary cycle (which includes expensive private tuition fees for cram lessons)⁴. Technical schools belong to one of three types (industrial, agricultural or commercial) and come in three- and five-year versions (training skilled production labour and technicians respectively). The general secondary school is essentially the preparation ground for university studies and its curriculum is not structured along the needs of the student who might wish to terminate his studies at this level. On the contrary, technical school graduates are essentially barred from entering university, although they can enter higher technical institutes.

Table 1
A summary of the structure of the Egyptian education system

PRIMARY	Primary (six years ; five years since 1987)	
LOWER SECONDARY	Preparatory (three years ; compulsory after the 1981 educational reform)	
UPPER SECONDARY	General Secondary (3 years)	Technical Secondary (3 or 5 years) • Industrial, Agricultural or Commercial
TERTIARY	University (4-6 years) Higher Technical Institute (2 or 5 years)	Higher Technical Institute (2 or 5 years) • Industrial or Commercial

The 1981 reform marked a turn in the expansion and adjustment of enrolments across school types, reflecting the optimism of educational planners that technical schools were achieving their target. A special Ministry of Education policy paper ramifying the new legislation urged “that the ratio of admissions in this type of education exceeds 60% of the total number of students admitted into various types of secondary schools” [National Centre of Educational Research (1980), p.73]. Figure 3 compares the share of each of the four types of schools in total secondary education enrolments between 1960 and 1996. It shows a policy drive to increase the relative weight of industrial education enrolments, initially at the expense of commercial and, later, of general secondary schools.

Figure 3
Enrolments by type of secondary education institution
as percentage of total secondary education enrolments, 1960-1996

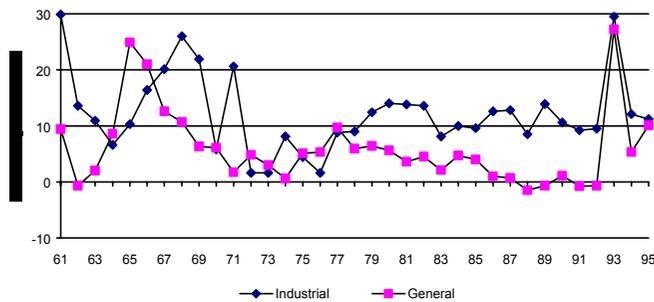


Source : Ministry of Planning (1991) and World Bank (1996) ;
the academic year 1981/82 is marked black

Figure 4 depicts the annual enrolment growth rate in industrial and general secondary schools over the past forty years, during which two phases can be

distinguished. First, the period of the massive expansion of the education system in general during the 1960s. Second, the period which started in the late 1970s, and was consolidated in the 1981 reform, which gave priority to the expansion of industrial over general secondary schools. The expansion of technical school capacity was met with high enrolment rates primarily because of the extension of the government policy guaranteeing public sector employment, initially reserved only for tertiary education graduates, to technical secondary school graduates in the 1960s⁵.

Figure 4
Secondary schools enrolment growth rate, 1961-1995



Source : Ministry of Planning (1991) and World Bank (1996)

Note : The spike in 1993 is the result of the 1987 reform that shortened the primary school cycle to five years.

Today almost 200,000 students graduate from industrial schools each year. To that number one must add at least another 50,000 from a variety of other institutions offering some sort of formal industrial training⁶. This number contrasts sharply with the amount of people currently employed in manufacturing and construction activities, which would be the most plausible employers for these graduates. These activities employ about a quarter of the total labour force, in other words just above 2.5 million people and the fast pace with which schools churn out presumably skilled manual workers is not reflected in any transformation of the production structure to this direction.

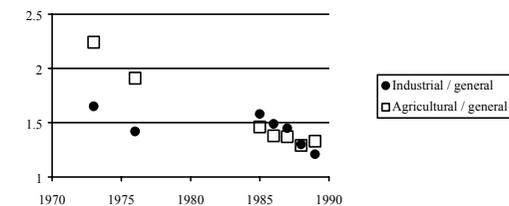
ASSESSING THE QUALITY OF TECHNICAL EDUCATION

It is questionable whether the technical education system was prepared to receive such a surge of enrolments in the 1980s. In order to document the widely perceived decline of instruction quality recourse is sought to three sources of information. First, evidence from official educational statistics is collated to provide a crude picture of qualitative developments, focusing on expenditure per pupil and teacher-student ratios. Second, studies of the educational system published by Egyptian and foreign researchers are reviewed. Third, official statistics and studies of the labour market are consulted to give an all-round view of the employment problem facing technical school graduates.

Educational statistics

Information on the cost of technical education is not available on a systematic basis, as it is not itemised in the Ministry of Education budget. Whenever estimates have appeared this has happened under the pressure to produce a report for an international organisation, but even then such information is usually limited to current, and not investment, spending. Figure 5 combines data on average cost per student from three such sources. These suggest a fall in the average cost differential between technical and general secondary education in the late 1980s. That may imply falling standards in technical education, as industrial schools are by default more expensive to run [UNESCO (1984)].

Figure 5
Ratio of current spending per pupil in technical over general secondary schools, various years



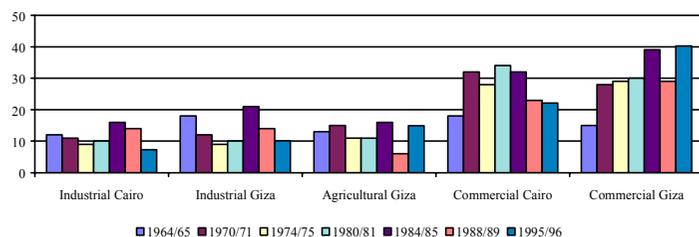
Sources : World Bank (1978), Ministry of Education (1990) and al-Ghannam (1993)

A more illuminating indicator may be the composition of current spending (teacher salaries versus maintenance or materials costs). Although there is no specialised information on the technical secondary level in Egypt, the World Bank (1991, Annex J) documented the rapid decline of non-salary related

current expenditure at both the primary and secondary level. Between 1980 and 1989 such spending fell by 75% to less than \$2 per pupil.

Information on the students per teacher ratio in each of the three types of schools in the two main metropolitan areas is available from the Ministry of Planning (1991) and the Ministry of Education (1997). These show a rapid increase in the mid-1980s when the Egyptian government embarked on its educational reform programme⁷. Such figures should be treated with caution though, as sometimes they do not conform with expected patterns. For example, they don't reveal any similar increase of the student-teacher ratio between 1975 and 1981, when migration of teachers and instructors to Arab countries is widely thought to have caused an acute shortage [Hansen and Radwan (1982)]. Moreover they do not represent real trends in the status of teachers. The improvement of the ratio in the late 1980s hides the fact that the level of commitment of technical education teachers was low, primarily due to salary erosion under mounting public debt. Above all, they tell nothing about the quality of their training, as the vast majority has never been exposed to practical workshop experience.

Figure 6
Number of pupils per teacher in Cairo and Giza technical secondary schools, selected years



Sources : Ministry of Planning (1991) and Ministry of Education (1997)

Studies of the educational system

Apart from quantitative indicators, substantive evidence is provided by qualitative descriptions of the system. Studies by Egyptian researchers are scant and characterised by a lack of awareness of the economic relationship linking skill acquisition with the wage determination process. However, they do share a common belief that technical education is in urgent need of reform. Al-Bahwash (1993, p.201) argues that the majority of graduates of industrial and agricultural

schools are unable to participate in the production process and that in its current form this type of education “cannot become a tool for development and progress, instead being nothing more than a waste of time and effort for those who expend it”. A constant preoccupation of the Egyptian academics is the dualism of the educational system and the inconsistency of aspiring for sustainable industrial development, while not entrusting it to the best students [Morsi and al-Nouri (1977), Said (1982)]. Metwali (1989) stresses that the weakest point is the almost complete absence of interface between firms and schools : how can the aim of training students to become employable be achieved, if employers have no saying in the curriculum content ? In the absence of feedback, several specialisations were being overly expanded at the same time that shortages were reported in others, as indicated by data on applicants in the civil service employment list compared across specialisations [al-Qusi (1986)]. Graduates in superfluous specialisations were routinely appointed to irrelevant posts, which weakened further the link between education and employment [al-Ghannam (1985)].

Foreign donors and international agencies have also undertaken evaluation studies. However, in the absence of a comprehensive information system, these are not thorough, but are limited to the level of mission observations and experts' remarks. In a large-scale review of technical and vocational education and training policies around the world [Middleton et al. (1993)] every single one of the six references to the Egyptian system represents the example to be avoided. The public sector employment guarantee, the compression of the government pay scale, the expansion of the university system, the restrictive labour legislation, the fragmentation of authority in training provision, the low remuneration of teachers, are all mentioned as signs of inefficiency. Within the framework of the World Bank's regional reviews of alternative modes of vocational training and technical education covering the Middle East and North Africa [ITS (1985a,b), World Bank (1986)], the shortage of adequately trained teachers and, in particular, the fact that workshop instructors have never exercised their practical skills in an industrial environment as production or maintenance workers, is singled out as the most serious problem⁸.

The study also had a tracer component covering 250 graduates from the period 1977-1982. The administrative determination of appointments and wages was out of line with the shortages of skilled labour caused by the then massive external migration to the oil-rich countries. Indeed, one fifth of those included in the list of graduates were abroad at the time of the survey. About a third of the contacted graduates were self-employed in family businesses, a factor that has been side-stepped by technical education policy makers whose courses and specialisations were planned to match the needs of public sector

industrialisation. The training needs of the informal sector, and especially the fact that employment opportunities are distributed along family lines, are labour market elements that have been entirely ignored in the conception of the system.

Extensive discussions with recent graduates suggest some crucial features of educational practice. Workshop experience has been very low over the last fifteen years in technical secondary schools, as a result of both the hastiness in preparing instructors (and hence their inability to meet quality standards) and the increasing class sizes. This stripped the technical school of its applied character and led to its discredit⁹. Recruitment criteria at *intermediate* skill levels are no longer based on educational attainment ; instead, skill mastery is verified after long probation periods, often in breach of labour legislation. The young skilled worker is employable if he can show familiarity with the workshop environment, which can mainly be acquired during adolescent part-time employment rather than in school itself. This phenomenon of substituting less educated but more experienced workers for graduates of vocational schools is also mentioned by Dessouqi (1992) and represents the opposite form of the familiar model of the labour market, where employers hire preferentially more educated workers. In fact, this tendency is still observed at *above intermediate* skill levels where industrial secondary school graduates are also unable to obtain technicians' jobs. Langeoire (1984) suggested that university graduates, whose employment opportunities are exhausted, filter down to the immediately lower step in the job hierarchy. Industrial secondary school graduates are squeezed from both sides in the labour market.

Since the middle of the 1980s adverse economic conditions, such as the reverse oil shock and the repatriation of a large part of immigrants, precipitated the collapse of the public budget. This meant both lower spending for technical education and lower level of investment in public enterprises, which also implies a lower intensity of training. Moreover, the centralised appointments scheme also collapsed at the same time, so that the government ceased serving as the employer of last resort¹⁰. As such an important source of jobs could no longer be tapped, it becomes interesting to see labour market developments in the 1990s.

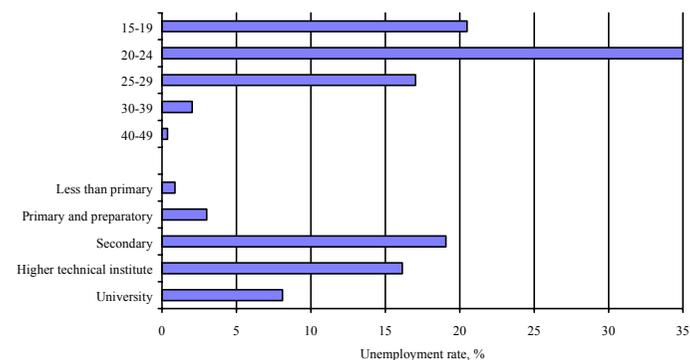
Labour market repercussions

Population and labour market statistics in Egypt are plagued with serious problems [Issawy (1983, pp.1-4), Anker and Anker (1988), World Bank (1991, pp.101-102)]¹¹. These problems of labour statistics, which are based on the sampling frames of the Central Agency for Public Mobilisation and Statistics, have been exacerbated in recent years as the state statistical authority is not prepared to deal with the emerging private sector [Weiss and Wurzel (1998)]. However, all available evidence on unemployment, despite significant

divergence across surveys with respect to the precise figures, agree that unemployment has two specific structural aspects : it is concentrated upon those with no labour market experience and those with secondary education certificates¹². Figure 7 decomposes the unemployment rate in age and education groups in 1995 according to the Labour Force Sample Survey¹³.

Although the former aspect may not be entirely surprising, given that in a labour force with such high proportion of young workers, the natural unemployment rate will be higher [Pissarides (1993)], the educational composition of the unemployed is more of a concern. Male secondary education graduates make up about one fourth of the labour force but three quarters of the unemployed stock. Similarly, female secondary education graduates constitute up to a third of the labour force but four fifths of the unemployed stock¹⁴.

Figure 7
Unemployment rate of urban male by age and education groups, 1995



Source : Central Agency for Public Mobilisation and Statistics, Labour Force Sample Survey

With respect to wage statistics, the absence of detailed or reliable survey data on wage trends is unfortunate¹⁵. The single official source, the annual Employment, Wages and Hours of Work survey, covers only public sector and formal private sector enterprises¹⁶ and, most importantly for our purposes, provides no breakdown of employees according to their educational qualifications. Without such information it is impossible to assess changes in demand for graduates of different educational levels.

The only exception in recent years is a special round of the Labour Force Sample Survey in 1988, financed by the ILO, which collected earnings information¹⁷. Several papers were based on these data, which somehow managed to find their way to researchers despite the fact that they were never officially released¹⁸, the most characteristic example being the work of Assaad (1997) on the role of the public sector pay and employment policy on the labour market. Bartsch (1995) suggested that private returns to primary and secondary education are extremely low or even negative, if we were to disregard the migration opportunities. Wahba (1996) found that secondary education graduates were earning less than preparatory school graduates in urban and rural Lower Egypt. While doubts exist about the reliability of the earnings module of even this meticulous survey¹⁹, the same surprising result was observed by Adams (1991, Appendix) in three villages in Upper Egypt. He argued that, even if this were to be attributed to negative selectivity, as the most able men among the educated had migrated, the result was so paradoxical as to call for further research into the effect of education on incomes.

To sum up, it has been argued that the government decision to expand technical and, in particular, industrial secondary education enrolments with the 1981 reform was miscalculated. It has resulted in the decline of the instruction standards of an already fragile system and the deterioration of its output, as evidenced by the increasing unemployment problem faced by graduates. In the following sections, it will be attempted to answer the question why Egyptian educational policy has placed such confidence in the ability of technical schools to transform students into skilled workers, despite clear signs that the system would not be able to cope with the challenges such an expansion was posing.

THE GAP BETWEEN THE PHILOSOPHY OF TECHNICAL EDUCATION AND ITS PRACTICAL IMPLEMENTATION

Hansen and Radwan (1982, p.269), reviewing education and training in Egypt of the late 1970s, remarked that “no society can today afford to waste its scarce resources on a system which is unable to achieve its objectives”. Why have educational policy planners shown such tolerance over the deteriorating conditions in technical education? In very few countries is the one extreme of the choice spectrum between educational quantity and quality as vividly represented, as in the case of Egypt. The policy guideline followed throughout the 1980s was to allocate 70% of students enrolled in upper secondary education to technical schools, this being perceived as the remedy to an increasing mismatch problem between education and employment. However, as it will be made clear, the choice was not based upon any study of labour market needs that the system had to adapt to. While the framework was set up on the basis of

ideological reasons, its persistent expansion was determined by the forceful influence of institutional memory and demographic pressures, rather than any rational response to socioeconomic planning. In the following paragraphs the attraction of the idea of formal technical education to Egyptian policy makers will be presented along with evidence on its appeal even in times of economic liberalisation.

Modernisation and national development

As just about everywhere in the Arab world, Egyptian educational policy has had a deep-rooted belief in the ability of technical schools to provide the required development impetus. The ideological current which came to dominate the revolution of 1952 would look back to “the era of exploitation, colonisation and corruption” and point to the colonial administration and the representatives of the *ancien regime*, including private entrepreneurs, as those to blame for holding back the pace with which sciences were entering the educational system and training was becoming an ingredient of employment relationships²⁰.

It was therefore not surprising that governments imbued with the Free Officers ideas for national emancipation would place technical education at the centre of their educational reform. That trend became more firmly entrenched as the economic strategy moved increasingly toward central planning and in particular after 1961, when the mass scale nationalisation of manufacturing industry took place. The National Charter of 1962 expressed the Egyptian intellectuals’ wish that the society adopted a scientific outlook on life to achieve revolution aims and that it did away with apparently old fashioned practices that abhorred planning activities [Ayubi (1991, Chapter 7)]. “Revolutionary action should be scientific. The revolution is not an action to wipe out the ruins of the past but rather to build up the future. If the revolution were to relinquish science it would become a mere emotional outburst enabling the nation to let off steam, but it would not change its state. Science is the true weapon of the revolutionary will. Here emerges the great role to be undertaken by the universities and educational centres on various levels. The people are the leaders of the revolution. Science is the weapon with which revolutionary triumph can be achieved. Science alone can guarantee that trial and error in the national action would lead to a development with guaranteed consequences”²¹.

However, the early steps in establishing vocational education programmes were perceived to be marred by an unfavourable public attitude toward this educational track. Several contemporary sources seem to imply that such reluctance to enrol in technical schools was unreasonable [al-Ghannam (1971) is an example]. Well into the 1980s, planners continued to believe that the lack of compliance of the student population with the idea that technical education is

beneficial for the country was one of the most serious problems facing the consolidation of these projects. The National Council of Experts (1990, p.79), for example, was suggesting as a solution to this problem in the mid-1970s to incorporate technical and vocational subjects in preparatory education, "as an attraction to raise the interest of the student and kindle desire for this type of education"²².

Believing that attitudes can change without changing the incentive structure amounts to little else than illusion. The international debate over the ability of technical schools to transmit developmental skills had already from the mid-1960s cast serious doubt on the technical schools' monopoly over these functions. On the one hand, Foster (1965) had argued in a seminal paper that reforms injecting vocational elements in otherwise academic curricula are inadequate tools to shift the preferences of graduates, which are actually shaped by perceptions of students and their parents on future economic returns. On the other hand, in a string of literature epitomised by Blaug (1973), it is argued that the high degree of substitutability in skill acquisition, especially in developing countries, runs contrary to the popularity of technical education projects to both governments and agencies. Studies on the private returns to education have failed to give any conclusive evidence in favour of technical schools and research has most often sided with the view that general secondary education imparts equally important skills, without imposing as heavy a burden on the public budget²³.

The vocational school fallacy committed by Egyptian governments has another, more important side. As argued above, a major force driving the development of technical education was the turn of the economic policy toward centralised planning and industrialisation. In such a framework, educational plans have to supplant investment plans in order to avoid bottlenecks that could disrupt projected production paths. Manpower planning projects the needs in skilled labour that will be required during the implementation of the economic plan and is based on assumptions about the precise proportions in which to combine the factors of production to yield given amounts of output. Filling the elements of a matrix of economic activities and their occupational structure, on the basis of the most recent census, is the first stage. The socioeconomic plan then specifies how fast the output will grow and what its distribution will be among economic activities by the end of the period under question. This output mix is translated in skilled labour needs on the assumption that the activity-occupation matrix of the base year remains relatively constant for a reasonable length of planning horizon. Further rigid formulas are then necessary to translate the needs for levels of skills into demands for the educational system²⁴.

An objection that can be raised against this mechanism is the multiplicity of combinations that can result in the same output. This makes it safer to leave the relative scarcities of production factors guide the direction of educational development and the skill intensity of production. Rather than administer centralised plans for the training of technicians with instruction on narrowly defined trades, it is more effective for governments to provide general training and an economic environment that will urge firms not to neglect investment in the productive capability of their workers. However, in the 1960s the appeal of central planning was understandable as it was backed by the, then perceived as, successful transformation of agrarian societies in Eastern Europe into modern industrialised states. In any case, in the absence of certainty about the optimal plan, an easy and palatable alternative would always be to complement plan estimates with estimates based on the past experience of currently advanced nations in an attempt to replicate their skill development paths. However, in none of these forms were manpower planning techniques applied in Egypt with any consistency or accuracy.

For the first ten years after the revolution, educational policy was lacking a reliable guide for decision making, mainly as a result of the lack of coordination between labour force surveys and the planning exercise²⁵. The first integrated planning effort for the needs of the first five year plan 1960/61-1964/65 was initiated in July 1961 and completed in December 1962 with a planning horizon up to 1975 (with the assumption that the GNP would grow at a rate of 7.2% per year during this period). It was organised by the Ministry of Education and the Institute of National Planning and according to Saleh (1985, p.175) it can be considered as the only forecast ever to have been carried out "seriously and on a sound basis". Apart from the above described stages, it also incorporated managers' opinions about their potential future needs. Table 2 shows the needs identified in the engineering sub-sector for the years 1964-1980, distinguishing between three levels of skill.

Table 2
Needs of engineering sub-sectors according to the 1962 manpower forecast

	Numbers needed		
	Engineers	Technicians	Skilled labour
Textiles	1000	7500	7500
Chemical	3400	10200	78000
Construction	14900	44600	535200
Mining and petroleum	1200	2400	4800
Electrical	8000	40000	80000
Metal	4500	13300	201300
Transport	3000	7500	30000
Education	6200	4000	4000
Total demand	42200	129500	940000
Annual demand	2650	8100	59300

Source : Saleh (1985, p.176)

The distinction in three levels constitutes a crucial aspect of the politics behind this planning exercise and the fate of the particular forecast, masterfully described by Moore (1980, Chapter 4)²⁶. Higher technical institutes, which were set up in 1955 to produce technicians, had failed in their aim. As a result, technicians were the type of skill mostly needed and planning-oriented politicians who had participated in the 1962 manpower forecasts were keen on replacing them with shorter and more intensive courses to deal with the shortage. However such a downscaling contravened the ambitions of the then incumbent Minister of Higher Education, who viewed the strengthening of these Institutes as a political survival tool and sabotaged the implementation of the recommendations (which in any case had not been officially adopted as national policy). In the event the Minister was deprived of his post for reasons irrelevant with his policies on the subject and the original projections were still the object of debate three years later. In 1965 a special inter-ministerial committee was formed whose recommendation was to limit the proportion of preparatory school graduates joining general secondary schools to 20% [Inter-Ministerial Committee (1966, pp.17-18)], a policy that was never adopted. Ironically, the policy of artificially raising the higher technical institutes to university faculty standards on paper finally succeeded in 1968 when their degrees were rendered equivalent, as part of an effort to control student protests in the aftermath of the Six Day War.

As a final word, it is quite indicative of the intentions and the capability of Egyptian policy makers to make decisions and then translate them into actual policy that this single study, which determined the necessary supply at about 8100 technicians and 59300 skilled workers on an annual basis, was still being quoted fifteen years later as the rationale behind educational expansion, even

though this projection was only meant to be valid until 1980 and while more than a million workers had already migrated to the OPEC countries [National Centre of Educational Research (1980), p.9]²⁷. Saleh (1985) reports that the 1962 manpower projection eventually overestimated the total labour force in 1976 by 12% (according to the Census results) as a result of this migration flow. Moreover, the wars with Israel were to be blamed for further deviations from the projected output mix : compared to the initial estimate, the need for skilled labour was underestimated in the construction and utilities sectors (as it did not take into account the reconstruction requirements) and it overestimated the needs in manufacturing, as the military involvement had squeezed investment in productive capacity. It should be remembered that the output target was woefully missed as GNP stagnated throughout the period, instead of doubling within ten years.

The possibility of manpower planning was re-assessed upon the beginning of cooperation between the Egyptian government and the United States Agency for International Development in the late 1970s. Among the first things that the local mission realised in its effort to increase its "scant knowledge of Egypt's economic problems" [Weinbaum (1985)] was the absence of a manpower information base upon which to base comparisons across alternatives [Salt (1977)]. However, shortages at particular industrial specialisations were acute in such areas as equipment maintenance and electrical networks [USAID (1978), pp.141-143] and this necessitated the resumption of forecasting, even though the conditions were far from ideal. Ignorance prevailed with respect to the volume of migration, the socioeconomic plan was not being implemented and the 1976 Census results had not been published. The results, which are summarised in Table 3, urged for an expansion of industrial and agricultural schools and higher technical institutes.

Table 3
Comparison of skill supply and demand according to the 1979 manpower forecast
(in thousands)

Type of school	Current annual output	Projected annual demand
General secondary	47	10
3-year industrial	31	67
3-year agricultural	12	12
3-year commercial	72	70
5-year industrial	2	28
5-year agricultural		4
5-year commercial	3	13
Universities	80	51

Source : Clatanoff (1979)

However, the call for repeating the study on a biannual basis was not materialised. Ten years later, the National Council of Experts (1990, p.376) was regretting “that no individual or organisation can indicate the real numbers for the training, levels and specialisations demanded at a national level”. Further evidence that no progress was achieved during the 1980s is provided by a report from the National Centre for Educational Research (1990a) which listed no attempt to project manpower needs after 1982 despite the large number of authorities involved on paper. The report itself, a study of the specialisations that should be introduced in technical schools, is a clear indication of the confusion of policy makers about the role of planning. Its authors acknowledged that the incompatible methods of previous attempts were a result of changing socioeconomic conditions and unreliable information. However, their approach, which extracted its results on the basis of opinions expressed by public sector company managers and which treated the technical school as a separate entity from the firm, actually applied the same outdated philosophy²⁸.

The role of international organisations and foreign donors

In the late 1970s following the abandonment of Soviet support by Sadat, the policy of economic opening and the peace process initiated at Camp David, the opportunity was provided for a series of development assistance programmes from Western donors related to technical education. Three World Bank projects concentrated on curriculum diversification efforts, technical teacher training and skilled and semiskilled worker education upgrading. In the framework of investment appraisal reports, light was shed on the state of educational planning, and a call for “urgent attention” was voiced, as severe shortages of technicians were discovered on the basis of manpower demands. The annual supply of industrial skilled workers in particular was found to cover only up to 30% of projected demand according to Bank estimates [World Bank (1978)].

The above suggests that the leading international development lending organisation was actually in favour of investments in technical education. It should not be forgotten that the World Bank was actually the largest funding source for such projects until well into the 1980s despite mounting evidence that gross inefficiencies in the implementation were usual. It was a study of the Colombian and Tanzanian diversified secondary education systems that prompted this policy shift [Psacharopoulos and Loxley (1985)]²⁹.

In general, during the second half of the 1980s, educational research also shifted its focus and, drawing on a wider base of empirical studies, also argued against large-scale technical education systems, especially when they are established at a quick pace [Lauglo and Lillis (1988)]. It should be therefore said in defence of Egyptian policy makers, that their confidence in expanding

vocational education was not in total vacuum but was often drawing on the favourable predisposition of the international organisations themselves. Such beliefs are commonly found in foreign experts reports, such as the 1980 ILO mission, which noted its “approval” for the plans for further expansion of the system incorporated in the 1981 reform [Hansen and Radwan (1982), p.267]³⁰. UNESCO and its regional Middle East office reports are another apt example of an institution whose prescriptions are used to justify educational policies in Egypt³¹.

Another good example of how old convictions continue to determine policies long after the official philosophy has changed is provided by the United States Agency’s for International Development attitude toward technical secondary education in the late 1970s. The Agency compiled the first comprehensive report on the state of technical education [USAID (1978)] and contributed the technical expertise for the second major manpower forecast ever to be attempted in Egypt, which was discussed above. In 1979 a joint Egyptian-American committee submitted a report on the reform of basic education, dedicating a separate chapter to technical education. This report, in common with the suggestions of the manpower report, advocated an expansion of the system of secondary technical education. This suggests a striking absence of interface between researchers and administrators within institutions themselves, as there appears to be incomplete translation of policy principles into operational guidelines. While the USAID philosophy on technical education in 1982 was stressing the need to decentralise and rely on employers [King (1991)], at the same time the agency’s representatives in Egypt were consenting to the expansion of a system that was organised along diametrically opposite lines. The main argument of the consultants’ report was that despite the weaknesses of the educational system, it was preferable to seek solutions through it, because individuals would only be able to adjust to changing economic conditions with delay and had to be protected. This was a view of the world that ran contrary to the assumptions that underlie the liberalisation policies espoused by USAID.

BUREAUCRATS NO LONGER IN BUSINESS : NEW CHALLENGES, OLD PRACTICES ?

The Minister of Education begged for answers in a recent exposition of his policy on technical education at a conference of the Society of Engineers: “I have always been saying that in Egypt we suffer in the field of technical education and this issue is indisputable. Let’s have a look around together, anywhere you like, for example let us have a look at the surrounding buildings where we can see the Egyptian trademark of which we are all aware, a leaking sewage on the facade, clear evidence of the real crisis of technical education. I

have not seen this thing in any developed country, however it is ever present in Egypt. Is it only related to technical education ? Or is it in our deep rooted nature, our fatalism, lack of effort, and neglect ? Or is it all these together affecting in various ways our education, including technical education ?” [Baha’ el-Din (1995)]

In fact throughout the whole speech, he provides no answers as to what can be done to save the existing set of schools and confines the discussion to the new initiatives, in particular the Mubarak-Kohl project. This is an exception to the dominant international trend of withdrawing funding from explicit technical education projects. It also represents the latest initiative of the Egyptian government, undertaken in collaboration with the German Organisation for Technical Co-operation (GTZ). It is noteworthy that GTZ had refrained in the past from exporting the German model of apprenticeships (known as the dual system and praised by OECD countries) to partner countries, including Egypt, relying instead on traditional technical education institutions [King (1991)]. However, following the overall re-assessment of German development policy on education in 1989, an agreement was signed in 1991 to establish a unit within the Egyptian Ministry of Education. The new system aims to provide the opportunity for students to work in workshops of firms. This is not very different from the PVTD apprenticeships at first sight, except that participating firms are private and the quality of the schools higher. Most of these schools are located in the burgeoning new industrial cities surrounding Cairo and have been accompanied with special agreements with the local investors associations. This is a significant departure from previous government practices, although there is always the concern that entrepreneurs join for reasons of prestige rather than any special commitment to personnel upgrading³². The first students graduated in 1998. In the final stage, the project aims to transform up to 25 existing schools and provide a total of 40,000 graduates every year.

Thus, it seems that John Waterbury’s observations concerning higher education more than fifteen years ago are also pertinent to current educational policy in the field of technical secondary schools. “There is a tendency to let the crisis worsen because, it is felt, whatever its dimensions it is no longer susceptible to reform. The standard tactic is then to seek a solution outside the afflicted institutions” (1983, pp.240-241)³³.

The institution of industrial secondary education was afflicted because the links between public enterprises and schools were never close, with the exception of those schools set up by some of the biggest of these firms and organisations. One policy option could have been to concentrate efforts in re-establishing feedback mechanisms between the two institutions. However, that was simply unrealistic. Over the last ten years the role of the state as an

economic agent has started to diminish. One of the manifestations of the public sector’s retreat from the economic sphere is the reduction of its share in total investment from 44% in 1988 to 27% in 1997. Moreover, the decline of the role of public manufacturing enterprises through the privatisation process also annuls the role of a centralised education system. Whereas industrial school students benefited from their appointment upon graduation to a technician’s job in public sector firms during the 1970s, formal links have ceased to exist for current graduates. A second policy option could therefore have been to make a conscious effort to adjust to the needs of the private sector by consulting them for the updating of curriculum. However, with the exception of the limited involvement of the investors’ associations in the new industrial cities, the institutional capacity was simply not there. In the face of all that, the third option would have been to consider reductions in the number of enrolments. As the links between education and production were increasingly harder to discern, it becomes even more questionable why this massive expansion of enrolments in industrial secondary schools since the 1980s should have ever taken place.

It must be quite clear by now that with respect to the expansion of secondary education it is safe to assume that the particular expansion pattern had little to do with any conscious planning activity to which the government decided to stick faithfully. On the contrary, this expansion should be related to a conscious attempt by the government to deal with the Pandora’s box that they opened in the 1950s with the premature expansion of university education. This view is shared also by Egyptian observers [see Gamal el-Din (1986)]. The size of the technical secondary system was largely the result of the screening process for tertiary education. As technical school graduates cannot enter university, the explicit division of upper secondary education into general and technical schools has essentially served the purpose of taking the pressure off the exams at the end of the general secondary cycle by providing an early sorting. These exams have been a loaded social issue and have generated a parallel education system of cram lessons, which had deleterious impact on educational quality³⁴.

The policy that was followed can be summed up in an effort to achieve a single administrative target and has neglected the essence of the educational practice, the transmission of development-related skills. “The specialists in the field of education ... overflow the market of intellect with laudatory speeches and panegyrics in exaltation of the issue of technical education ... More students now join the public institutions of technical education than those of general education ... Can these indicators fill us with confidence with respect to this education ?” [‘Ali (1996), p.210]. The 1962 National Charter warned that “administration commits a grievous error if it imagines its huge machinery to be an end in itself”. Korayem et. al. (1985, p.98) argue that educational policy can only be understood in the light of history and ideology. “In Egypt, as elsewhere,

reversing the forces of history and ideology requires an equally formidable force because the overriding conditions of underdevelopment reduce the range of options and leave little room for manoeuvre.” Indeed, hard choices face policy makers who have to decide about which segments of the population will be excluded from the educational process. However, in Egypt the form of exclusion chosen was a very costly one in that not only did it divert resources from improving access and educational standards in compulsory education, but it also created a generation of educated people with high expectations but inadequate means to fulfil them³⁵. The discussion of technical education policy has shown another episode in the “growing imbalance between men and things” [Ajami (1992), p.7], the lost opportunities and the resulting social exclusions.

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Endnotes

- ¹ See, for example, Beinin (1989), Bianchi (1989), Goldberg (1992), and Posusney (1997).
- ² Oil production, Suez Canal tolls and migrants' remittances have been an increasing source of income growth in recent decades. Tourism revenues, despite the fact that they have been assisted by significant investments, may also be considered as attempts to extract the rents of the country's rich heritage. See the extensive discussion in Hansen (1992).
- ³ It should be stressed that comparisons across educational systems are not always illuminating because of differences in classification methods. Some systems may have a strong vocational bias in their general secondary curricula, but not to the extent that they would be characterised as technical under the typology applied by UNESCO. There may be countries applying technical tracks in the lower secondary level, which may hide the fact that other countries, such as Egypt, focus on technical education in the upper secondary level. However, on average, it suffices to say that Egypt has relied more than most countries on technical education as a means of achieving its development goals.
- ⁴ Abdel-Mesih (1987) found that 26% of the students in the industrial school he surveyed belonged in this category. Evidence on the widespread use of private tuition even in technical secondary education is provided by Salib (1998) who found that practically every student in the Cairene school he surveyed resorted to tutorials in their final year.
- ⁵ This link was particularly strong in the case of female commercial secondary school graduates.
- ⁶ In all, 15 institutions are active in the field, according to the report by the Ministry of Manpower and Employment (1994). Conflicting interests have often been mentioned as a source of friction that opposes the unification and rationalisation of the system. The vocational training centres of the Productivity and Vocational Training Department (PVTD) of the Ministry of Industry were set up in 1958 and grant certificates of an equivalent status to those of industrial secondary schools. This is also known as the apprenticeship system, because of the emphasis given on practical experience as a central element of the study, at the recommendation of the ILO which instigated their establishment [al-Arabi (1961, 1965)]. A functional apprenticeship system also exists in factories under the jurisdiction of the Ministry of Military Production, yet their status is not equivalent to that of secondary technical education. The Ministry of Housing and Reconstruction runs its own programmes of specialised training, while individual public authorities are responsible for training formally their own labour force, apart from their involvement in Ministry of Education schools.
- ⁷ Abdel-Haleem (1988) reports data from the Ministry of Education showing that at the time the expansion was being decided upon, the shortage of industrial school teachers for theoretical subjects was above 20%.
- ⁸ The study also suggested the superiority, at the time, of vocational training centres under the jurisdiction of the Ministry of Industry over the industrial secondary schools because of their attachment to the needs of industry. This view was also held by an evaluation of a PVTD centre in Alexandria, which concluded that “the industrial apprentice is well trained on the vocation he is fit for, inside the locality or place of production” [Gaber (1981)].
- ⁹ An important aspect of this failure should be traced back to the teaching and evaluation methods that rely on rote memorisation. Hargreaves (1997) notes the absence of interrelated concepts within subjects in the curriculum, as a factor hampering learning. It has been an old criticism that the educational philosophy leaves the graduate like “a horse in blinkers” [Kerr (1965, p.181)]. The record of both language and mathematical skill retention in primary education has been very low [Hanushek and Lavy (1994) on the basis of a 1980 survey] and has deteriorated further during the 1980s according to a UNICEF study [Fergany (1994)].

¹⁰ The last cohort to be offered posts, with a delay of about eleven years, was that of the 1984 graduates [see the monthly magazine of the Ministry of Labour, *al-'amal*, Issue 389, October 1995, pp.12-13].

¹¹ It suffices to say that even the Census is not a reliable reference point. For example, the estimated male-female ratio of resident Egyptians is always above one, despite the fact that men constitute the vast majority of the sizable migrant population.

¹² See also Industry and Economic Consultants (1996) for the results of a household survey on behalf the Social Fund for Development.

¹³ Note that the educational classification used by the Central Agency for Public Mobilisation and Statistics does not distinguish between technical and general secondary school graduates. However, as shown in the introduction, the latter groups are but a fraction of the group of all secondary school graduates.

¹⁴ According to Fergany (1995) this trend of increasingly attributing the unemployment problem to the inexperienced and relatively educated during the 1990s may be a result of biases in the survey procedure. A special round of the LFSS, which was undertaken in October 1988 and serves as a useful benchmark for longer term aspects of the labour force [such as the activity rate; see Fergany (1991)], estimated the share of those with secondary and tertiary education certificates among the unemployed at 57%, a considerable difference when compared to the estimates portrayed in Figure 7, which exceed 90%, if university educated unemployed are added. This can be traced back to the relatively strict unemployment criterion of zero hours of economic activity during the reference week of the LFSS, which does not capture the underemployment of the lesser educated. In general, it is hard to make sense of an unemployment index, which is close to zero for these workers and up to 25% for secondary education graduates.

¹⁵ This is a general problem facing economic research in Egypt and detailed microeconomic labour market studies are rare. There have been more opportunities to study rural labour markets. The two prominent examples are the papers by Hansen (1969) and Mabro (1967), who suggested that seasonal fluctuations in agricultural wages argued against the use of Egypt as an example of an archetypal labour surplus economy. Adams (1986) and Commander (1987) have also provided survey-based insights into agricultural labour pay.

¹⁶ Moreover, private sector firms report only the basic salaries paid, and not the various allowances and bonuses of the pay structure, to minimise their social security contributions.

¹⁷ In October 1998, a special survey designed to be comparable to the October 1988 LFSS and using a similar sample and questionnaire design, was carried out by the newly established Economic Research Forum in cooperation with the Central Agency for Public Mobilisation and Statistics. Assaad (2000) presents a valuable preliminary overview of the changes in the main labour market aggregates in the period 1988-1998 on the basis of these new data.

¹⁸ The Egyptian law takes a very restrictive attitude with respect to granting authorisation to researchers to use statistical material collected by national authorities.

¹⁹ Secondary employment among civil servants was estimated at only 10%, a figure that is unrealistic by all accounts. For more than simply anecdotal evidence see the overwhelming findings from the urban quarter surveyed exhaustively by Singerman (1995, Chapter 4), which raise the respective figure to over 70%. If, as is believed, such parallel employment opportunities provide the main source of income for most households, then statistical analyses of rates of return to education, which rely on reported public sector salaries, are both theoretically unsound and empirically misleading.

²⁰ Shenouda (1972, Chapter 7) describes the limited effect of technical education reforms in the first independence period.

²¹ The translation of the text of the National Charter text is from Rejwan (1973, pp.254-255).

²² Another way to increase the attraction of technical education at that time was the establishment of a syndicate for the so-called applied technical professions in 1974 whose members were the graduates of industrial secondary schools. Given that members of professional organisations could only make 20% of workers committees, the creation of the syndicate sought to enhance the prestige of these workers by raising them above the level of ordinary workers. On this issue see the work of Longuenesse (2000).

²³ More recently, Bennell (1996) reviewed the entire evidence from such rates of return studies. Failing to establish a universal pattern, he argued that comparisons attempted in the past between the efficiency of general and technical strands of secondary education were flawed, especially because the samples on which comparisons were based were not random. There do exist efficient systems, especially in Latin America, where there is a longer tradition of technical education and industrialisation. Successes and failures can only be explained within their specific contexts and technical education systems cannot be altogether dismissed.

²⁴ An exposition of the methods applied at the Institute of National Planning is provided by Fahmy (1997). This textbook was written in the 1960s and in its sixth edition the most recent reference to foreign bibliography is thirty years old.

²⁵ In the particular case, the results of the 1960 Census had not been available.

²⁶ See also Klat (1960), for a very early critique of the Middle Eastern governments' approach to technical education. The thrust of his criticism concerns the over-ambitiousness of decision makers. Technical education policy already in the 1950s emphasised buildings over teaching materials, training centres over workshops for apprentices, industrial management over extension work in agriculture. Like Moore, he blamed such emphasis on eye-catching projects on the role of political ambition.

²⁷ This is all the more striking given that just a year before, the World Bank had made its own projections in collaboration with the government, within the framework of a series of educational investment loans. There it was calculated that 20800 industrial technicians were needed every year. It was also explicitly stated that this estimate was not taking into account the leakage that could be caused by migration flows [World Bank (1978), p.5].

²⁸ It must be added here that policy proposals emanating from this research unit are often ignored by the central administration of the Ministry of Education, because of factionalism that has developed out of grievances over pay differentials, as reported by Toronto (1992).

²⁹ Technical education projects have been funded by the World Bank since then, but they were rather oriented toward training and did not involve the participation of the Ministry of Education.

³⁰ In a similar fashion, an ILO (1975, pp.207-8) plan of action a few years earlier had argued that the "priority given by the Egyptian government to tackling open urban unemployment was correct, including the policy of absorbing university graduates in the public sector".

³¹ For example, the National Councils of Experts (1990, p.80) refer to the need to follow UNESCO guidelines for textbook integration across theoretical and applied concepts.

³² A World Bank report [Gill (1995)], while not rejecting these principles, foresaw the demise of the new system unless either the private sector is called upon to increase its contribution or the administration is removed from the labour market-insensitive Ministry of Education.

³³ In other words, "a dual system ... was once again created within Egypt" [Szyliowicz (1973, p.285) referring to higher education in the 1960s].

³⁴ Another attempt of the Ministry of Education to reduce the number of students who reached the general secondary final exams was the introduction of the so called path adjustment alternative, which allowed failing students to join the second year of a technical secondary school after two years in a general secondary school.

³⁵ See the discussion on the 'political chemistry' of these schools in Richards and Waterbury (1990, p.131)

REFERENCES

Abdel-Haleem, Sayed Mohamed (1988) *Technical secondary education in Egypt, with special reference to rates of return to investment*, unpublished PhD thesis, University of Southampton

Abdel-Mesih, EM (1987) *Vocational education development in Egypt : an administrative perspective*, unpublished MA thesis, American University in Cairo

Adams, Richard H Jr. (1986) *Development and social change in rural Egypt*, Syracuse University Press

Adams, Richard (1991) *The effects of international remittances on poverty, inequality, and development in rural Egypt*, Research Report 86, International Food Policy Research Institute

Ajami, Fouad (1992) *The Arab predicament : Arab political thought and practice since 1967*, Cambridge University Press

Ali, Sayed Ismail (1996) *Educational policy in Egypt* (Siyasa al-ta'alim fi misr), Cairo : 'Alam al-Kutub

Anker, Richard and Martha Anker (1988) *Improving the measurement of women's participation in the Egyptian labour force : results of a methodological study*, Population and Labour Policies Programme Working Paper 163, World Employment Programme, International Labour Office

al-Arabi, M (1961) A modern apprenticeship scheme in the United Arab Republic, *International Labour Review* 84 (6), pp.478-498

al-Arabi, M (1965) Experience of apprenticeship training in the United Arab Republic, *International Labour Review* 92 (6), pp.490-505

Assaad, Ragui (1997) The effects of public sector hiring and compensation policies on the Egyptian labor market, *World Bank Economic Review* 11, pp.85-118

Assaad, Ragui (2000) *The transformation of the Egyptian labor market in the 1990s : an assessment of the winners and losers in an era of reform*, Paper presented at the First Mediterranean Social and Political and Research Meeting, Florence, March 2000

Ayubi, Nazih N (1991) *The state and public policies in Egypt since Sadat*, Ithaca Press

Baha' el-Din, Hussein Kamal (1995) *The general strategy on technical education in Egypt* (Al-istratijiah al-'amah li al-ta'alim al-fanni fi misr), National Strategy for Development on the Occasion of the 75 Years Jubilee of the Society : Volume Three, Cairo : Egyptian Society of Engineers

al-Bahwash, Said Abdelaziz (1993) *Toward a new philosophy of technical education in Egypt in the face of the challenges of the 21st century* (Nahu falsafah jadida li al-ta'alim al-fanni fi misr li muwajahat tahdiat al-qarn al-hadi wa al-'ashrin), Proceedings of the 13th conference of the Association of Modern Education with the participation of the Faculty of Education of Ain Shams University, Cairo 13-15/7/1993 (on technical education)

Bartsch, Ulrich (1995) Rates of return to investment in education and migration in Egypt, *Al-Mishkat Research Notes* 9, Cairo

Beinin, Joel (1989) Labor, capital, and the state in Nasirist Egypt, 1952-61, *International Journal of Middle East Studies* 21, pp.71-90

Bennell, Paul (1996) General versus vocational secondary education in developing countries : a review of the rates of return evidence, *Journal of Development Studies* 33, pp.230-247

Berger, Morroe (1957) *Bureaucracy and society in Modern Egypt : a study of the higher civil service*, Princeton University Press

Bianchi, Robert (1989) *Unruly corporatism : associational life in twentieth century Egypt*, Oxford University Press

Blaug, Mark (1973) *Education and the employment problem in developing countries*, ILO

Clatanoff, William B Jr (1979) *Manpower projections for planning education and training*, Assisted by Dr M Saleh, M Ismail, N Makari, United States Agency for International Development

Cochran, Judith (1986) *Education in Egypt*, Croom Helm

Commander, Simon (1987) *The state and agricultural development in Egypt since 1973*, Ithaca Press for the Overseas Development Institute

Dessouqi, Said (1992) *The role of education in development* (Dawr al-ta'alim fi al-tanmiyah), Proceedings of conference on pre-university education, April 1992, Club of members of the Institute of Education, University of Cairo

Development Decisions International Inc (1985) *Regional study of alternative modes of vocational training : final report, Country study : Egypt*

Fahmy, Mohammed Seif el-Din (1997) *Educational planning : principles, methods and problems* (Al-takhtit al-ta'alimi, ususuha wa asalibuhu wa mushkilatuhu), 6th edition, Cairo : Anglo-Egyptian Bookshop

Fergany, Nader (1991) *Overview and general features of employment in the domestic economy : final report*, CAPMAS Labour Information System Project, Cairo

Fergany, Nader (1994) Survey of access to primary education and acquisition of basic literacy skills in three governorates in Egypt, Cairo : UNICEF

Fergany, Nader (1995) *Strategic issues of education and employment in Egypt*, Al-Mishkat Centre for Research and Training, mimeo, Cairo

Foster, Philip (1965) The vocational school fallacy in development planning, in : C Anderson and MJ Bowman (eds.) *Education and economic development*, Aldine

Gaber, Samia M (1981) *Graduates (apprenticeship technicians) of vocational training centres in Egypt*, Conference of evaluation of vocational training centres in Egypt, Konrad Adenauer Centre in Cairo and the Faculty of Arts, University of Alexandria,

Gamal el-Din, Nadia (1986) Dialogue on the issue of technical education (Hiwar hawal qidaya al-ta'alim al-fanni), *Dirasat Tarbawia* (Educational Studies), June, pp.73-93

al-Ghannam, Ahmed Mohammed (1971) *Education in the Arab region viewed from the 1970 Marrakesh Conference*, UNESCO

al-Ghannam, Ahmed Mohammed (1985) Technical education, in : *General social survey of the Egyptian society : Education 1952-1980* (Al-mash al-ijtima'i al-shamil al-mujtama' al-misri), Cairo : National Centre of Sociological and Criminological Research

al-Ghannam, Ahmed Mohammed (1993) *Study of administration requirements of industrial and agricultural secondary schools*, Paper presented at the 13th conference of the Association of Modern Education, Faculty of Education of Ain Shams University, Cairo (in Arabic)

Gill, Indermit (1995) Meeting private sector skill demands, in : Arab Republic of Egypt, *Economic policies for private sector development*, Volume 2 : Background analysis, The World Bank : EGT-14067

Goldberg, Ellis (1992) The foundations of state-labor relations in contemporary Egypt, *Comparative Politics* 24, pp.147-161

Hansen, Bent (1969) Employment and wages in rural Egypt, *American Economic Review* 59(3), pp.298-313

Hansen, Bent (1992) *The political economy of poverty, equity, and growth : Egypt and Turkey*, Oxford University Press for the World Bank

Hansen, Bent and Samir Radwan (1982) *Employment opportunities and equity in a changing economy, Egypt in the 1980s : a labour market approach*, International Labour Office

Hanushek, Eric and Victor Lavy (1994) *School quality, achievement bias, and dropout behaviour in Egypt*, Living Standards Measurement Study Working Paper 107, The World Bank

Hargreaves, Eleanore (1997) The diploma disease in Egypt : teaching and the monster of the secondary leaving certificate, *Assessment in education : principles, policy and practice* 4 (1), pp.161-176

Hyde, Georgie (1978) *Education in modern Egypt : ideals and realities*, Routledge and Kegan Paul

Industrial Training Service Ltd (1985a) *The three year technical education system in the Arab Republic of Egypt*

Industrial Training Service Ltd (1985b) *The vocational training system of the Productivity and Vocational Training Department of the Ministry of Industry in the Arab Republic of Egypt*

Industry and Economic Consultants (1996) *Study of the results of the Priorities Survey in 1993 : final report* (Dirasah nata'ij masah al-wuluyiyat 'an 'am 1993, al-taqrir al-niha'i), Cairo: Al-Mustshariyun li al-Sina'ah wa al-Iqtisad

Inter-ministerial Committee (1966) *Report of the Inter-ministerial Committee on Manpower about educational policy* (Taqrir lajnah al-wizariah li al-quwah al-'amilah 'an siyasaht al-ta'alim), Cairo

International Labour Office (1975) *Manpower and employment in Arab countries : some critical issues*, Selected papers and reports of the ILO/ECWA seminar on manpower and employment planning in Arab Countries, May 1975, Beirut

el-Issawy, Ibrahim H (1983) *Labour force, employment and unemployment*, The technical papers of the ILO/UNDP comprehensive employment strategy mission to Egypt, No.4

Kerr, Malcolm (1965) Egypt, in : James S Coleman (ed.) *Education and political development*, Princeton University Press

King, Kenneth (1991) *Aid and education in the developing world : the role of the donor agencies in educational analysis*, Longman

Klat PJ (1960) Economics and manpower planning, *Middle East Economic Papers*, pp.55-64

Korayem, Karima, Abdel-Aziz el-Koussy, Mohy Khairy Harby and Mauricio Leonor (1985) Egypt, in : MD Leonor (ed.) *Unemployment, schooling and training in developing countries : Tanzania, Egypt, The Philippines and Indonesia*, International Labour Office/World Employment Programme, Croom Helm

Langeoire, JF (1984) *A study of industrial training in Egypt : a report on agricultural machinery repair and maintenance*, International Labour Office and Ministry of Industry, Productivity and Vocational Training Department

Lauglo, Jon and Kevin Lillis (eds.) (1988) *Vocationalising education*, Pergamon Press : Comparative and International Education Series, 6

Longuenesse, Elisabeth (2000) *The syndicate of "applied technical professions" in Egypt : towards a neo-liberal corporatism*, Paper presented at the First Mediterranean Social and Political and Research Meeting, Florence, March 2000

Mabro, Robert (1967) Industrial growth and agricultural underemployment and the Lewis model : the Egyptian case, *Journal of Development Studies* 4

Metwalli, Fouad Bassiouni (1989) *Technical education : its history, legislation, reforms and future. Analytic study on the history of technical education from the beginning of the 19th century to the end of the twentieth century* (Al-ta'alim al-fanni, tarikhuhu, tashri'at, ishlahat, mustaqbaluhu), Alexandria : Dar al-Ma'arifa al-Gama'ia

Middleton, John, Arvil van Adams and Adrian Ziderman (1993) *Skills for productivity : vocational education and training in developing countries*, Oxford University Press

Ministry of Education (1997) *Pre-university education statistics* (Ihsa'at al-ta'alim qabl al-jama'i), Cairo

Ministry of Manpower and Employment (1994) *Guide to centres of vocational training in the Arab Republic of Egypt* (Dalil marakiz al-tadrib al-mihni fi jumhuriyah misr al-'arabiya), Cairo

Ministry of Planning (1991) *Statistical study on the development of pre-university education in Egypt in thirty years (during the period 1959/60 to 1988/89)*, Central Directorate of Information and Documentation, General Directorate of Statistics, Statistical Studies Series 6, Cairo

Moore, Clement Henry (1980) *Images of development : Egyptian engineers in search of industry*, MIT Press

Morsi, Mohammed Mounir and Abd el-Fani el-Nouri (1977) Educational planning and economics (Takhtit al-ta'alim wa iqtisadiatuhu), Cairo : Dar al-Nahdah al-'Arabiyyah

National Centre for Educational Research (1980) *Developing and innovating education in Egypt : policy, plans and implementation programs*, Cairo

National Centre for Educational Research (1990a) *Development of technical secondary education in response to labour market requirements for modern occupations : survey study* (Tatawir al-ta'alim al-thanawi al-fanni li al-wafa' bi mutatalabat suq al-'amal min al-mahan al-mustahdatha), Department of Studies for Educational Planning, Cairo

National Centre for Educational Research (1990b) *Reform of educational system in Egypt*, mimeo, Cairo

National Councils of Experts (1980a) *Technical education and its role in the preparation of the labour force* (Al-ta'alim al-fanni wa dawratuhu fi i'dad al-quwa al-'amilah), Egypt Toward 2000 No.9, Presidency of the Republic

National Councils of Experts (1980b) *Educational policy : principles, studies and recommendations* (Siyasah al-ta'alim, mabadi' wa dirasat wa tawsiyat), Egypt Toward 2000 No.12 Presidency of the Republic

National Councils of Experts (1990) *Compendium of the National Councils of Experts 1974-1989, Volume 6* (Mausu'ah al-majalis al-qawmiyah al-mutakhasisah, al-mujallad al-sadis),

National Council on Education, Scientific Research and Manpower, Presidency of the Republic

Pissarides, Christopher (1993) *Labour markets in the Middle East and North Africa*, MENA Discussion Paper Series 5, The World Bank

Posusney, Marsha Pripstein (1997) *Labor and the state in Egypt : workers, unions and economic restructuring*, Columbia University Press

Psacharopoulos, George and William Loxley (1985) *Curriculum diversification in Colombia and Tanzania : an evaluation*, Johns Hopkins University Press

al-Qusi, Ahmed Fuad (1986) *Technical education and the needs of development* (Al-ta'alim al-fanni wa ihtijajat al-tanmiyah), Conference on technical education organised by the Egyptian Society of Engineers, October 1986, Cairo

Rejwan, Nissim (1973) *Nasserist ideology : its exponents and critics*, Halsted Press

Richards, Alan and John Waterbury (1990) *A political economy of the Middle East : state, class and economic development*, Westview Press

Said, Ahmed Ibrahim Ahmed (1982) *Planning of industrial education in Egypt : evaluative study* (Al-takhtit al-tarbawi li al-ta'alim al-sina'i fi misr, dirasah taqwimiyyah), PhD thesis, Faculty of Education, University of Mansoura

Saleh, Mamdouh (1985) Retrospective evaluation of forecasting methods for qualified-manpower needs for Egypt, in : R Vesituluta Youdi and K Hinchliffé (eds.) *Forecasting skilled-manpower needs : the experience of eleven countries*, UNESCO International Institute for Educational Planning

Salib, Magdi Maher Masiha (1998) Private lessons and their relation to various observed and unobserved variables in industrial technical secondary education (Al-durus al-khususiah wa 'alaqatuha bi ba'd al-mutaghairat al-mu'arifiah wa ghair al-mu'arifiah lada tulab al-ta'alim al-thanawi al-fanni al-sina'i), *al-Tarbia wa al-Ta'alim* (Pedagogy and Education), January, pp. 132-142

Salt, Allan F (1977) *An assessment of Egyptian manpower planning and information programmes relevant to technical education and vocational training*, A report prepared for the Advisory Council on Technical Education and Manpower Development (Ministry of Education) under the auspices of the United States Agency for International Development

Shenouda, Emil Fahmy Hana (1972) *History of industrial education until to the revolution of July 23rd, 1952* (Tarikh al-ta'alim al-sina'i hata thawrat 23 yuliu 1952)

Singerman, Diane (1995) *Avenues of participation : family, politics, and networks in urban quarters of Cairo*, Princeton University Press

Szyliowicz, Joseph S (1973) *Education and modernization in the Middle East*, Cornell University Press

Toronto, James Albert (1992) *The dynamics of educational reform in contemporary Egypt*, PhD thesis, Department of Middle East Studies, Harvard University

UNESCO (1984) *Policy, planning and management in technical and vocational education : a comparative study*, Trends and issues in technical and vocational education 3

US Agency for International Development (1978) *Vocational technical education in Egypt*

US Agency for International Development (1979) *Basic education in Egypt, Report of the joint Egyptian-American survey team*

Wahba, Jackline (1996) *Earnings and regional inequality in Egypt*, Economic Research Forum for the Arab countries, Iran and Turkey, Working Paper 9613, Cairo

Waterbury, John (1983) *The Egypt of Nasser and Sadat : the political economy of two regimes*, Princeton University Press

Weinbaum, Mervin G (1985) *Egypt and the politics of US economic aid*, Westview Press

Weiss, Dieter and Ulrich Wurzel (1998) *The economics and politics of transition to an open market economy : Egypt*, Development Centre Studies, OECD Development Centre

World Bank (1978) *Staff appraisal report, Second education project*, Arab Republic of Egypt, Education and Manpower Development Division, Europe, Middle East and North Africa Region, 2112-EGT

World Bank (1986) *Regional review of alternative modes of vocational training and technical education : final report*, Education and Manpower Development Division, Europe, Middle East and North Africa Region

World Bank (1991) *Egypt : alleviating poverty during structural adjustment*, A World Bank country study

World Bank (1996) *Staff Appraisal Report, Education enhancement program*, Arab Republic of Egypt, Human Development Group, Middle East and North Africa Region, 15750-EGT