

CHAPTER THREE
EDUCATION AND THE FORMATION
OF KNOWLEDGE CAPITAL



EDUCATION AND THE FORMATION OF KNOWLEDGE CAPITAL

Introduction

From our discussion of an empowering environment and the part it plays in the preparations for entrance into the knowledge society we turn to a survey of Arab knowledge capital. We shall take as our starting point in this crucial area an examination of the state of education in Arab societies aimed at analysing what and how their educational systems contribute to knowledge and development and to diagnosing the flaws that impede the ability of these systems to broaden the scope of knowledge in Arab societies. The various levels and outputs of education form the central base of the knowledge society. An assessment of its present state in the Arab region should then lead us directly to the sources of the knowledge gap between it and the rest of the world.

To consider education in the Arab nation in terms of its achievements and its relationship to the knowledge society is to broach the challenges confronting the educational systems in most Arab countries. These challenges include illiteracy, appropriateness of educational systems to serve development plans, science instruction with greater openness to the fruits of contemporary scientific knowledge in its various specializations, the relationship between education and the market (the need to link educational systems to the development requirements of Arab societies), and the relationship between education, unemployment, and job opportunities (placing education at the service of production and the expansion of choices). Following an inspection of these conventional challenges, we will proceed to the newer challenges facing those who see education as an underpinning for and mainstay of the knowledge society. In this context, issues such as the technical utilisation of modern media, quality standards, and long-distance learning

become additional indicators of the large and multifaceted gap in our educational systems.

These new challenges to education and the formation of a knowledge society have helped to crystallise in a general way new problematics linked to the tasks now assigned to the educational process in its various phases in view of the substantial discoveries of new and varied knowledge media, such as information technologies, in a world evolving at unaccustomed speed.

Most Arab countries face multi-layered problems in their educational systems, problems further aggravated by the many innovations introduced by the revolution in information technology. The demands are manifold and blend the challenges of the past with those of the present and future. In view of the difficulty of the subject and the many ways of approaching it, we have chosen to examine the role of education in the creation of Arab knowledge capital. This approach will help us, firstly, in assessing the modes of knowledge accumulation that currently exist at the different educational levels and, secondly, in pinpointing the flaws and shortcomings that keep our educational systems from performing their central function of fostering the necessary conditions for entry into the knowledge society.

Modern societies have charged their educational systems with the task of disseminating knowledge among the broader public, a responsibility formerly restricted to the family, the religious establishment, masters of trades and, for the privileged few, a handful of tutors. Despite the rise of rival institutions, educational institutions around the world have maintained their pivotal role in the dissemination of knowledge and the formation of the human energies that form the backbone of the knowledge society. Moreover, instruction has long since expanded from teaching the

The challenges facing education in the Arab nation revolve around a set of axes that include illiteracy, appropriateness of educational systems to serve development plans, and greater openness to the fruits of contemporary scientific knowledge

In their educational systems, most Arab countries face multi-layered problems aggravated by the many innovations introduced by the revolution in information technology

In the last quarter of a century, Arab states have achieved remarkable progress on all indicators used to gauge the dissemination of knowledge among their people, from lower illiteracy rates to higher numbers of university graduates

basic skills of reading, writing, and arithmetic and inculcating the essential skills of a trade to include the development of analytical and critical abilities, organisational and decision-making skills, the powers of creativity and innovation, and other higher behavioural and mental competencies. Nor is the knowledge that an educational system is presumed to impart limited anymore to the ability to answer the question, "What do you know?" Educational systems are now expected to equip students to answer such questions as, "Do you know how to do such and such?" "Where and how do you find such and such information?" "How do you assess the value of the knowledge you have obtained?" and "How can this knowledge be put to use?" It is through competencies of this sort that individuals become knowledgeable in varying degrees and ways. Thus they become persons aware of the underlying substance and intrinsic value of things and of how to deal with them, educators capable of contributing to the dissemination of knowledge, and active players in their environment and society through their ability to take decisions and espouse views on the basis of available knowledge, as opposed to superstitions, traditions, prejudices, random improvisation, or personal whim.

"When all have access to the lights of knowledge, the time of democracy will have come."

- Victor Hugo (circa 1840)

"An ignorant people is more tractable than an educated one."

- Egyptian ruler Muhammad Sa'id Pasha, son of Mohammed 'Ali Pasha (circa 1860)

Achievements should not blind us to the failures that have prevented many Arab countries from emerging into the knowledge society

THE GENERAL STATE OF KNOWLEDGE AS PROVIDED THROUGH EDUCATION IN THE ARAB COUNTRIES

In the last quarter of a century, Arab states have achieved remarkable progress on all indicators used to gauge the dissemination of knowledge among their people, from lower illiteracy rates to higher numbers of university graduates. Taking the three major education indicators used by the World Bank to assess a country's preparedness

to compete in the knowledge economy—adult¹ literacy rates, secondary school enrolment rates, and enrolment in tertiary education—the progress these countries have achieved becomes readily apparent. Whereas in 1980 the adult literacy rate across the Arab region was approximately 55 per cent for males and 25 per cent for females, by 2005 it had climbed to 82 per cent and 62 per cent respectively.² In 1980, the gross enrolment ratios in all levels and types of secondary schooling stood at a median of approximately 57 per cent for males and 38 per cent for females. In 2006, they had reached 70 per cent for males and 65 per cent for females.³ In 1980, tertiary enrolment exceeded 25 per cent for males and 20 per cent for females in Lebanon only (41 per cent and 21 per cent respectively). The medians were 8 per cent and 4.6 per cent respectively and higher education was non-existent or virtually non-existent in a third of Arab countries (tertiary enrolment was less than 5 per cent). By 2005, only three Arab countries had tertiary enrolment rates below 5 per cent and the median had risen to 18 per cent for males and 29 per cent for females.⁴

Figure 3.1 presents the education and human resources⁵ index for seventeen Arab countries from the most recent period of available statistics and the comparison of these results with the 1995 levels. The indices are based on the World Bank's Knowledge Assessment Methodology (KAM).⁶ The figure throws into relief the huge discrepancies between these countries, some of which have progressed significantly since the mid-1990s, while others have declined in comparison with other countries in the world.⁷ It also reveals that very few Arab countries belong to the upper half of the world's countries on this index (a score of 5 or more).

Nevertheless, these achievements should not blind us to the failures that have prevented many Arab countries from emerging into the knowledge society. How can they even see the light at the end of this tunnel when more than 60 million of their people, two thirds of them women,

FIGURE 3-1

Education and human resources index for Arab Countries (most recent statistical period compared to 1995).



Source: World Bank, KAM, http://info.worldbank.org/etools/kam2/KAM_page5.asp

In the Arab world, more than 60 million people, two thirds of them women, are illiterate, and some nine million school-age children are out of school

are illiterate, and when some nine million school-age children are out of school, most of these in the very countries that have failed to solve the illiteracy problem?⁸

How can these countries possibly build a knowledge economy if the rate of upper secondary school enrolment is less than 55 per cent for both males and females at a time when this rate exceeds 80 per cent in industrialised developed nations and the countries of Central Asia? Indeed, the Arab region lags behind most of the rest of the world in the three above-mentioned variables, ranking sixth out of the eight regions of the world and placing higher than South and West Asia and Sub-Saharan Africa only.⁹

THE NEED TO DRAW AN ACCURATE PICTURE OF KNOWLEDGE CAPITAL

To produce a clear and accurate portrait of the knowledge capital of any society one must look beyond the quantifiable variables mentioned above. These indices and the criteria used to calculate them provide only a preliminary idea of this capital. Whereas illiterates, for example, are alike in their

inability to access written knowledge, however diverse the material foundations of this knowledge, literate people differ greatly in knowledge and skills, especially if they have persisted in their studies beyond the level of compulsory schooling. As we know, public educational systems around the world begin to bifurcate with the end of basic education, which is to say from the upper secondary school level. Consequently, it is possible to imagine that people might possess a glut of certain types of knowledge and of a paucity of other types of knowledge due to the differences between the curricula used in the different branches of secondary education and in the different specialisations at the tertiary level. Moreover, completed levels of education and official graduation certificates do not necessarily reflect the true quality of an individual's knowledge and skills.

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MEASURING A SOCIETY'S KNOWLEDGE CAPITAL

One way to broach the question of knowledge capital in a society is to observe how knowledge is distributed among older generations and then to

Knowledge is more than the information acquired at school. It extends to the information and know-how acquired through experience in the economically productive workplace, as well as from life

Quantitatively, the more education is universalised across society and the higher the average level of schooling, the greater the ability of the members of that society to participate in the knowledge society; the qualitative side of the equation is far more difficult

track the opportunities for knowledge acquisition available to the younger generations through the educational system. "Knowledge capital" refers to the sum of epistemological skills possessed by the individuals of a community. It covers knowledge in the various fields of learning, notably languages and literature, maths and sciences, technology, health and environment, the arts, the humanities and sociology, and philosophy among others. It also includes various mental skills such as the ability to acquire information and to learn independently, analytic abilities and rational processing, the ability to evaluate (which involves critical thought) and apply information and know-how to solve theoretical or practical problems, combinatorial and synthesising skills, planning and organisational abilities, the capacity to make projections for the future, the ability to acclimatise to change and new givens, the ability to take advantage of opportunities for renovation, creativity and innovation, and other such higher intellectual skills. The concept further includes knowledge-based human and social competencies,¹⁰ foremost among which are communicative skills, the ability to form constructive and cooperative relations with others, the ability to work as part of a team and to participate effectively in public affairs, and leadership, guidance and managerial skills.

Measuring the knowledge capital of the members of a community poses an immense challenge to researchers and strategists in human resource development. Knowledge is considerably more than the information individuals acquire at their desks at school. It extends to the information and know-how acquired through experience in the economically productive workplace, as well as from life experience—the informal activities one engages in and the interactions with others that lead to various types of awareness about diverse aspects of life. In the context of the process of assessing total national wealth, in general, and intellectual capital, in particular, some scholars (Bontis, 2004) attempted to

measure "national human capital" by using indices that are so obviously disparate as to render their use in deducing a meaningful indicator difficult.¹¹

To avoid confusing the issues and losing sight of the distinct character of knowledge capital acquired through education, the approach of this report to "national human knowledge capital" will rely solely on the direct relationship between the individual, the institutions of learning, and the learning process. This focus on what formal educational institutions offer and what students gain from them is also determined by the absence of reliable data on the opportunities available to individuals in Arab societies to acquire knowledge outside of their formal educational systems. We will also deconstruct the equation into its quantitative and qualitative components, examine these separately, and then bring them together in common conclusions.

Quantitatively, we can presume that the more education, in its various levels, is universalised across society and the higher the average level of schooling, the greater the ability of the members of that society to participate in the knowledge society. The best objective gauge for this criterion is the level of schooling attained by those who are currently not enrolled in educational institutions. As for those who are still of school age or still enrolled in educational institutions, more than one indicator will have to be brought into play to determine the level of formal schooling that these individuals may ultimately attain. Examples of such indicators are enrolment rates at each educational stage and average school life expectancy.

The qualitative side of the equation is far more difficult, as there are no standing agencies for monitoring the knowledge possessed by different sectors of society, the sources of this knowledge, and the role that the systems for formal education, training, and continuous learning systems play in shaping it. We will, therefore, have to use various approaches in order to obtain an overall, if only initial, estimate

of the qualitative knowledge capital that a society's educational system can ensure. Every society has the right to ask its educational system: What is the quality of the knowledge that will be gained by recipients in the various educational levels? Does the education system truly create knowledge capital and equip us to compete in the knowledge society?

The selection of knowledge to be taught in formal educational institutions derives from a society's project for the appropriate rearing of its emerging generations. It generally takes the form of what are usually termed educational curricula, together with their particular tracks or streams, pedagogic methods, and means of assessing whether students have attained the desired results. The chain of selections (some of which are ideological in nature) begins with setting the amount of time to be allocated to each subject—mother tongue, foreign languages, maths, humanities, pure sciences, the arts, and so on—at the pre-university levels. But the more crucial gauge in this area is whether the recipients have obtained the knowledge, skills, and attitudes expected of them at these levels.

KNOWLEDGE CAPITAL FORMATION BY CHILDREN

Enrolment in basic education is the first step in formal education towards the creation of national knowledge capital. To participate in the knowledge society an individual must possess a range of knowledge, intellectual skills, and attitudes that can only be obtained through continuous schooling for, according to most experts, a period of at least nine years, or what is commonly referred to as "basic education." Accordingly, this report has analysed four complementary indicators for evaluating the opportunities to create knowledge capital in children: primary school enrolment rates, numbers of children outside school, enrolment rates in the upper stage of basic education, and average school life expectancy rates.

BOX 3-1

The Aims of Education for All

The World Education Forum, held in Dakar, Senegal, in 2000, in response to the call of UN organisations led by UNESCO, produced a framework for action entitled "Education for All: Meeting our Collective Commitments." It provides for collective international commitment to the attainment of the following goals:

1. Expanding and improving comprehensive early childhood care and education;
2. Ensuring that by 2015 all children have access to and complete free and compulsory primary education of good quality;
3. Ensuring that the learning needs of all young people and adults are met through equitable access to appropriate learning and life skills programmes;
4. Achieving a 50 per cent improvement in levels of adult literacy by 2015, especially for women, and equitable access to basic and continuing education for all adults;
5. Eliminating gender disparities in primary and secondary education by 2015;
6. Improving every aspect of the quality of education.

The UN General Assembly incorporated goals 2 and 5 into the Millennium Development Goals, thereby entering them into the agendas of all UN development organisations.

For the qualitative aspect of the formation of knowledge capital in children we will survey the different types of knowledge they come into contact with and the levels of competence they are expected to attain in each. How, then, do the Arab countries stand with regard to the foregoing?

QUANTITATIVE INDICATORS

The statistics on net primary school enrolment rates show that only four Arab countries approach the saturation point (95 per cent and above) according to this criterion, eight countries range between 80 per cent and 94 per cent, and six—Djibouti, Mauritania, Oman, Palestine, Yemen (and Saudi Arabia)¹²—fall below this, with Djibouti showing a rate of less than 40 per cent. We should note, too, that only two countries (Bahrain and Tunisia) have attained the saturation point for female enrolment. These figures clearly reflect large disparities among Arab states. Gross enrolment ratios, meanwhile, reveal the inflation in enrolment figures arising from such unhealthy phenomena as high repetition rates and the packing of classrooms with students beyond the reasonable limit for the designated age group of a class. Enrolment rates are inflated by more than 10 per cent in six

The statistics on net primary school enrolment rates show that only four Arab countries approach the saturation point (95 per cent and above)

Arab countries with Mauritania at the top with 21 per cent.¹³

Available statistics also indicate that some nine million children in the Arab region are out of school. Most of these are in Sudan, Saudi Arabia, Somalia, Yemen, Iraq, and Morocco. But even those countries with a reputation for good performance in education, such as Lebanon and Jordan, are not immune to this phenomenon.

Although the laws in most Arab countries provide for compulsory education up to at least the end of the intermediate level,¹⁴ only eight countries have attained gross enrolment ratios meeting or approaching the expected rate of more than 95 per cent through the active application of this provision. Seven countries lag well behind (with enrolment rates of less than 70 per cent): Iraq, Morocco, Yemen, the Comoros, Djibouti, Mauritania, and Sudan. There are no precise statistics for Saudi Arabia and Somalia. Five countries—Jordan, Kuwait, Lebanon, Oman, and Syria—approach the expected level (with enrolment rates of between 85 per cent and 94 per cent).¹⁵

Lastly, relying on data from the UNESCO Institute for Statistics, we can rank Arab countries on the basis of school life expectancy¹⁶ for children enrolled in basic education into the four following categories:¹⁷

- A. Countries in which the average number of school years extends to the start of tertiary education. The countries in this category are Bahrain, Tunisia, Jordan, Libya, Lebanon, and Palestine.
- B. Countries in which the overall average of school years is equivalent to the end or close to the end of secondary school. Algeria, Egypt, Qatar, Kuwait, the UAE, and Oman fall into this category.
- C. Countries in which enrolled children can generally expect not to exceed the upper stage of basic education: Iraq, Morocco, Yemen, and the Comoros.
- D. Countries in which enrolled children can only expect to complete primary education or a little more: Mauritania, Djibouti, and Sudan.

On the basis of the data available on the four preceding indicators, we can classify Arab countries according to the four following categories in terms of their ability to ensure opportunities for the formation of basic knowledge capital among new generations of children (between 6 and 14 years of age) (see Table 3-1):

- A. Countries that can ensure to a high degree that the opportunities are available to their children to obtain the fundamental knowledge necessary to participate in the knowledge society. These countries (for which the four indices average out to 85 per cent or more) are Bahrain, Tunisia, Algeria, Qatar, Egypt, Jordan, the UAE, and Libya.
- B. Countries that can ensure such opportunities to a considerable extent, but must exert additional efforts to guarantee that no child remains excluded from the avenue leading to the acquisition of this knowledge. With overall averages of between 70 per cent and 84 per cent, these countries are Kuwait, Palestine, Lebanon, Oman, Morocco, and Iraq (as well as Syria and Saudi Arabia).
- C. Two countries that must exert intensive efforts in order to equip a greater number of children to participate in the knowledge society: Yemen and Mauritania (with average scores that fall between 55 per cent and 69 per cent).
- D. Countries with a questionable ability to provide sufficient numbers of children opportunities to access the knowledge society within the foreseeable future, if educational opportunities remain in their present state. With average scores of less than 55 per cent, these countries are the Comoros, Sudan, Djibouti (and Somalia).

Figure 3-2, which plots the opportunities for basic knowledge capital creation in children in Arab countries in relation to per capita GDP, depicts a moderately loose correlation between these two variables. As can be seen, financial capacities exceed

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TABLE 3-1

Opportunities for basic knowledge capital formation in children through education in 2005 (per cent)

Country	A Enrolment rate	B Net enrolment rate in primary education	C Gross enrolment ratio in upper stage of basic education (adjusted*)	D Ratio of expected school years to age 18**	Average score (A+B+C+D)/4
Libya	..	..	100	91.9	..
Bahrain	99	98	97	80.2	93.6
Tunisia	97	96	99.8	73.7	91.6
Algeria	98	95	100	66.5	89.9
Qatar	98	94	94.2	67.2	88.4
Egypt	96	94	91.4	65.9	86.8
Jordan	94	90	87.7	72.4	86.0
UAE	95	88	90.5	62.4	84.0
Kuwait	89	83	84.9	68.9	81.5
Occupied Palestinian Territories	80	76	93.3	70.9	80.1
Lebanon	83	82	82.1	70.1	79.3
Syria	..	95	85.8	..	..
Oman	77	74	87.7	64.2	75.7
Morocco	88	88	64.4	51.6	73.0
Iraq	89	89	54.1	49.3	70.4
Saudi Arabia	75	78	58.8	..	..
Yemen	75	75	47.6	43.9	60.4
Mauritania	80	79	25.2	39.4	55.9
Comoros	55	..	38.3	43.9	..
Sudan	44	..	43.9	25.4	..
Djibouti	38	38	25.2	19.2	30.1
Somalia	..	..	..	..	..

Source: UNESCO Institute for Statistics, Data Centre; figures in columns C and D and average score are provided by Ramzi Salama/Report core team member.

* Base averages reduced by 6.7 per cent (average over 100 per cent in the Arab countries in question) to correct for errors in the calculation of gross enrolment figures, which may exceed 100 per cent.

** It may be supposed for the sake of argument that the gross school life expectancy of a given age cohort may, under ideal circumstances, approach eighteen years, as is expected in some countries of the world, such as Ireland and Norway. On the other hand, it may be considered overoptimistic to hope to approach the twenty years that is expected for Australia and New Zealand. The figure of eighteen years has therefore been taken as a maximum for the calculation of the expected figure for all Arab countries.

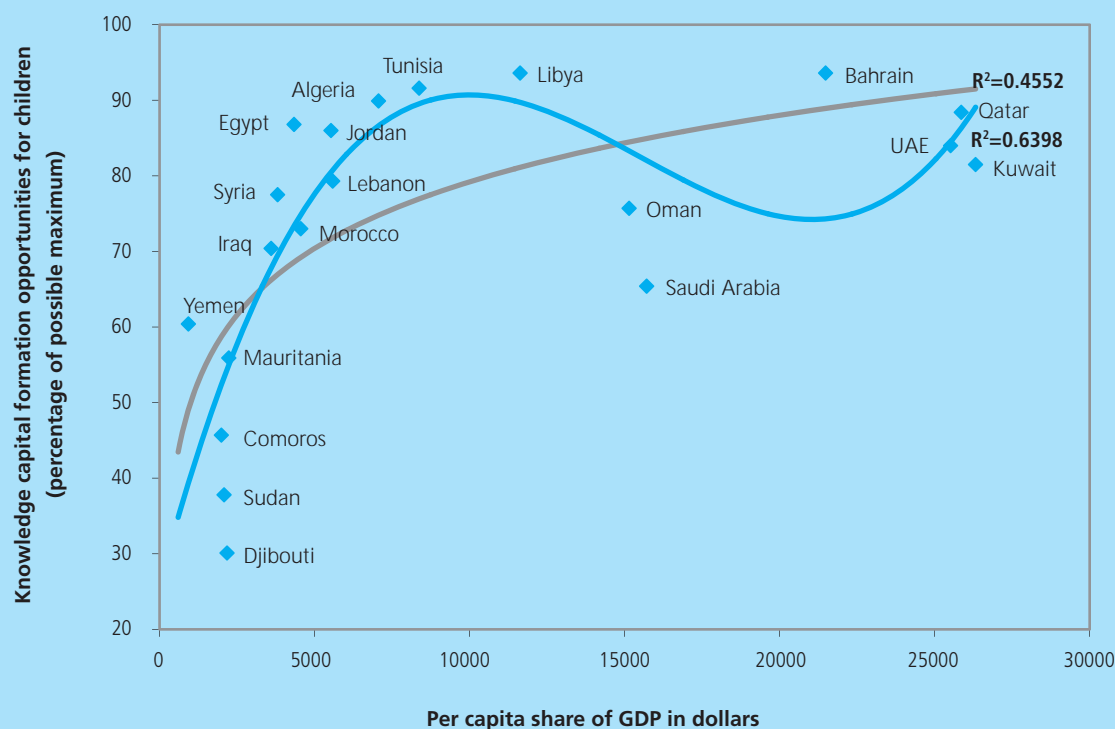
Tunisia, Algeria, Jordan, and Egypt have managed to ensure high opportunities for the creation of knowledge capital in children, in spite of their limited financial capacities

potential achievement in Kuwait, Saudi Arabia, Oman, Djibouti, Sudan, and the Comoros, whereas anticipated achievement exceeds relative financial capacities in Bahrain, Libya, Tunisia, Algeria, Egypt, Jordan, Syria, and Yemen, regardless of the calculated equation.¹⁸ In these terms,

Saudi Arabia and Oman clearly lag well behind the norm, whereas countries such as Tunisia, Algeria, Jordan, and Egypt have managed to ensure high opportunities for the creation of knowledge capital in children, in spite of their limited financial capacities.

FIGURE 3-2:¹⁹

Basic knowledge capital formation opportunities for children in Arab countries against per capita GDP



QUALITATIVE INDICATORS

Time allocated to school subjects in basic education

Apart from Arabic language and maths, the knowledge capital that Arab countries impart to those who have enrolled in or completed basic education varies, in terms of quantity at least

A study on the time allocated to school subjects in basic education²⁰ in Arab countries during the last decade shows considerable variation between these countries in the ratios of class time allotted to religious education and foreign language instruction, a moderate variation in the class time dedicated to science and technology, social studies, the arts, and physical education, and general conformity in the amounts of time allotted to Arabic language²¹ and maths instruction. It follows that, apart from Arabic language and maths, the knowledge capital that Arab countries sought to impart to those who have enrolled in or completed basic education during this period varies, in terms of quantity at least.

The average ratio of class time allotted to Arabic language instruction (28.5 per cent at the primary level and 26.4 per cent in total basic school education) is somewhat lower than the international average for the time allotted to instruction in the mother tongue (up to approximately 32 per cent in primary school education) (International Association for the Evaluation of Educational Achievement, 2003). Classes allotted to Islamic religious instruction average about 12 per cent of the total in the Arab region as a whole, in contrast to the global rate of about 5 per cent among countries whose educational curricula feature religious education instruction (Majallat Mustaqbaliyyat, in Arabic, 2003). The quota for Islamic religious instruction reaches 28 per cent in Saudi Arabia, which is followed by Yemen (20 per cent), Sudan (18 per cent), and Oman (17 per cent). In Tunisia and Algeria, the time ratio for Islamic religious instruction is around the global average.

Virtually the only area in which Arab countries conform to the rest of the world is that of the ratio of class time accorded to maths instruction (about 16 per cent) (UNDP, 2007a, in Arabic). In science and technology instruction, including information and communications technology, Arab countries as a whole depart moderately from the global norm. However, whereas the average ratio of class time accorded to science instruction, alone, in the Arab region (10.5 per cent) is somewhat lower than the global average of 11.7,²² it is markedly lower in Mauritania, Egypt, Saudi Arabia, Yemen, Sudan, and Tunisia. The rest of the Arab countries approach the global average in this regard (UNDP, 2007a, in Arabic).

Noticeable differences between Arab countries emerge with regard to the ratio of class time dedicated to social studies, arts, and physical education. Nevertheless, the general averages in these areas rival the international norms (three hours per week for both social studies and the arts and two hours per week for physical education).

In foreign language instruction at the school level of basic education there is little conformity among Arab countries. Tunisia, Lebanon, Morocco, and Mauritania have long been accustomed to allocating relatively large blocks of class time (from six to eight periods out of thirty-five periods per week) to this item and Qatar, Kuwait, the UAE, and Jordan have recently introduced it into their curricula with significant emphasis. On the other hand, in Saudi Arabia, Libya, Yemen, Syria, Iraq, Egypt, Oman, and Sudan, foreign language instruction is absent or near absent from their curricula.

One is also struck by the total absence of computer technology instruction in many countries and by the scarcity of countries that have introduced this subject into their primary school curricula. We also observe a considerable amount of class time devoted to extra-curricular activities in Egypt, and to political education in Syria.

Due to certain peculiarities of Arab education systems, the time allotted for

instruction in most subjects is relatively low in the majority of Arab countries. Time allocations for the various subjects should be well balanced, so that no subject is given time at the expense of another that may be regarded as basic for the formation of the growing child's knowledge capital. It also stands to reason that the total class time required of basic education in most Arab countries—an average of 802 hours per year, consisting of thirty-three weeks at the primary level, and an average of 911 hours per year, consisting of thirty-three weeks each at the upper level of basic education—is not sufficient to form a knowledge capital solid and robust enough to allow the individual to reap the optimal advantage from higher levels of learning and to actively participate in the knowledge society. This shortcoming is at its most evident in all the Gulf countries (with the exception of Oman under its new system of education), Syria, Iraq, Libya, and Tunisia.²³ Indeed, one UNESCO report observes that the median number of annual hours allocated to primary education in Arab countries is lower than the levels recommended by numerous international organisations and forums, which is between 850 and 1,000 hours per year. The report adds that if we consider the amount of time actually dedicated to instruction, children in many Arab countries receive less than 70 per cent of the time allotted for their formal education (UNESCO, 2008a).

Quality of knowledge acquired through basic education

The results of a 2003 study on the performance of eighth-graders in maths and sciences (UNDP, 2007a, in Arabic), in which ten Arab countries took part,²⁴ aroused considerable dismay in Arab educational and political circles. In maths, the students from Arab countries that participated in this study ranked noticeably lower than the overall international average. They were in the company of students from ten other countries, mostly

The total class time required of basic education in most Arab countries is not sufficient to form a knowledge capital that would allow the individual to actively participate in the knowledge society

Children in many Arab countries receive less than 70 per cent of the time allotted for their formal education

Arab educational curricula in general are almost entirely lacking in activities aimed at developing learners' abilities to collect, organise, sift, and analyse information

from sub-Saharan Africa and Asia. Thirty countries ranked significantly higher than the international average. These were mostly the advanced industrialised countries of Western and Eastern Europe, North America, Asia and the Pacific and they also included Malaysia, which came in twelfth, and Israel, which came in twenty-third. Only 10 per cent of Jordanian participants, 8 per cent of students in Egypt, 6 per cent of Lebanese, and 5 per cent of Palestinian participants achieved high scores; figures for the rest of the Arab countries were even lower. Globally, 23 per cent of participants in the study achieved high scores, with higher rates yet in those countries that ranked the highest. In other words, the knowledge measured by the maths test is possessed by a scant minority of Arab students and absent among the overwhelming majority of them.

Arab countries also ranked at the bottom (coming in at between thirty-eighth and fifty-first place out of fifty-two countries) in the science test. Again, the

results were significantly lower than the international average, with the exception of Jordan which, with results equivalent to the global average, ranked thirtieth. About 21 per cent of Jordanian students achieved high scores, while only about 10 per cent of Egyptian and Palestinian participants and even fewer participants from the other participating Arab countries matched this performance.²⁵ Arab countries have performed poorly in other international studies on maths, science, and reading acquisition.²⁶

Arab students continued to perform poorly in maths and sciences in similar international studies conducted in 2007. In the studies of eighth-graders, Arab countries were among the bottom finalists in maths (between thirtieth and fifty-first out of fifty-one participating countries)²⁷ and sciences (between twenty-second and fiftieth out of fifty-one participating countries).²⁸ In the equivalent tests for fourth-graders, Arab countries came in between thirty-first and thirty-eighth place out of thirty-eight countries in maths,²⁹ and between thirty-third and thirty-eighth place out of thirty-eight participating countries in science.³⁰ No country came near to approaching the international averages apart from Dubai/UAE, which ranked first among all Arab countries in the four tests (UNDP, 2007d, in Arabic).³¹

These studies have shown that while, with the exception of a few details, the science and maths curricula in countries such as Jordan, Palestine, Egypt, and Bahrain are largely the same as those in the rest of the world, Arab educational curricula in general are almost entirely lacking in activities aimed at developing learners' abilities to collect, organise, sift, and analyse information. They also fail to teach how to interpret the phenomena suggested by the information, fully probing all possible ramifications and possibilities, and other similar skills for the handling of information and natural phenomena. The acquisition of such skills is intimately connected to the development of the higher mental faculties individuals

BOX 3-2

Oman's New Plan for Education

The Sultanate of Oman has recently made radical changes in its pre-university public education plans. It has introduced the new Basic Education system, which consists of ten years in two phases, the first covering grades one to four and the second grades five to ten. Basic education is then followed by the Secondary Education phase which extends over two years and is divided into Arts and Science tracks. Oman has also introduced the principle of coeducation in the first phase of basic education. These reforms were put into effect in the 1998-1999 academic year with an eye to their gradual roll-out across the country, as material and human resources permit.

The newly adopted education plan marked a clear break with its predecessor by adding four weeks to the school year, which is now 180 days, and spreading the educational subjects over forty-minute long classes per week, bringing the weekly and annual times allocated to instruction up to international levels. The Basic Education curriculum has introduced classes for

the instruction of computer skills and augmented classroom time allocated to maths, sciences, and social studies to levels equivalent to or greater than international norms. English language instruction has been introduced into the curriculum, starting in the first grade of basic education at an average of five classes per week. New teaching and self-learning methods have been adopted with the aim of developing learners' mental, practical, and life-skills faculties. The new plan retains, to a large extent, the prominence of Islamic studies and Arabic language instruction, while it reduces the number of physical education courses in favour of maths. In the secondary school science track, the number of social science classes has been reduced in order to augment the hours allocated to earth- and life-sciences.

The progress of this experiment should be monitored with an eye to assessing its impact on the formation of knowledge capital among new generations of Omani youths.

must possess if they aspire to participate in the knowledge society. The low performance expectations with regard to language acquisition is also striking, judging by the fact that the curricula of the Arab countries in question defer until later years what is taught earlier in other countries. Moreover, the few hours allotted per week to instruction in foreign languages and various other subjects such as arts, social studies, and physical education offer little assurance of their proper acquisition.

Science and technology instruction and foreign language instruction seem fated to get the shortest end of the stick in the distribution of class time. It is little wonder, therefore, that school graduates of basic education come away with a paucity of know-how in these subjects and that this, in turn, leads to a general disinclination among youth to specialise in the sciences in later phases of the educational process.

Generating sufficient and balanced knowledge capital in Arab children requires increasing the number of annual hours of instruction and weekly periods to appropriate levels and reviewing how these are distributed among the various curricular subjects, as Oman has recently done (see Box 3-2). It also requires an overhaul of the curricula and the pedagogic approach so as to ensure that learners can obtain the required knowledge and develop their higher mental faculties. To this end, every country must ask the following questions: "What knowledge do we really want our school graduates of basic education to have acquired?" "Will this knowledge truly equip our children to meet the demands of the knowledge economy and to participate effectively in the knowledge society?" "Will the time set aside for the acquisition of each knowledge category and the methods of instruction actually lead to the learners' acquisition of the designated knowledge?" Certainly, the answers to such questions must lead to greater receptiveness to progressive Arab and international experiences in these fields, and this, in turn, should reinforce the principle of openness to others in

the development of the Arab project for knowledge capital creation through education.

Basic education is a crucial phase in the intellectual formation of the members of Arab societies. Many will leave the formal educational system at the end of this phase, which generally coincides with the end of compulsory education, in order to enter the labor market or vocational training. The remainder will follow the various streams of general and technical secondary education and receive different types of instruction depending on the particular stream. Gaps in knowledge formation at the level of basic education may not, therefore, be filled by what is offered at the more advanced educational levels or through practical life experience. How can people with such gaps, lacking the fundamentals that allow them to comprehend the information they encounter or to deal with problems that require certain types of awareness, analytical skills, and decision-making capacities, participate in the knowledge society? Clearly, all Arab countries without exception must upgrade the various quality components of their educational systems in order to bring the performance of their students up to international averages.

KNOWLEDGE CAPITAL FORMATION BY YOUTH

QUANTITATIVE DIMENSIONS

The literacy rate among youth (ages 15 to 24) has attained the saturation point (95 per cent or higher) in ten Arab countries. Four others (with literacy rates for this age group between 85 per cent and 94 per cent) have approached this point while a further three (with rates from 66 per cent to 80 per cent) fall well below it.³² The gender parity index,³³ in this regard, is above 95 per cent for half the Arab countries, whereas it is still relatively low (under 0.90) in Egypt, Mauritania, Morocco, and Yemen.

Available figures on upper secondary school enrolment indicate that four Arab states (Bahrain, Kuwait, Libya, and Qatar)

Generating sufficient and balanced knowledge capital in Arab children requires increasing the number of annual hours of instruction and weekly periods to appropriate levels

Every Arab country must ask such questions as: "What knowledge do we really want our school graduates of basic education to have acquired?" "Will this knowledge truly equip them to meet the demands of the knowledge economy?"

While Arab countries vary greatly in their tertiary education enrolment rates, none have attained the saturation point

have gross enrolment ratios (90 per cent or above) approaching saturation point. Nine countries (with ratios of less than 65 per cent) lag far behind: Algeria, Yemen, Morocco, Iraq, Syria, Comoros, Sudan, Mauritania, and Djibouti.³⁴ Seven others rank in between (with rates between 65 per cent and 90 per cent). We observe that in thirteen countries the gender parity index is in favour of females, which suggests, in part, that males tend to drop out before this level. The gender parity index is significantly lower only in Djibouti, Iraq, and Yemen.³⁵

Proceeding from the assumption that the young adults of today are the children who attended school between the ages of nine and nineteen, with an average age of fourteen, we calculated the school life expectancy for the current generation of youth as it stood in 1992. According to the available data,³⁶ the rate of school life expectancy for the entire sector of today's

young adults, whether or not they are still in school, comes to an overall average of eight school years (nine for males and seven for females) across the board in the Arab region, which is one year less than the school phase of basic education. Of course, there are considerable disparities among Arab countries. Average school life expectancy in Libya and Bahrain, for example, extends to the tertiary educational phase, whereas it stops short of the end of primary school in Mauritania, Sudan, and Yemen.³⁷ On the whole, therefore, the current generation of youth (ages 15 to 24) in the Arab world has a relatively low school life expectancy, even if considerable numbers of them are still pursuing their studies in upper secondary and tertiary educational institutions.

While Arab countries vary greatly in their tertiary education enrolment rates, none have attained the saturation point. Libya ranks the highest, with 56 per cent, followed by Lebanon, Palestine, and Jordan (from 46 to 40 per cent); and then by Egypt, Bahrain, Tunisia, and Saudi Arabia (from 35 to 29 per cent). The rates then continue to plunge from 23 per cent and 15 per cent in the UAE, Algeria, Qatar, Kuwait, Oman, Iraq, and Syria, while access to this level of education remains the privilege of only a select few in Morocco, Yemen, Sudan, Mauritania, Djibouti, and the Comoros (all of which have enrolment rates under 11 per cent).³⁸ The apparent disinclination of males to pursue tertiary education in Qatar, Kuwait, the UAE, and Bahrain, in which the gender parity index falls between 3.30 and 2.40 (in favour of females), as well as in Saudi Arabia, Tunisia, and Algeria, in which this index is between 1.46 and 1.26, partially accounts for the Arab region's low ranking in tertiary education enrolment compared to other regions in the world. That twelve countries show enrolment rates below the average of the Arab region as a whole (22 per cent) also helps explain this ranking.³⁹

On the basis of available data on the four above-mentioned indices (see Table 3-2), Arab countries fall into the following

BOX 3-3

The Growing Numbers of Universities in the Arab Region

As countries in the Arab world began to deregulate their economies in the 1990s, governments introduced legislation permitting the local and foreign private sectors to setup higher educational institutions. The result has been an unprecedented boom in the numbers of these institutions, whether established as non-profit or commercial organisations.

It is impossible to draw an accurate portrait of this phenomenon due to the lack of a complete database on the numbers and types of these institutions and their affiliations, curricula, and enrolment figures. However, the available information suggests that they remain marginal in terms of student numbers. Given the stagnation in gross tertiary educational enrolment ratios between 1999 and 2005, it appears that the added educational opportunities furnished by old and new establishments (more than 1.5 million opportunities) have not stimulated a rise in enrolment rates, but rather absorbed the population growth in the category of youths who complete secondary school.

The establishment of branches of foreign universities and higher

educational institutes with foreign affiliations is a manifestation of the globalisation of higher education. It is premature to determine the actual effect these institutions will have—whether they will diminish or enhance the quality of higher education, whether they will merely reproduce outworn educational programmes, curricula and services, or whether they will introduce and stimulate innovation in these concerns. UNESCO has approached this phenomenon from the standpoint of the right of students, their guardians, and the whole of society to quality higher education suited to the needs of national development. In 2005, it elaborated "Guidelines on Quality Provision in Cross-border Higher Education," in cooperation with the Organisation for Economic Cooperation and Development. The guidelines urge these institutes, regardless of their affiliation or means of delivering educational services, to conform to the national quality standards in both the providers' home countries and in the recipient countries, so as to prevent the commercialisation of higher education from leading to a sacrifice of quality.

TABLE 3-2

Opportunities for the formation of knowledge capital by youth (ages 15-24) in Arab countries, 2005 (per cent)

Country	A Literacy rate	B Gross enrolment ratio in upper secondary education	C Gross enrolment Ratio in tertiary education (adjusted*)	D Rate of School Life Expectancy (up to 18**)	Average score (A+B+C+D)/4
Libya	99	94	70	72	84
Bahrain	100	98	41	78	79
Jordan	99	76	50	67	73
Lebanon	..	72	58	67	..
Qatar	97	96	24	67	71
Occupied Palestinian Territories	99	70	51	..	..
UAE	97	78	29	61	66
Kuwait	99	99	24	..	..
Egypt	85	77	44	56	66
Tunisia	95	68	38	56	64
Oman	98	79	23	44	61
Algeria	92	58	26	56	58
Saudi Arabia	97	..	36	44	..
Syria	93	32	19	56	50
Iraq	..	32	20	56	..
Yemen	79	40	11	28	40
Morocco	74	34	14	33	39
Comoros	89	27	3	..	..
Mauritania	66	20	4	22	28
Sudan	..	25	8	22	..
Djibouti	..	16	3	..	..
Somalia	..	..	..	..	..

Source: UNESCO Institute for Statistics, Data Centre; figures in columns C and D and "Average score" were composed by Ramzi Salama, Report core team member.

* As a percentage of the 80 per cent that forms a reasonable goal reached by some industrialised countries.

** As a percentage of the eighteen years that constitute the reasonable maximum.

Only two Arab countries largely ensure opportunities for youth to obtain the advanced knowledge for participating in the knowledge society: Libya and Bahrain

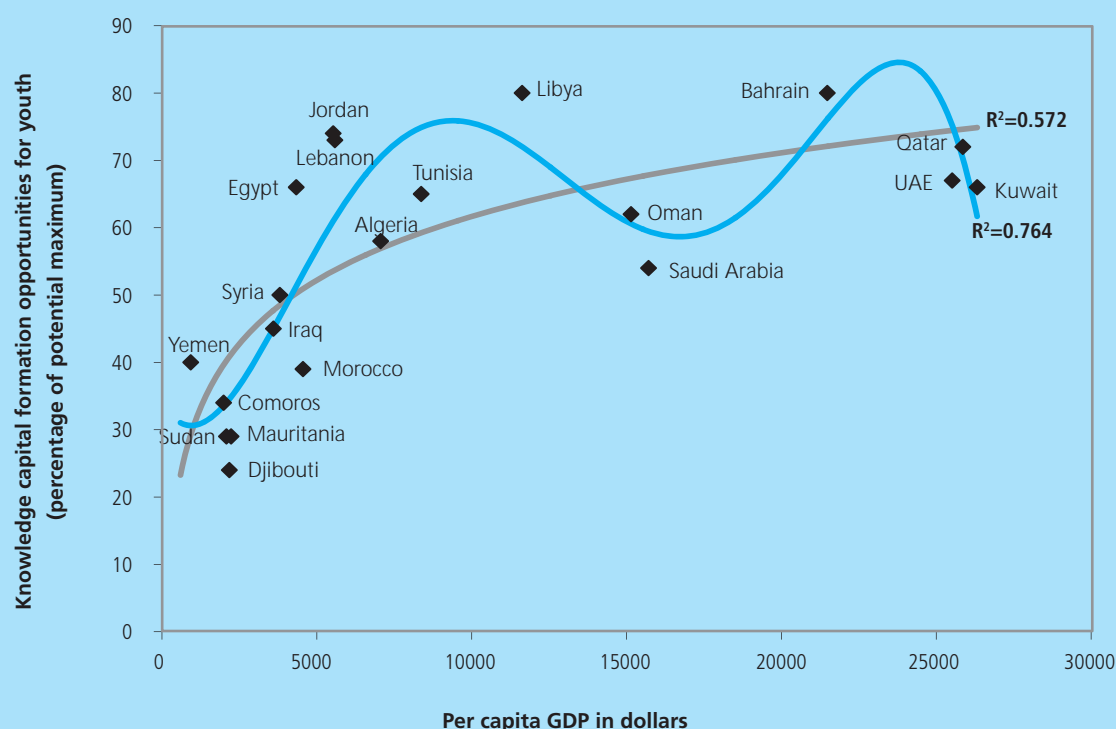
four categories in terms of their ability to ensure advanced knowledge capital formation in young adults (ages 15 to 24):⁴⁰

A. Two countries largely ensure opportunities for youth to obtain the advanced knowledge for participating

in the knowledge society: Libya and Bahrain (79 per cent to 84 per cent);
B. Eight countries ensure a reasonable level of opportunity: Jordan, Qatar, the UAE, Egypt, Tunisia, (Lebanon, Palestine, and Kuwait) (64 per cent to 73 per cent);

FIGURE 3-3

Advanced knowledge capital formation opportunities for Arab youth against per capita GDP



There is a consensus, internationally and in the Arab region, that secondary education, whether general or technical, plays a key role in the formation of the knowledge capital

C. Three countries need to exert additional effort to create a critical mass of youth sufficiently equipped to participate in the knowledge society: Oman, Algeria, and (Saudi Arabia) (50 per cent to 61 per cent);

D. Nine countries have questionable potential for ensuring opportunities for a sufficient number of youth to enter the knowledge society in the foreseeable future: Syria, Yemen, Morocco, Mauritania, (Iraq, the Comoros, Sudan, Djibouti, and Somalia) (under 50 per cent).

Figure 3-3 plots the opportunities for advanced knowledge capital formation in Arab youth in ratio to per capita GDP. Again we find a moderately loose correlation between the two variables, as evidenced by the distance of some of the countries located away from the curve of the exponential equation and by the multiple crests of the polynomial equation. Whereas achievements in this area exceed

financial capacities in Bahrain, Libya, Jordan, Lebanon, Egypt, and Yemen, the reverse is the case for the majority of poor nations, such as Djibouti, Mauritania, Sudan, and Morocco, as well as for the majority of relatively wealthy nations, such as Saudi Arabia, Oman, Kuwait, and the UAE.

QUALITATIVE INDICATORS

There is a consensus, internationally and in the Arab region, that secondary education, whether general or technical, plays a key role in the formation of the knowledge capital needed to progress toward the knowledge society. To what extent does secondary education in Arab countries contribute to the formation of the qualitative cognition needed to equip youths to participate effectively in the knowledge society?

General secondary education and the formation of knowledge capital by youth

Arab countries have gone to great pains to develop general and technical secondary school programmes and curricula, and they have made some effort at streaming this level of education (UNESCO, 2003, in Arabic). However, an analysis of authorised secondary school curricula in Arab countries during the last decade of the twentieth century⁴¹ reveals that these fall considerably short of official aspirations in all but a few pioneering instances, such as Bahrain and Oman. Countries influenced by the French educational system have divided their general secondary education into three or four streams or tracks, while the remaining countries have adopted two-arts and sciences. Libya is the exception with six.⁴² One positive point to which we should draw attention is that curricula for the science branches in most Arab countries contain courses allocated to social sciences and, similarly, most curricula for the arts and humanities branches contain some science courses. As result, early streaming does not mean that those who choose one branch will remain unexposed to the subject matter in the other, even if the proportion of classes allocated to social studies in the science track is in some cases quite low.⁴³ Available data on secondary education shows that the arts tracks have higher intakes than the science tracks. When more than two tracks exist, as in Lebanon, Libya, and the countries of the Maghreb, enrolment figures in the tracks that, according to some at least, may require more academic effort, such as literature and basic sciences, decline in favour of social sciences and life sciences, which seem closer to the applied than to the theoretical sciences.⁴⁴

Several issues require attention in Arab secondary school curricula. One is that in many countries social studies are largely limited to geography, with little or no attention accorded to sociology, economics, or even history. With regard to the latter,

the tendency is to home in on certain historical eras and to pass over others. We also note the rare appearance of philosophy in Arab secondary school curricula, apart from those influenced by the French system.⁴⁵ Good philosophy instruction at the secondary school level is of unquestionable importance. It contributes to the refinement of the personality of learners, hones their intellectual competencies, and expands their world view, all of which are especially important in adolescence, that especially crucial phase in an individual's intellectual, psychological, and social development (UNESCO, 2007). Rare, too, is the inclusion in each track of optional subjects, which give students appropriate opportunities to discover and develop their own inclinations and abilities. Nor do curricula provide courses aimed at developing self-study capacities, such as research, information analysis, and processing skills, or communicative skills, life and community participation skills, and other such knowledge and know-how that directly equip learners to participate intelligently and effectively in the knowledge society. The absence of certain subjects from the curricula in this phase undoubtedly reflects specific social and ideological choices. However, it is also the case that the low overall weekly periods and annual number of school hours in some countries⁴⁶ compared to the international norms makes it difficult to introduce optional courses, independent learning courses, and other such beneficial items into this educational phase.⁴⁷

Technical secondary education and the formation of knowledge capital by youth

The practice in technical secondary education differs little from that in its general counterpart in that it places greater emphasis on the acquisition of the practical skills needed for the performance of a specialised vocation than on the formation of technicians capable of adjusting to changing job requirements.

Arab countries have gone to great pains to develop general and technical secondary school programmes and curricula, and they have made some effort at streaming this level of education, but these fall considerably short of official aspirations in all but a few pioneering instances

In many Arab countries, social studies are largely limited to geography, with little or no attention accorded to sociology, economics, or even history and, in the latter, the tendency is to home in on certain historical eras and to pass over others

Available statistics since 1970 indicate that technical education has been unable to attract sufficient numbers of Arab youths. Until the end of the twentieth century the exceptions to this rule were Egypt, Tunisia,⁴⁹ Bahrain, and Djibouti, joined later by Jordan and Lebanon. Only after

the beginning of the twenty-first century did Syria, Iraq, and Algeria follow suit, albeit to a lesser extent.⁵⁰

One could say that, during the last three decades of the twentieth century, the educational systems in the Arab region were able to create a critical mass of technicians capable of meeting the demands of the labor market in only Egypt, Tunisia, Bahrain, and Lebanon. As a result, Arab countries made do with under-qualified local labor or imported expertise, whether from other Arab countries or abroad.⁵¹ Nevertheless, with the turn of the twenty-first century, there has been noticeable improvement. Enrolment in technical secondary education has reached acceptable levels in about half the Arab countries,⁵² which can now boast of, or are well on their way to forming, a critical mass of young technicians with the knowledge and know-how to meet the demands of the knowledge economy, if not the knowledge society.⁵³

THE ROLE OF HIGHER EDUCATION IN THE FORMATION OF KNOWLEDGE CAPITAL

Quantitative indicators

There is no consensus over universally applicable criteria for ideal or preferable ratios for the distribution of students between higher technical and university education. To develop such criteria one would have to have an accurate picture of the (generally domestic) needs of the job market for technical or university qualifications. The globalisation and opening up of labor markets, and the consequent occupational mobility and migration, have compounded the difficulties in identifying these needs.

The available data on the intake at the tertiary educational level in Arab countries⁵⁴ show that from under 1 per cent to around 31 per cent join the vocational stream. The countries can be categorised into three groups in this respect. The first, with

BOX 3-4

The knowledge students should acquire: the contemporary French approach

The Commission for the Deliberation of Educational Content was established at the request of French President Francois Mitterrand with the purpose of revising the knowledge imparted by the educational system and ensuring the unity and coherence of this knowledge. The commission, composed of prominent figures from the French intelligentsia and world of education, submitted a report in 1989, recommending a series of general principles that it deemed applicable anywhere at the present time. Among these principles are, firstly, the need to periodically review curricula in order to introduce content required by scientific advancements and social change and, secondly, the need to give priority among instruction and learning processes to methods of thinking that are applicable to diverse domains, such as empirical, analytical, critical, deductive and historical thinking, over the types of knowledge that are available outside the educational system or that are accessible through other means. A third principle is the need to strive for flexibility, gradualism, and horizontal cohesion and integration in educational content on the basis of a clear educational philosophy that explains why such knowledge is required and how it should be acquired, including the amount of time that should be allocated to its instruction. Such justifications and conditions should rest on the findings of research and studies revealing the methods that are most conducive to learner acquisition of the required knowledge. A fourth principle is the need to diversify methods of delivering the curricular content and periodically to assess learners' progress in terms of the curricular aims. Fifth is the need to transcend the artificial antithesis between theoretical and practical knowledge by striving to merge the acquisition of applied skills with the acquisition of theoretical or abstract

knowledge, and the need to transcend the divide between the sciences and humanities by reinforcing awareness of their overlapping dimensions in the various subjects taught.

In a study conducted at the request of UNESCO, Edgar Morin⁴⁸ defined seven types of knowledge that learners should derive from the educational system. These are:

1. Awareness of the nature of knowledge and how to obtain it, the difficulties involved and the risks of error and illusion;
2. Development of the natural inclination to contextualise and categorise information, and strengthening the ways of comprehending the relationships between the whole and the parts;
3. Awareness of the unity of mankind, physically, intellectually, sociologically, and culturally;
4. Awareness of the unity of the planet earth and the human species and the difficulties both have experienced and continue to encounter;
5. How to confront the uncertainties scientific advancement has created in all aspects of life and how to accept uncertainty where there is no means of attaining certainty;
6. An understanding of social phenomena with an eye to those dimensions that can foster understanding between peoples;
7. Awareness of the ethical dimension so as to develop the consciousness that a person is an individual, a member of society, and a member of the human species, that the relationship between the individual and society must be organised on the bases of democracy and respect for rights, and that the relationship between societies must be organised on the bases of mutual understanding and membership in a single human species.

relatively high enrolment rates of between 31 per cent and around 20 per cent, includes (from highest to lowest) Djibouti, Libya, Tunisia, Oman, and Algeria. The second, in the middle range of 17 per cent down to 10 per cent, includes Iraq, Morocco, Lebanon, Yemen, Saudi Arabia, Syria, Jordan, and Palestine. Lastly, with the lowest enrolment rates in the vocational track, come Bahrain, Egypt, Mauritania, Qatar, and Kuwait.

Consequently, at a median of 84 per cent, intake in higher education is heavily concentrated in the universities at the undergraduate phase. Only a very small proportion of students continue to the post-graduate phase. The median is 1 per cent, with some noticeably higher rates in Tunisia (7 per cent); Morocco, Iraq, Syria (5 per cent), and Algeria (4 per cent). While female enrolment exists at all three higher educational levels, it exceeds 40 per cent in only three countries (Tunisia 55 per cent, Algeria 44 per cent, and Saudi Arabia 40 per cent).

There are many reasons why the young are reluctant to enter the vocational stream. Prime among them is the low regard that society has for this branch of learning. Students, therefore, flock to university programmes, with the aim of obtaining the prestige of a degree and title, even if they end up in jobs that do not require a university education and have very little to do with the specialisation engraved on their certificates. This is a clear manifestation of the squandering and misuse of resources, a phenomenon that runs counter the requirements for creating a diverse human resource capital capable of meeting the needs of comprehensive, integrated, and sustained development.

The second phenomenon that needs to be urgently addressed is the very low enrolment rates in graduate studies. In order to strike a balance between higher educational institutions' task of transmitting knowledge and the task of developing and renewing this knowledge through its various uses, graduate studies must be expanded, especially at the doctoral

BOX 3-5

Expansion in General and Technical Secondary Education in Bahrain and its Impact on Female Enrolment

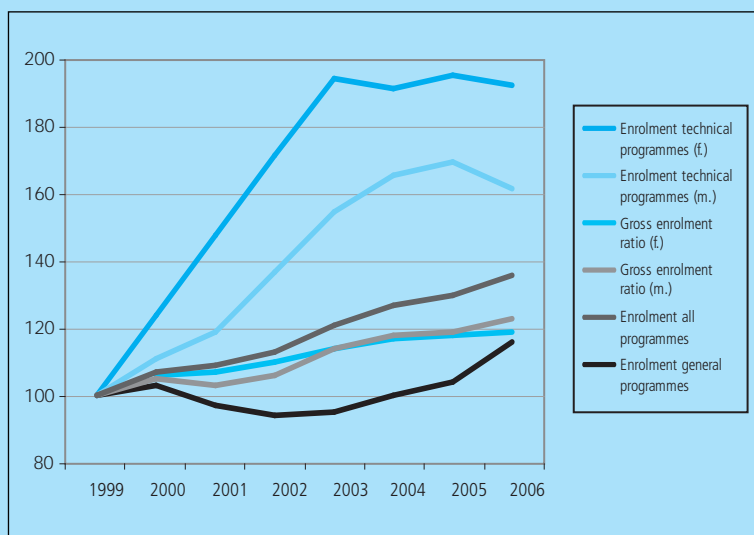
Bahrain has scored a series of achievements in education that have raised it to level of the vanguard of Arab countries in this domain. Its experience merits attention. Bahrain boasts one of the lowest ratios of children out of school, the highest level of net enrolment in primary education, the best enrolment rates in secondary education as a whole, and gender parity. It has nearly reached the saturation point in enrolment rates at the upper secondary education level, and it has the highest enrolment rate in technical secondary education among both Arab and Asian countries.

Secondary education enrolment rates in Bahrain have risen steadily from 1999 to 2006. It is clear that this growth is due to the noticeable increase in the enrolment, depicted in the graph below, of young women (f.) and men (m.) in the technical and vocational programmes. This increase is much higher than the rise in the gross enrolment rate at this educational level, whether taking into account all programmes combined or only the general secondary school programmes.

This quantitative development is undoubtedly connected with the structural reform of secondary education that Bahrain put into effect in the last decade. In addition to diversifying the programmes of technical secondary education and providing an element of flexibility in these programmes, the avenue is now open to enrol in corresponding higher educational programmes, thereby offering a horizon for technical secondary school graduates to continue their studies and progress further in their vocational choice.

Some characteristics of Bahraini society may have played a part in this dual development (the rise in technical secondary school enrolment and the rise in female enrolment in this educational branch). Bahrain is an urban society. With a per capita income lower than that of other small Gulf countries, it depends more on its own people than on imported labor to keep life's wheels turning and promote economic development.

Development in general and technical secondary school enrolment in Bahrain, 1999 to 2006 (100=1999)



Source: UNESCO Institute for Statistics, Data Centre, 13 March 2009.

level. In developed societies, doctoral degree-holders account for 1.3 per cent

More PhDs Needed as University Teachers

Higher education in the Arab region suffers a considerable shortage of teachers. In 2005, the student-teacher ratio was 25:1, compared to the global average of 16:1. The Arab student-teacher ratio is the highest among all regions of the world, including sub-Saharan Africa. Taking the global average as the norm, we find that, in 2005, the Arab region needed some 154,000 additional members in its educational staffs. This signifies that the higher education system in the Arab region does not ensure sufficient human resources with higher academic qualifications, especially doctoral degrees, to meet the needs of its teaching staffs autonomously.⁵⁶

The shortage is more severe in some countries than in others. The student-teacher ratio is at least double the global average in Yemen, Egypt, Algeria, and Palestine, and one-and-a-half times the global average in Jordan, Bahrain, Mauritania, Libya, the UAE, and Saudi Arabia. Only in Lebanon, Qatar, Oman, Djibouti, Kuwait, Tunisia, and Morocco does the student-teacher ratio fall close to the global average. However, due to its growing higher education intake rates, Lebanon, alone, currently appears to be self-sufficient in staffing its universities, in spite of deficiencies in some specialisations such as maths.⁵⁷

High student-teacher ratios are detrimental to the instruction and learning processes and to the productivity of institutions and academic staff members. The more class numbers swell the lower the potential for teacher-student interaction and the higher the risks of drop-out and repetition which, in turn, exacerbate overcrowding and further delay graduation. Another adverse effect of high student-teacher ratios is that teaching staff become so encumbered by the tasks of instruction, whether due to too many students in the classroom

or to too heavy a teaching load, that they have no time for scholastic research and creativity. In addition, it reduces the available time for the types of tandem activities that enrich the learning process and it increases the likelihood of demotivation, which can prove disruptive to the learning process. All such phenomena are detrimental to the quality of the knowledge capital that students acquire.

In addition, many of the staff members engaged in higher educational institutes in the Arab world are inappropriately qualified. According to a regional study carried out ten years ago (Subhi al-Qasim, 1998, in Arabic,) no more than 60 per cent of tertiary education staff members possess a doctorate, although the ratio is somewhat higher in the fields of science and technology.⁵⁸ Moreover, fully-fledged "professors" account for only 16 per cent of the staff. In order to qualify for a professorship one must, in addition to possessing a doctorate, have published valuable articles in serious and reputable academic periodicals.

In sum, most higher education systems in the Arab region do not furnish teaching staffs with the necessary specifications. If they have a sufficient number of PhD holders⁵⁹, these may still not meet the required competency. If they do meet the required competency, circumstances may not be conducive to their further research or their participation in academic life at the international level, or they may find themselves drowning beneath too heavy a teaching load, with the result that in a few years they will either grow academically jaded, leave the educational system for private sector employment, or emigrate. The majority of staff members without PhDs will find their academic dynamism depleted within an even shorter time.

Tertiary education and the formation of the specialised knowledge capital needed to meet development needs

Distribution of undergraduate and graduate students by discipline

It is difficult to produce credible universally applicable criteria for the preferred balance of enrolment rates between the diverse higher educational specialisations. Every country has its own economic, political, and social structures, and its particular financial capacities, which determine to a large extent its needs for the types of highly qualified expertise produced at the higher education level. Still, it is generally acknowledged that every society requires sufficient numbers of experts in education, health, engineering, management, and other fields in order to run its institutional machinery and meet its service and developmental needs in these fields. In addition, every society needs specialists in all fields to undertake the tasks of development.

In general, there are no specific plans in Arab universities for steering students and setting intake guidelines for the various disciplines in terms of their relationship with the domestic and foreign labor markets. Many Arab countries have expanded their university systems, opening new branches and universities in many of their cities, but not in accordance with any comprehensive ordering of the actual needs of these countries. If anything, this has compounded the problems of higher education. Moreover, many countries have merely cloned their universities, with little thought for the relationship between the university and its immediate environment. This begs the question as to the limitations inherent in the type of expansion that fails to embrace the quality of the complex relationship between the university and its designated functions within a particular community from the standpoints of internal coherence, openness to the immediate environment, and escape from the "ivory tower."

Available data shows large discrepancies between Arab countries in the intake rates in the various fields of higher education

of all relevant age brackets, which means a minimum overall higher education intake of over 50 per cent, a graduate level intake of at least 10 per cent, and no less than 2 per cent to 3 per cent intake in doctoral programmes.⁵⁵

Available data shows large discrepancies between Arab countries in the intake rates in the various fields of higher education.⁶⁰ Whereas education degree programmes attract between 1 per cent and 4 per cent of students at the tertiary level in Algeria, Bahrain, Lebanon, Mauritania, Morocco, and Tunisia (and these are extremely low ratios by any standard), rates climb to around 20 per cent or more in Iraq (19 per cent), Jordan (20 per cent), Saudi Arabia (24 per cent), Palestine (27 per cent), and Oman (30 per cent). These higher figures may indicate over-enrolment in education degree programmes in these countries at the expense of other disciplines. Perhaps somewhere midway between the two observed extremes would strike a balance in the intake levels between the various fields of higher education.⁶¹

Turning to those engaged in the diverse fields of medicine, including specialists from other Arab countries and abroad, the available figures for Arab countries⁶² indicate that Lebanon, Qatar, Jordan, and the UAE have acceptable numbers of doctors, whereas the others range between those that need to exert greater effort in order to raise the ratio of doctors per 1,000 people to a level midway between the global average and the European rate (which is the highest in the world), and those countries that need to work intensively in order to attain the global average. Interestingly, there is a surfeit of dentists in Jordan, Lebanon, and, to a lesser extent, Syria. One also notes that Jordan is unique for a large surplus in pharmacists, with a pharmacist per 300 persons or per 50 families. One is particularly struck by the huge variation between Arab countries in all indicators in this profession. One would be hard put to come up with a single explanation for the disparity. Perhaps the most salient factor that would account for this situation is the failure of educational systems to steer sufficient numbers of students into this vital field with an appropriate balance between its diverse specialisations.

In spite of the lack of abundant data on enrolment rates in medicine and health

sciences, we can affirm that the overall ratios are quite low.⁶³ We can therefore conclude that at the current rates of enrolment in medicine and health care sciences, Arab countries will not in the future be able to ensure highly qualified human resources in medicine and healthcare vocations in numbers sufficient to meet the health needs of Arab societies, most of which are desperately short, in comparison with international averages, of specialists

The picture with regard to engineering is less grim than those of education and health. Still, apart from Iraq and Libya, Arab oil-exporting countries do not have higher enrolment rates in their schools of engineering than other Arab countries, in spite of their greater need for engineers, not only in the field of petroleum and petroleum derivatives, but in every other field of engineering, owing to the abundance of revenues available for funding major construction projects. That these countries resort to imported labor is proof of the inability of their educational systems, including their systems of higher education, to respond to their developmental needs for highly qualified human capital.

Nor can it be doubted that many Arab countries have a shortage in student enrolment in the pure, life, and applied sciences and maths in favour of the schools of literature, social sciences, law, and business administration.⁶⁴ Moreover, the job market is not sufficiently diverse and plentiful to absorb most liberal arts graduates, whereas the need for specialists in science and technology is at least as great as the need for specialists in education, health, and engineering, assuming that the Arab countries aspire to generate the knowledge human capital capable of closing the scientific and digital gap between them and the industrially developed world. This is precisely the talent that the higher educational systems in the Arab region are not supplying.

The agricultural sciences require a special study due to the lack of available data on many Arab countries, their diverse

Many Arab countries have opened new branches and universities in many of their cities, but not in accordance with any comprehensive ordering of the actual needs of these countries

Many Arab countries have a shortage in student enrolment in the pure, life and applied sciences and maths in favour of the schools of literature, social sciences, law, and business administration

The available data on the fields of education, medicine and health sciences, engineering, and other fields suggest a shortage of specialised human capital capable of meeting the requirements needed by Arab societies

Thousands of graduates pour out of their higher educational institutes with no real employment opportunities while their domestic labor markets lack graduates in many important specialisations

needs, and the consequent lack of criteria for determining, for example, their relative need for agricultural engineers for areas that can be utilised for plant or livestock production, or their need for veterinarians and the like. In view of the great differences between Arab countries in such matters, each country should be considered individually in terms of its specialisation needs. That said, the available information on schools of agriculture in Arab countries indicates that they offer insufficient diversification to cover their needs for the diverse specialisations in agriculture and food production, and that they occupy a marginal position among higher educational institutions. Such information leads one to believe that agricultural production, in all its forms, is based on traditional know-how rather than modern scientific knowledge.

In general, one can only speculate as to whether higher education in Arab countries can truly ensure the knowledge capital needed to respond to the diverse requirements of development and the needs of the labor market. Certainly, the available data on the fields of education, medicine and health sciences, engineering, and other fields suggest a shortage of specialised human capital capable of meeting the requirements needed by Arab societies to approach issues with a high degree of intellectual acumen and to take decisions based on in-depth knowledge of the issue at hand. This is especially true when they are compared to modern industrialised countries in this regard.

Furthermore, the imbalance in the distribution of graduates over the various specialisations,⁶⁵ of which the social sciences, law, and business administration hold the virtually uncontested lead, suggests, in spite of the importance of these sciences, that the higher education systems are not conducive to the generation of the diverse types of qualified human capital Arab countries need to manage and to develop their societies. Thousands of graduates pour out of their higher educational institutes with no real

employment opportunities while their domestic labor markets lack graduates in many important specialisations.

Qualifications of graduates

Rare is the information from independent and reliable sources on the qualifications of graduates from any educational level in Arab countries. Generally, the available information is restricted to the grades awarded to students on the required subjects in the curricula of the programmes from which they graduated, which, in turn, begs many questions as to how and on what basis these grades are awarded (UNDP, 2007b, in Arabic).

Perhaps the best project in this domain is that conducted by the UNDP Regional Bureau for Arab states in cooperation with the UNESCO Regional Bureau for Education in the Arab states. The project studied large samples of graduates from business administration and computer science university programmes in many Arab countries on the basis of standardised tests. Table 3-3 shows the total results for students tested in business administration in Arab universities. Table 3-4 shows the results for the computer science test. Both tables compare the results with those of their counterparts in universities in the USA.

If we lump the grade rankings into three categories, we find that business administration students from Arab countries on the point of graduating range as follows: 41 per cent failed or performed poorly, which is a very high ratio by any standard; 47 per cent had acceptable or good marks; and 12 per cent rated very good or excellent. In the USA, 15 per cent of those tested performed poorly (about three times less than their counterparts in Arab countries) and none failed, 61 per cent had pass or good marks, and 24 per cent (or more than double) ranked very good or excellent.

Thus, while there do exist students in Arab countries in the higher performance categories, they are exceptions to the

TABLE 3-3

Comparison of overall results of students in Arab countries and students in USA on the business administration test⁶⁶

Grade categories	Ranking	Ratio of students in Arab countries (per cent)	Ratio of students in the US (per cent)
120-130	Fail	15	0
131-140	Poor	26	15
141-150	Pass	28	22
151-160	Good	19	39
161-170	Very good	9	10
171-200	Excellent	3	14
Total		100	100

Source: UNESCO Regional Bureau report (Salamé and El-Murr, 2005)

While there do exist students in Arab countries in the higher performance categories, they are the exceptions to the rule

rule. The vast majority (about 70 per cent compared with 37 per cent of their USA counterparts) are clustered in the lower rankings. This extremely high figure raises grave questions concerning the quality of the human resource capital coming out of higher educational institutions in the Arab world. As to the specifics, students in the Arab states are more or less on a par with their counterparts in the USA in a single component in the business administration programme: economics. They do not come off at all well in any of the other components—accounting, management, statistics, finance, marketing, legal affairs and international business administration—all of which constitute essential applied knowledge needed to participate in the knowledge economy.

The available data also points to telling discrepancies in how students from the different participating universities performed. None of the students from the participating universities in Lebanon, Jordan, Palestine, Yemen, and Algeria attained the general average observed among the students from the universities in the USA. Nor was this average attained by 75 per cent of students from other universities in Lebanon, Syria, Egypt,⁶⁷ Sudan, and Morocco. Only the students from a single university in Morocco came

close to rivalling their USA counterparts.⁶⁸

In Table 3-4, showing the results of the computer science test, we find the same percentages of failed marks for both the students from the Arab region and those from the USA (15 per cent of each group). The divergence begins from the poor ranking upwards, with results in favour of the USA students. Whereas the vast majority of students from Arab countries are split between the lower grade category, with 48 per cent receiving failed or poor marks, and the middle category, with 47 per cent receiving pass or good marks,

TABLE 3-4

Comparison of overall results of students in Arab countries and students in USA on the computer science test.⁶⁹

Grade categories	Ranking	Ratio of students in Arab countries (per cent)	Ratio of students in the USA (per cent)
120-130	Fail	15	15
131-140	Poor	33	23
141-150	Pass	32	19
151-160	Good	15	23
161-170	Very good	4	12
171-200	Excellent	1	8
Total		100	100

Source: UNESCO Regional Bureau report (Salamé and El-Murr, 2005)

Literacy rates among adults have not reached the saturation point (95 per cent and above) in any Arab state

The available data shows steady progress in the average number of years of schooling completed in all Arab states

leaving only 5 per cent at the top end of the scale, students from the USA range as follows: 38 per cent with grades of failed or poor, 42 per cent with grades of pass or good, and 20 per cent with grades of very good or excellent (four times the ratio among students of Arab countries in this category). It follows that the Arab higher educational institutes under study have a 50 per cent success rate of producing acceptable levels of knowledge in computer science. But this is not good enough to generate a critical mass of highly skilled human resources capable of engaging in the processes of development, renewal, innovation and other such activities that would propel Arab countries toward the knowledge economy.

KNOWLEDGE CAPITAL ACQUIRED BY ADULTS THROUGH EDUCATION⁷⁰

Literacy rates among adults have not reached the saturation point (95 per cent and above) in any Arab state.⁷¹ However, they do approach this level (with rates of between 85 per cent and 94 per cent) in

eight countries, and have attained lower rates (from 70 per cent to 84 per cent) in eight others. They remain poor (from 54 per cent to 65 per cent) in five countries. There is a noticeable discrepancy between males and females in these rates. It is about 20 per cent in favour of males overall in the Arab region, with the highest discrepancy (38 per cent) in Yemen. The only exceptions to the gender discrepancy (with differences of 5 per cent or less) are Qatar, the UAE, Kuwait, and Bahrain.

The average number of years of schooling completed is considered the best indicator of the quantitative knowledge capital acquired by adults through the educational system. However, to calculate this indicator requires accurate information on the school grade reached by every member of a society. UN organisations involved in population studies use a clear scale of completed levels of education among adults⁷² for this purpose. Although countries have used the scale for their comprehensive and interim censuses, Arab countries rarely publish this data. Therefore, two approaches have been brought into play in order to estimate the knowledge level of adults. The first relies on past school life expectancy rates, since the adults of today are the children who entered the school system nineteen or more years ago. Accordingly, the rate of school life expectancy was calculated for the period from 1990 (those born in 1984 at the latest) working backwards to 1970 (beginning with those born in 1958), which is to say as far back as statistics are available. This approach thus covered adults who, in 2008, were between a minimum of twenty-five and a maximum of fifty years of age.

The available data⁷³ shows steady progress in this rate in all Arab states for which statistical data is available. The median school life expectancy rates in Arab states ranged from the primary level to the intermediate level, with discrepancies favouring males, except for in Qatar, the UAE, and Bahrain in recent periods, when the discrepancies favoured

BOX 3-7

The Educational Level of Saudi Arabians

The internet site of Saudi Arabia's Ministry of Economy and Planning⁷⁶ provides precise statistics on the education level of the Saudi people. On the basis of this data, we have calculated the level of education of the latter as an illustration of how the same may be done in other countries. Each individual was given a mark according to his level of education, starting from zero for illiterate and ending with eight for a doctoral degree graduate, according to the scale of educational levels attained by adults.⁷⁷

According to the findings, the average educational level of Saudis currently employed is the secondary school level (with a mark of 3.97), which is not bad from the perspectives of the knowledge economy and knowledge society. The average level of education among Saudis not employed, most of whom are women (79 per cent), is just

a little beyond primary school (2.13), which suggests deficiencies in meeting the requirements of a knowledge society. Thus, the overall rate of schooling among Saudi adults is 2.95, or the equivalent of the intermediary level.⁷⁸

It is clear from these findings that the higher a person's educational level in Saudi Arabia the greater the likelihood of his participation in the country's economic life. Therefore, even though the general level of education in Saudi Arabia falls short of the minimal level for creating a knowledge society, we could say that the forces active in the developmental fields in society have attained the required educational level,⁷⁹ while the educational level of more than half of Saudi adults, especially women, is clearly too low to enable them to participate in the knowledge society.

females. According to this data, too, the overall school life expectancy for today's adults in the Arab region as a whole was eight years (nine for males and seven for females), or the equivalent of completing the year before the end of basic education. Nevertheless, there is considerable variation from one country to the next. The rate for the youngest adults is the higher education level in Bahrain and Libya, whereas it is only the end of primary school for their counterparts in Mauritania, Sudan, and Yemen.

The second approach for estimating the level of education of adults aged twenty-five to fifty is to follow the enrolment figures of these sectors in the various levels of education from 1970 to 2005.⁷⁴ According to the findings of this approach, Arab countries have worked hard to eradicate illiteracy. Some 50 per cent of those who had formerly been included in the statistics on illiteracy can, at least, read and write today. The findings of seventeen Arab countries for which statistical data is available⁷⁵ show great strides forward in the educational levels from one age bracket to the next among adults in virtually all Arab states, in spite of large discrepancies from one country to the next and within the various age brackets. According to these findings, the median level of education of the age group that is today fifty years old is 2.5 (less than end of the intermediate level), whereas that of the group that is today twenty-five years old is 4.0 (the secondary school level). This is equivalent to five years more schooling than the older age group.

Due to population growth, the younger the age-bracket the more weight it should carry when assessing the overall level of education of adults aged 25 to 50 in Arab countries. Taking approximations of the relative weights of these age-brackets, the median educational level for them is 3.2, or a little higher than the intermediate level. Nevertheless, Arab countries vary considerably with respect to this average,⁸⁰ which can range from as high as secondary

education, as in Bahrain, Lebanon, Qatar, and Kuwait, or even slightly higher, as in Libya, to below the end of the primary level, as in Djibouti and Somalia. At least half the countries concerned, however, are in the vicinity of the intermediate level of education.⁸¹

Thus the knowledge level attained through the educational systems by adults in Arab countries—particularly

TABLE 3-5

Estimated knowledge capital acquired through education among adults (25 to 50 years) in Arab countries in 2008 (per cent)

Country	Literacy Rate in 2005 A	School life expectancy rate among adults (aged 25 to 50*) B	Average score (A + B)/2
Kuwait	94	51	73
Libya	86	57	72
Bahrain	88	55	72
Qatar	89	52	71
Jordan	91	47	69
Lebanon	86	52	69
UAE	89	45	67
Occupied Palestinian Territories	92	..	..
Syria	82	44	63
Saudi Arabia	84	38	61
Egypt	71	48	60
Tunisia	76	43	60
Oman	83	35	59
Algeria	74	43	59
Iraq	74	40	57
Comoros	73	..	..
Morocco	54	32	43
Djibouti	65	21	43
Sudan	61	..	..
Yemen	56	..	..
Mauritania	55	..	..
Somalia	..	19	..

Source: UNESCO Institute for Statistics; Data Centre; figures in columns B and "Average score" were assembled by Ramzi Salama, Report core team member.

* As a percentage of 7.33, or eighteen years of study, taken as a reasonable maximum, as above.

the generations of the primary vital forces in society, which is to say the age groups between twenty-five and fifty, which account for the largest numbers of adults—averages something close to the end of the basic education level, with evident discrepancies in favour of males, in general. On the basis of discrepancies in the region, we can categorise individual countries as follows (see Table 3-5):

- A. No Arab country can boast the ability to produce a clear majority of inhabitants above the age of twenty-five with high levels of education (i.e., with a literacy plus educational level index higher than or in the vicinity of 84 per cent⁸²).
- B. Countries that have a critical mass of adults who possess a relatively sufficient knowledge capital (a literacy plus education level index of between 67 per cent and 73 per cent) to enable them to participate in the knowledge society. Eight countries fall into this category: Kuwait, Libya, Bahrain, Qatar, Jordan, Lebanon, the UAE, and Palestine.
- C. Countries that have a minimal level of adults capable of participating in the knowledge society (i.e., with a literacy plus education level index between 50 per cent and 66 per cent),

yet that simultaneously contain large numbers of adults who lack this ability (especially females). There are seven countries in this category: Syria, Saudi Arabia, Egypt, Tunisia, Oman, Algeria, and Iraq.

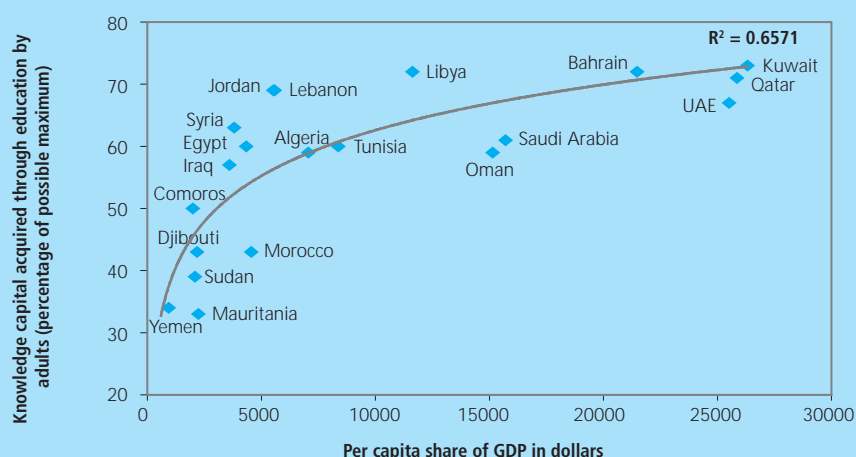
- D. Countries that lack a sufficient mass of adults capable of participating in the knowledge society (i.e., with a literacy plus education level index of less than 50 per cent). In other words, the ability to participate in the knowledge society is restricted to a predominantly male elite that varies in size from one country to the next. There are seven countries in this category: Morocco and Djibouti (to which can be added the Comoros, Sudan, Yemen, Mauritania, and Somalia, for which sufficient data are unavailable).

Figure 3-4 illustrates the adult knowledge capital formed through education in Arab states with respect to per capita GDP, again depicting a moderately loose relationship between these two variables. As can be seen, most Arab countries cluster around the exponential curve, the exceptions being Libya, Lebanon, Jordan and Syria, which show educational accomplishments among adults exceeding these countries' current financial capacities, and the UAE, Saudi Arabia, Oman, and Morocco, which

Eight Arab countries have a critical mass of adults who possess a relatively sufficient knowledge capital to enable them to participate in the knowledge society. Seven other countries lack this critical mass

FIGURE 3-4

Adult knowledge capital acquired through education in Arab countries against per capita GDP



show educational accomplishments among adults below these countries' current financial capacities.

KNOWLEDGE CAPITAL REQUIRED FOR PARTICIPATION IN THE KNOWLEDGE SOCIETY

QUANTITATIVE DIMENSIONS

Table 3-6 lists the Arab states in order of how they rank on the scale of total actual or estimated quantitative components of the knowledge society for each of the three major strata: children, youth, and adults. The table makes palpable the huge discrepancies between Arab societies in their respective abilities to supply the quantitative knowledge capital needed to facilitate participation in the knowledge society.

All three age strata of citizens in Libya and Bahrain are making steady strides towards the degree of excellence (an overall grade of 84 per cent and above) that characterises countries capable of engaging confidently in the knowledge society. Qatar and Jordan, however, (with overall grades of above 75 per cent) possess only a reasonable quantity of the knowledge capital needed to participate in the knowledge society among adults and ensure the acquisition of that capital among the emerging generations of youth and children. Lebanon, Kuwait, the UAE, Tunisia, Palestine, Egypt, and Algeria (with overall grades of between 69 per cent and 74 per cent) follow in terms of their progress toward qualifying for participating in the knowledge society, while Yemen and the Comoros, Mauritania, Sudan, Djibouti, (and Somalia) show themselves unable to realise the minimal level of quantitative components among all age sectors of society to attain this end. With overall marks of less than 50 per cent, participation in the knowledge society in these countries is restricted to small elites. The rest of the Arab states fall in varying degrees between these two poles in terms of their ability to

TABLE 3-6

Summary of estimated quantitative capital obtained through education for the different age strata of Arab societies in 2005 (per cent)

Country	Expected knowledge capital acquisition among Children A	Knowledge capital among youth B	Knowledge capital among adults C	Average score (A + B + C)/3
Libya	*(94)	80	72	82
Bahrain	94	80	72	82
Qatar	88	72	71	77
Jordan	86	74	69	76
Lebanon	79	(73)	69	74
Kuwait	82	(66)	73	74
UAE	84	67	67	73
Tunisia	92	65	60	72
Occupied Palestinian Territories	80	(70)	(65)	72
Egypt	87	66	60	71
Algeria	90	58	59	69
Oman	76	62	59	66
Syria	(78)	50	63	64
Saudi Arabia	(65)	(54)	61	60
Iraq	70	(45)	57	58
Morocco	73	39	43	52
Yemen	60	40	(34)	45
Comoros	(46)	(34)	(50)	43
Mauritania	56	29	(33)	39
Sudan	(38)	(29)	(39)	35
Djibouti	30	(24)	43	32
Somalia	..	..	..	..

* Numbers between brackets are estimates based on incomplete statistical data.

Source: UNESCO Institute for Statistics; Data Centre. Figures were assembled by Ramzi Salama, Report core team member.

establish a critical mass of people able to participate in the knowledge society. Thus we find Oman, Syria, Saudi Arabia, and Iraq in the middle of the scale (with totals of between 58 per cent and 66 per cent) and Morocco (with an overall score of 52 per cent) at the lowest degree of ability.

Most Arab countries have been unable to ensure openings at the upper secondary and the various tertiary education phases in quantities sufficient to keep pace with population growth rates

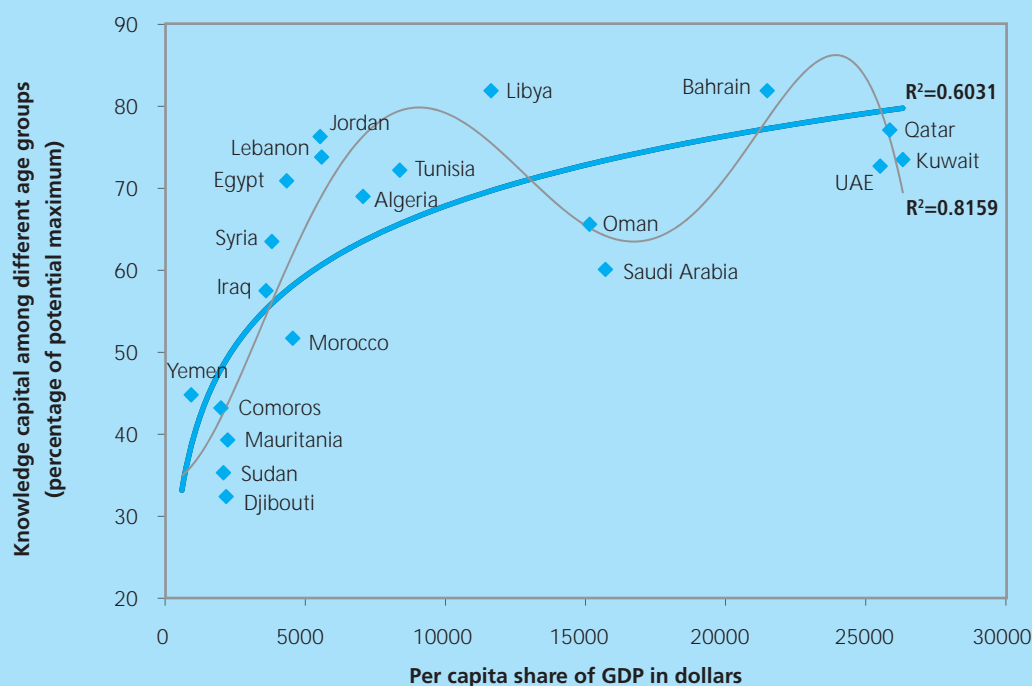
For the most part children are clearly more fortunate than preceding generations with respect to the potential for obtaining the requirements necessary to participate in the knowledge society. However, the situation is not so clear cut when we come to the prospects of youth in knowledge formation when compared to adults. Although youth are, indeed, more fortunate than adults in this regard in half the Arab countries, it is impossible to believe that statistical error or the methods of estimating certain figures can explain why the reverse should be the case in the other half of the countries. The countries in which this phenomenon manifests itself most clearly are Kuwait, Syria, Saudi Arabia, Iraq, Morocco, the Comoros, Mauritania, Sudan, and Djibouti. Undoubtedly, the particular circumstances of each of these countries account for this. The upheavals that Iraq has experienced since 1990 have reduced the opportunities available to youths at their particular educational levels.

The rest of these countries, apart from Kuwait, have evidently been unable to ensure openings at the upper secondary and the various tertiary education phases in quantities sufficient to keep pace with population growth rates among youth and the rising numbers of graduates from basic education. In Kuwait, the reluctance of youths, especially males, to proceed to tertiary education (as evidenced by only a 10 per cent enrolment rate in this level in 2005) is one of the primary causes of the decline in the opportunities for Kuwaiti youth in terms their preparedness for the knowledge economy and society.

Figure 3-5 depicts the knowledge capital created or expected to be created through formal education for the various age strata in relation to the per capita GDP. That there is a strong directly proportional correlation between these two variables is evidenced by how most countries cluster in the vicinity of the exponential curve. The exceptions are Libya, Lebanon, Jordan, and Egypt, which have made educational

FIGURE 3-5

Actual (or expected) knowledge capital formed through education among different age groups in Arab countries against per capita GDP



inroads well beyond their current financial capacities, and Saudi Arabia, Djibouti, and Sudan, where the reverse applies to a remarkable extent.

It should be borne in mind that each country has particular characteristics and circumstances of its own even if it ranks the same as others. This applies particularly to the countries at the upper end of the scale. For example, the degree and focus of efforts the UAE must expend to lift its national knowledge capital to the level of the knowledge society is not the same as that required in Jordan or Lebanon. Likewise, the degree and focus of efforts required in Kuwait and Tunisia are not the same as those required in Saudi Arabia and Syria. As for the countries at the lower end of the scale, they must take urgent and comprehensive measures covering all age groups and the majority of the indices.

QUALITATIVE DIMENSIONS

All indicators for which statistical evidence is available point to an overall decline in the quality of the knowledge capital in all areas in the Arab region. This should not be taken to mean that Arab states are totally deficient in quality or that there are not scattered islands of excellence and distinguished elites. These do exist in varying degrees from one country to the next and one field of specialisation to the next. Frequently, however, they are the exception that proves the rule.

For example, the number of class hours allocated to maths in basic education is on a par with that in other countries for this subject that is so essential to the formation of knowledge capital. Yet, we find at the same time that Arab students do not, as a whole, fare well in the international standardised tests that measure their maths acquisition. In like manner, Arab countries generally allocate a sufficient amount of classes to physical education, yet rarely do their athletes win high medals in the Olympics or other such athletic competitions that demand outstanding performance. Some students perform extremely well

in standardised tests in computer science and business administration; however, the majority end up at the lower end of the grade scale in the selfsame tests. Enrolment rates in secondary and higher educational institutes are climbing, but in most cases the students flock to educational streams and specialisations that already have more than their fill of graduates while other tracks and specialisations are plagued by glaring shortages.

In sum, Arab educational systems are not functioning well in the creation of critical masses of the qualitative knowledge capital Arab societies need to enter sure-footedly into the knowledge economy and to participate effectively in the knowledge society.

INVESTING IN THE FORMATION OF HUMAN KNOWLEDGE CAPITAL THROUGH EDUCATION

The creation of human knowledge capital requires interplay between many diverse factors. Foremost among these are the time devoted to teaching and learning, the nature of the curricula and the competencies learners are expected to acquire from the various types of educational programmes. Also critical are the expectations of those in charge of education and instruction towards learners in terms of learning and performance, the opportunities available to learners to increase their knowledge, the quality of the instruction provided by the human resources responsible for instruction, and the policies, plans, programmes, and practices founded on reliable pedagogical knowledge. Such are the considerations that are brought to bear in the formulation, operation, revision, and development of the instructional/educational process.

Ensuring the requirements of quality knowledge capital creation and its universalisation across the widest possible cohorts of children, youths, and adults through formal education and continuing learning processes requires effective

Capital creation across the widest possible cohorts of children, youths, and adults, requires effective government supervision and enormous financial resources that are sometimes beyond the means of nations and can only be ensured at appropriate levels in countries with a high national income

The available data for the Arab region reveals considerable disparity between Arab countries in their levels of spending on education

government supervision and enormous financial resources. Not infrequently these sometimes lie beyond the means of nations and can only be ensured at appropriate levels in countries with a high national income.

Spending on education

The available data for the Arab region reveals considerable disparity between Arab countries in their levels of spending on education.⁸³ Whereas Djibouti, Saudi Arabia, Tunisia, and Morocco allocated high proportions of their national budgets (from 20.8 per cent to 27.6 per cent) and high ratios of GDP (between 6.5 per cent and 8.7 per cent) to the different stages of education over the last five years at least, other countries for which statistics are available (with the exception of Kuwait) have spent from the equivalent of 4.7 per cent of GDP (Egypt) to as little as 1.7 per cent (UAE). If the education allocations in Qatar and the UAE are sufficient given these countries' relatively high gross domestic product, and Kuwait is munificent in terms of what it spends on education, the outlays on education in Egypt and Mauritania appear insufficient to ensure an educational system capable of meeting the challenges of the twenty-first century. Egypt has nevertheless scored tangible quantitative achievements in education. And if the level of public allocations for education in Lebanon is modest by all recognised standards, one must also bear in mind the contributions made by Lebanese civil society through the proliferation of private and parochial schooling at all educational stages.

One justification for the relatively low outlays on education in countries such as Egypt and Mauritania is the need of these countries to spend large sums of money on developing the infrastructure necessary to meet the demands of their large population increases, on expanding the various social and utility services to minimal levels of availability and reliability, and other such essentials. Another factor that may

account for low educational outlays is limited government revenues with respect to gross national income and, hence, the limited amounts of funds available for public expenditure. Still, one is struck by the inversely proportional relationship, in these countries, between public expenditure on education with respect to GDP and the overall indicators of knowledge capital formation through education. Nothing could be more indicative of the intensive fiscal management efforts being exerted by the less wealthy nations to catch up with and enhance their prospects for human capital formation, even if the results are not necessarily commensurate to the efforts expended due to the paucity of available public financial resources as well as to other educational and social factors.

National income and the formation of quantitative knowledge capital

Statistical analyses show a definite, if variable, correlation between per capita income (which is to say the level of national wealth), and the various indices of quantitative human knowledge capital formation through education. The figures we have included above illustrate the correlations between some of these indices and per capita GDP in Arab states.

From more detailed analyses we find that the loosest relationship is between per capita national income and primary and higher educational enrolment. The universalisation or partial universalisation of primary education in Arab countries has reached such a degree as to have divorced enrolment rates at this level from national wealth. Exceptions are Djibouti, which suffers acute shortfall in enrolment, and Oman and Saudi Arabia, in which enrolment rates are not commensurate with per capita GDP. Tertiary education enrolment rates follow a polynomial trendline that peaks away from per capita GDP in numerous places, showing various inversely proportionate relations. Consider, for example, that middle-income

Statistical analyses show a definite, if variable, correlation between per capita level of national wealth, and the various indices of quantitative human knowledge capital formation through education

FIGURE 3-6a

Maths performance of eighth-year students in Arab countries against per capita GDP.

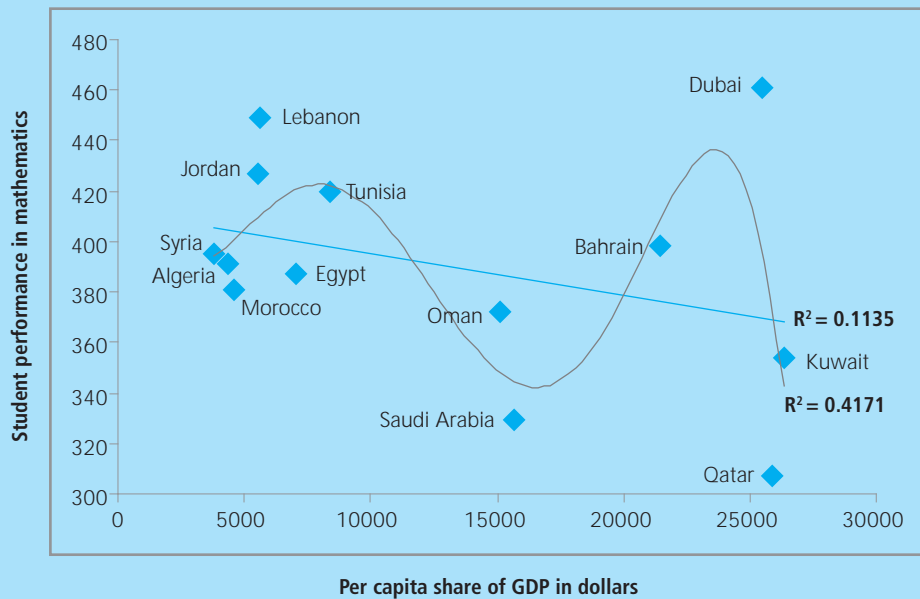
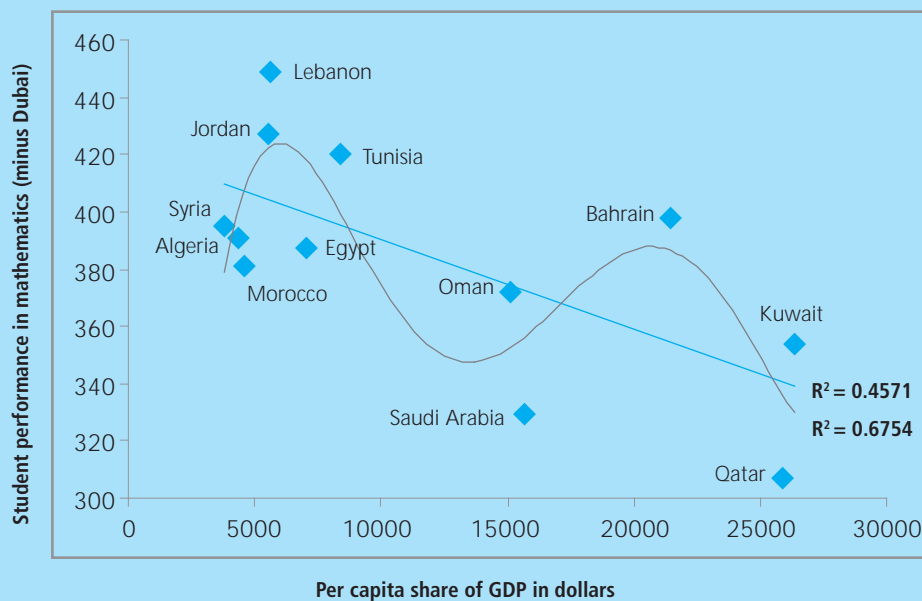


FIGURE 3-6b

Math performance of eighth-year students in Arab countries against per capita GDP (excluding Dubai).

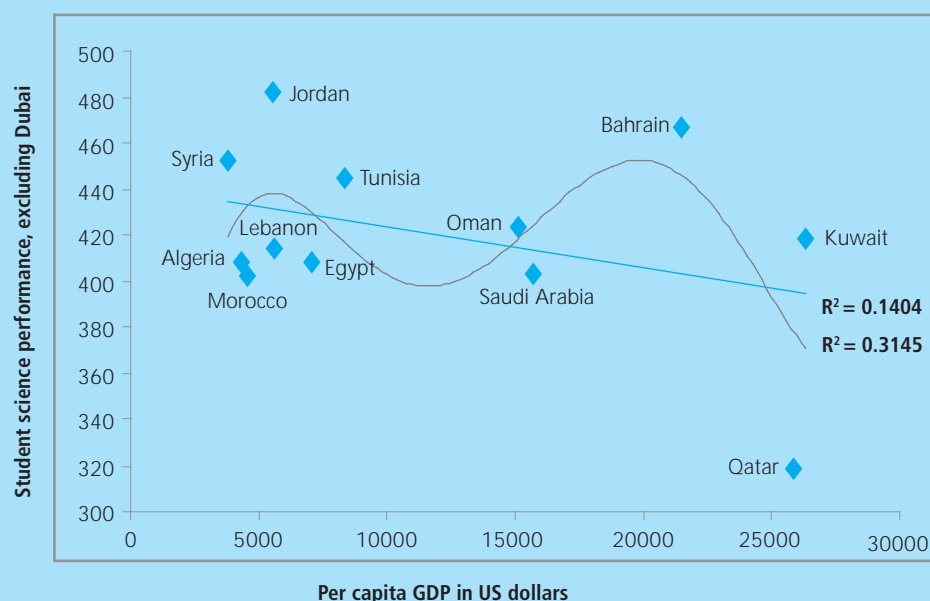


countries, such as Libya, Lebanon, Jordan, and Egypt, attain high enrolment rates at the tertiary educational level, whereas such rates dwindle to disturbing levels in such

relatively wealthy countries as Kuwait, Qatar, the UAE, and Oman. On the other hand, there is a much closer relationship between per capita income and upper

FIGURE 3-7

Science performance of eighth-year students in Arab countries against per capita GDP (excluding Dubai).



Financial prosperity explains only some of the differences between Arab states in the quantitative dimensions of national knowledge capital and seems to have an inverse relationship—albeit moderate—with the qualitative performance of students

secondary level enrolment. Here enrolment rates at this level have, indeed, become an indicator of a society's wealth: the lower the secondary enrolment rate, the poorer the society; the more prevalent attendance is at this level of education, the wealthier the society.

Most other indicators have moderately close relations with per capita income. Some are virtually linear, as is the case with the relationship with gross enrolment rates, total secondary education enrolment rates at both the lower and upper levels, and the total knowledge capital among adults. Others tend toward a polynomial pattern, as is the case with the relationship with enrolment rates at the upper stage of basic education and the total scores on the opportunities for the formation of knowledge capital among children and youths. The relationship between literacy and per capita income is virtually linear; less so, however, than the relationship between per capita income and overall secondary education enrolment, as a whole, and upper secondary education, in particular.

National income and qualitative capital formation

If we consider education quality indicators, such as eighth graders' performance in maths, in connection with per capita GDP, the results reveal an inverse relationship between national prosperity and student performance (see Figure 3-6a). On the other hand, if we exclude the students from Dubai/UAE from the equation,⁸⁴ the inverse relationship grows more pronounced, with the peaks in the polynomial curve becoming less jagged, as can be seen in Figure 3-6b. The same applies with regard to the relationship between national prosperity and eighth-grader performance in sciences (see Figure 3-7), albeit the inverse relationship is less acute in this case.⁸⁵

EDUCATIONAL REFORM EFFORTS

Financial prosperity explains only some of the differences between Arab states in the quantitative dimensions of national knowledge capital and seems to have an

The Contribution of Non-Public Schools to Education in the Arab Region

Locally and foreign affiliated parochial and private schools occupy a respectably sizeable realm in the pre-university educational galaxy in the Arab region. They ensure most of the educational opportunities in the pre-elementary phase in the majority of Arab countries, more than 60 per cent of school opportunities at the primary stage in two Arab states, and more than 20 per cent of these opportunities in at least four other states. In most other countries, they are concentrated, to large extent, at this level. Non-governmental schools are also prominent at the intermediate and secondary education levels in at least nine Arab states. Indeed, in such countries as Bahrain, the Comoros, Djibouti, Jordan, Kuwait, Lebanon, Mauritania, Qatar, the UAE (and Saudi Arabia), it seems as though these institutions are indispensable for ensuring schooling opportunities for adolescents and young adults.⁸⁶

One is naturally inclined to ask the question as to whether non-public institutes actually contribute added value to the formation of knowledge capital in the Arab region. If they do, then what exactly is this added value that public schools do not provide? What are the achievements of private schools that government schools fail to attain? What factors account for the possible differences between these two types of education providers?

Perhaps the most salient contribution of non-public providers is that they alleviate the burden of ensuring education for all members of the public from the shoulders of the national budget. However, these providers have also created a glimmering image for themselves—sometimes merited, sometimes not—that extends the scope of parents' and students' expectations from these institutions to international horizons.

The more prestigious schools accomplish this by adopting a curriculum that generally uses a foreign tongue as the primary language of instruction and that raises performance expectations by setting achievement standards at the ability to pass foreign and internationally recognised proficiency tests. Frequently, too, their curricula and course cycles are geared to equip their students to enter internationally reputed universities. They also enable professional contact with the world abroad through continual exposure to the latest developments in pedagogy and educational technology and

by arranging for their teaching staff to participate in internationally certified educational training courses and professional development workshops. Furthermore, by introducing elements of general universal culture into the heart of the local culture, treating them as though they were fundamental components of human culture, they lend an extra international dimension to the educational service they deliver.

Certainly, the socio-economic and scholastic selectivity many of these institutions practice accounts, to a considerable extent, for the success rates of their students. It also explains their ability to impose their higher achievement expectations on students. Yet these institutes could not have imposed such conditions if they did not thrive in an environment that permits freedom of movement, initiative, originality, and innovation in all their activities. This is precisely what public schools generally lack, restricted as they are by the general political climate, government bureaucracy, the dominance of quantity over quality, and the fixation with having to treat all government schools and their staffs in like manner. Such are the factors that tend to choke off all attempts to excel and depart from the norm.

Non-public schools generally control quality education, the quality of their teaching and other working staff, through the margin of administrative and financial independence that they enjoy. They can attract whatever attested expertise they wish, whether for the purposes of administration, instruction, training, or provision of educational support services. They can offer their students the best state-of-the-art educational equipment and media their budgets can afford. Nevertheless, the non-public providers that truly contribute to the development of education in theory and practice, and that do raise their student performance levels to international standards, are not necessarily the rule. Indeed, the reality is that they are more in the nature of "islands of excellence" scattered here and there in a sea of sometimes good, sometimes questionable institutions. Despite this, even the more mediocre providers frequently give the impression that they offer an added value to Arab society, not necessarily because of their actual contribution but because of how far public schools lag behind the development train.

inverse relationship—albeit moderate—with the qualitative performance of students. Therefore, there must be other aspects that account for the differences between these countries in knowledge performance. Is performance connected, for example, in any way to educational reforms recently undertaken by Arab countries?

In fact, Arab states from the Gulf to the Atlantic have experienced great surges of domestic educational development efforts backed by the technical and financial support provided by the international community as embodied in such international organisations as UNESCO, the UNDP, and the World Bank, by such influential regional organisations as the

EU, or by means of bilateral cooperation programmes, among the most important of which are the French, German, British, US, and Japanese cooperation programmes. Most of the recent public education development drives arose from the framework of the first World Conference on Education for All (held in Jomtien, Thailand, in 1990), which defined six goals to be met by 2000. As most Arab countries failed to attain these goals by that time, they reaffirmed their commitment to them in the Arab Regional Conference on Education for All held in Cairo in 2000, and then in the World Education Forum held in Dakar later that year, in the hope of achieving them by 2015 at the latest.⁸⁷

Human Capital Formation to Meet the Needs of Instruction and Pedagogy

Education systems need highly qualified human resources to design pedagogical policies, plans, and programmes; to administer pedagogical and educational affairs and run teaching institutions; and to provide the instructional and pedagogical support services needed to generate human capital among forthcoming generations in sufficient quantities and of the required quality. All the relevant literature on the subject in Arabic or other languages confirms that the various types of human resources for education must be prepared at the university level.⁸⁹

The statistics published by the UNESCO Institute for Statistics on teacher qualifications are not sufficient to determine whether educational systems are truly equipped with sufficient human resources capable of turning the wheels of the pedagogical process. These statistics fail to take into account the type of the teachers' degrees (the educational level completed), the nature of their qualifications (scholastic or specialising in education), and the quality of that qualification (the instruments that authenticate its worth); this greatly reduces the possibility of meaningful comparative studies between countries.⁹⁰ We should therefore ask whether the higher education systems in this region ensure a supply of teachers and other education specialists in sufficient numbers to feed the education sector with the highly qualified human resources it needs.

Simulation exercises indicate that education systems, in general, must allocate no less than 5 per cent of every adult age bracket to the purposes of providing for the basic needs of these systems.⁹¹ Applying this figure to the enrolment rates in tertiary level education degree programmes (hypothetically the twenty to twenty-four age bracket) in Arab countries, the deficiencies in the preparation of teachers and others responsible for the educational process become readily apparent for most of the Arab countries for which statistics are

available, as does the need to rectify the flaws. Undoubtedly, most of the other countries must suffer shortages similar to those observed in the countries for which there are available data. According to the simulation exercises, Djibouti, Mauritania, Sudan, Syria, Yemen, Morocco, Iraq, Algeria, and Tunisia are quite short of competent educators and hence must greatly expand the enrolment levels in education and teacher training programmes at the tertiary level. But even in countries that show an imbalance in favour of education and teaching training programmes compared to enrolment rates in other higher education specialisations, as is the case in Palestine, Jordan, and Saudi Arabia, this imbalance does not necessarily ensure the provision of the necessary numbers or the different types of qualifications at the quality that the education system needs.

A recent evaluation of university programmes in pedagogy in different specialisations, at different levels and in various Arab states (Salamé and El-Murr, 2005), reveals that these programmes, as a whole, lack most of the quality components, from inputs (programme design) and processes (i.e., using modern resources and modern information technologies to enhance the learning process and the monitoring of student progress) to outputs (quality of graduates, especially as pertains to their acquisition of the higher mental competencies). The programmes also lack quality assurance components, from benchmarks and effective mechanisms for assessing learner acquisition and performance to annual monitoring and periodic review systems for assessing the programmes themselves and monitoring the careers of students after graduation. Furthermore, the study concludes, the persons in charge of these programmes are devoid of a culture of awareness of and dedication to quality and of the need constantly to upgrade the quality of the educational services they provide and to plan, follow up, and adjust.

Social pressures resulting from mounting numbers of students completing basic and, hence, secondary education in many Arab countries have given rise to a

drive specifically aimed at the reform of technical and higher education. This drive took shape at an international conference sponsored by UNESCO in 1998, which was preceded by a regional conference on the subject held in Beirut that year.

The World Bank report, *The Road Not Travelled—Education Reform in the Middle East and North Africa* (World Bank, 2007b) observes that, over the previous fifty years, the thirteen Arab states that comprise the subjects of its study have drawn up extensive plans for reforming their educational systems at all their levels and for all their types of education. It estimated an average of 2.5 such plans per country during this period with an average of twenty-five measures per plan.

But in spite of the efforts undertaken in Arab countries since the 1990s (1990 to 2005),⁸⁸ it appears that many of them have fallen short of realising the goals of Education for All (UNESCO, 2008a) and from meeting global standards with regard to occupational, technical, and higher education. Certainly significant progress has been made in the quantitative indices for education—in enrolment rates and in others; however, such indices have reached the saturation point in very few countries. Meanwhile, the qualitative indicators place Arab countries well behind not only the industrialised developed nations but also a large group of other nations in Asia and Latin America, which have made enormous strides in the quality of their educational services and have obtained results equal or close to those of the advanced industrialised nations.

The World Bank report cites differences between Arab countries on the basis of a compound index that combines measurements of enrolment at all educational levels, gender parity, primary education efficiency, and the quality of education as evidenced by adult literacy rates and results in international standardised tests such as those mentioned earlier in this chapter. Naturally, the differences are most pronounced between the better performing countries, such as Jordan and

Kuwait, and the worst performers such as Morocco, Iraq, Yemen, and Djibouti.

The report describes the performance of Arab states in terms of three “building blocks” which are subsumed beneath the headings “engineering” (consisting of physical resources, finance and administration, curricula and teaching methods), “incentives” (which cover evaluation and monitoring, motivation and rewards, and information), and “public accountability.” It suggests that the most successful countries, such as Jordan, Kuwait, and Lebanon, have education systems that feature a good mix of engineering, incentives, and public accountability. Indeed, it demonstrates that with such a mix, education systems can perform acceptably even in environments marred by violence and instability as is the case in Palestine and as was formerly for a protracted period the case in Lebanon.

On the basis of the foregoing, the World Bank report maintains that the way forward is for countries to make the transition from engineering inputs to engineering for results, from hierarchical control to incentive-compatible contracts, and from accountability to the state to broader public participation in educational affairs. In addition, it urges Arab states to synchronise human capital accumulation with labor demand both within each individual Arab state and within the Arab region as a whole and, more generally, to tailor education to the needs of economic development and the generation of large numbers of job opportunities so as to optimise the economic returns on investment in education.

Perhaps the lack of extensive public debate in Arab countries, together and individually, on the nature, goals, and challenges of education reform, and the dearth of published studies, research, and documents on these issues have caused reform efforts to turn in on themselves, exposing them to the dangers of oversimplification. This has given rise to the tendency to handle reform as though it were merely a matter of applying

ready-made formulas. In fact, authentic reform entails setting in motion a societal dynamic that is associated with the unleashing of the forces of innovative thought, experimentation, evaluation, rectification and renewed initiative, thereby generating a new and vigorous educational culture that pervades all facets of the educational system and all aspects of its relationship to the needs of comprehensive integrated development (Adnan al-Amin, et al, 2005, in Arabic). In all events, it is clear that the Arab states, in general, do not have the critical mass needed to sustain the impetus of efforts aimed at elevating their educational systems to the standards achieved by developed nations. Undoubtedly the fault for this shortcoming can be traced to levels of responsibility, from the leaders of educational thought and education planners to teachers and instructors at all phases of the education process, via education and school administrators and all others in charge of providing educational services, especially those concerned with quality assurance.

An example of a societal dynamic promising for reform occurred in Morocco in 1998-2000. In this period, the organs and energies of civil society were galvanised into action, generating the impetus that launched the National Charter of Education and Training (1999), or the so-called “Education Law,” that laid out the fundamental pillars for reform at all levels and in all branches of education in the kingdom. The experience was remarkable in spite of the hurdles that have continually obstructed the implementation of the agreed-upon principles by dint of the sheer number of difficulties and the fact that some of these have been left to accumulate for so long and have become so intractable as to defy solution even after years of work. A similar movement occurred in Lebanon from 1995 to 1997, although in this case it was restricted to the reform of the public education curricula.

In all other countries, officials in charge of the education systems and education experts formed the primary and sole

The lack of extensive public debate in Arab countries has given rise to the tendency to handle reform as though it were merely a matter of applying ready-made formulas

Arab educational development drives have, as a rule, remained stuck in the rut of expansion, as opposed to reform, which is why improvement has occurred only in the quantitative indicators

The Lebanese Association for Educational Studies: a model for national and pan-Arab networking for the development of educational knowledge

The Lebanese Association for Educational Studies (LAES) was founded in 1995 with the aim of developing pedagogical knowledge. The decision to form the association was inspired by three considerations: the quantitative and qualitative decline in the educational knowledge produced by governmental agencies, the fact that the educational knowledge produced in universities remains locked up in these universities, and the fact that the huge shortage of educational knowledge compels officials to take their decisions on the basis of the pressures of the moment and of narrow interests, and not on the basis of acquiring knowledge.

LAES is a non-governmental, non-profit organisation with no representative capacity for employees or specialists in education. It established itself in this manner in order to avoid any dependency on the government, any commercial taint, and any need to act in the manner of a syndicate or lobby, so as to be able to enjoy full and unrestricted academic freedom. Its membership is restricted to university professors endowed with the qualities of the impartial and objective scholar.

It was not long before the LAES developed into a point for contact and exchange among scholars from diverse disciplines, Lebanese institutions that had remained remote from one another for historical reasons, and parallel global cultures (Arabophone, Francophone, and Anglophone). As these diverse elements participated in study circles and joint research projects, prejudices evaporated, minds opened to fresh approaches and diverse perspectives, and the general scope of thought broadened. The added knowledge value from this networking was palpable.

Soon the LAES and its publications became a resource for scholars, researchers, and others, both from Lebanon and abroad, interested in information on the state of education and pedagogy in Lebanon. In addition, the activities of this association began to attract the attention of people engaged in the educational sector. One of the conferences it organised drew around 500 participants, and had it not been for the confines of the venue there could have been more.

"Providing a network" for Lebanese academicians had not been explicitly mentioned in the aims of LAES. However, the phrase "enhancing the educational academic community" was used in order to sum up the association's desire to strengthen the type of scholastic interplay aimed at the advancement of educational knowledge by compiling a body of literature consisting of tests, criteria standards, and analytic and assessment approaches and methodologies to help ensure objectivity and quality in study and research, and applying this literature and making its findings available through publication and conferences. In the process, LAES has become, at the Lebanese

national level, a nucleus of the educational academic community.

Another of the association's aims was to "engage with similar organisations in other Arab countries." However, due to the dearth of such organisations, LAES's activities in this regard have been confined to cooperation with a single "similar" organisation, the Kuwaiti Society for the Advancement of Arab Children. The joint activities undertaken in the context of this cooperation included a study circle on "The Reform of General Education in Arab Countries" (papers and discussions appeared in book form in 2005) and a study on *The Psychological Conditions of Children and Youth in Lebanon after the July 2006 War* (2008).

LAES also engaged in academic activities with a broader Arab scope in cooperation with faculties of education, Lebanese-based UNESCO committees, universities, ministries, and individual scholars. Such activities included conferences and workshops all of whose proceedings have been published, an example being the conference on "Teacher Preparation in the Arab Countries" (2001). The association also conducted a major study on a topic that is now of the highest priority in higher educational circumstances. Incorporating an extensive survey in 2003 to which 157 Arab universities responded, the results of the study were published in 2005 with the title, *Quality Assurance in Arab Universities*, and distributed widely in the Arab world. Such a large-scale effort could not have succeeded had it not been for the cooperation and support LAES received from the Federation of Arab Universities and the UNESCO bureau in Beirut.

Faced by the poor level of networking on educational knowledge in the Arab region, the sense that education specialists in each country are in the dark about what is happening in their field in other countries, and the near certainty that the lack of networking and the mutual ignorance are detrimental to Arab knowledge production in every Arab country, LAES had another inspiration. This was to create a database on all the books, articles, theses, and studies on education published in Arab countries and to make it available to all on a website, the Arab Educational Information Network (www.shamaanet.org).

LAES hopes that all other scholars, organisations, and institutions that share its belief that networking, information exchange, and the creation of a robust educational academic community form a prerequisite to the development of educational knowledge in Arab states and a fundamental pillar for their educational revival will support its efforts.

(Based on a contribution by 'Adnan al-Amin, General Secretary, LAES)

agents of the reform processes. As these processes did not provide for widespread grassroots participation, the diverse sectors of society could not be brought to embrace the reform aims and hence be mobilised towards the realisation of their aims.⁹² Unfortunately, the reform initiatives that were launched in Lebanon and Morocco also proved unsustainable. In these cases, follow-through proved weaker than hoped

for, and, as a result, these initiatives failed to fully mature, yielding only partial results, as can be seen in the indicators discussed in this chapter.

Arab educational development drives have, as a rule, remained stuck in the rut of expansion, as opposed to reform, which is why improvement has occurred only in the quantitative indicators. In most cases, educational systems in Arab countries have

remained encumbered by the prevailing educational cultures in these countries. Apart from smatterings of imported literature on desirable systems and preferred practices, modern and innovative ideas on education remain alien to the prevailing cultures. The wheels of educational reform thus become mired down, hampering the achievement of saturation in quantitative goals and obstructing tangible progress towards the realisation of qualitative goals (Naila al-Sellini, Rafi'a Ghubash and Fathi al-Zayyat, background papers for this Report, in Arabic).

CONCLUSION

Educational systems occupy a crucial place in the formation of knowledge capital in modern societies, which have become dependent more on "scientific" knowledge than on inherited "traditional" knowledge for the pursuit of their interests and advancement of their welfare. Experts agree that the ability to understand the way things work and approach them with a minimum degree of intelligence, the ability to manage one's personal, health, financial, and other affairs, and the ability to participate effectively in society, economically, socially, politically, culturally, and environmentally are contingent upon possessing a well-rounded basketful of basic knowledge. This can only be acquired by attending educational institutions for a period of no less than nine or ten years.

While half the Arab countries have attained enrolment rates approaching the saturation point for the present generation of children, the other half continue to lag behind. Simultaneously, available indicators demonstrate that the quantitative inroads achieved remain unaccompanied by corresponding qualitative inroads. The performance of Arab students, from countries that have universalised basic education to countries that are still troubled by elitism at this phase, rarely rivals that of their counterparts elsewhere in the world. In addition, the problem of children out of school remains rampant and severely

plagues about a third of the Arab countries, jeopardising their prospects for entering the knowledge society with any degree of confidence in the foreseeable future.

Meanwhile, it is sufficient to note that the formal education of a huge percentage of youth—over 40 per cent in seven Arab countries—does not extend beyond the level of basic education, hampering these countries' ability to engage in the knowledge economy, which requires theoretical and technical knowledge that can be acquired only in educational phases higher than basic education. But even among the numbers that do cross the threshold beyond the basic level, the knowledge capital they acquire may satisfy their personal intellectual propensities while not necessarily coinciding with the requirements a society bent on making the transition to the knowledge economy. This is an economy that is heavily dependent upon specialised sciences, modern technologies, and the information and communications revolution, as well as upon openness to the latest advances in knowledge, sustained and constructive interaction between countries and societies, and intensive networking between individuals and institutions. Yet, while at least some higher education institutions in Arab countries do not prevent some of their most outstanding talents from excelling, Arab societies brim with fine minds and gifted individuals who do not have the opportunities to grow and fulfil their potential. The absence of such opportunities forms an obstacle to generating a critical mass of highly qualified human capital with the power to create, innovate, and renew and the skills and competencies it takes to steer the processes of sustained development that Arab societies so desperately need.

With regard to adults, since the beginning of contemporary modernism in the last quarter of the twentieth century, the education systems in most Arab countries have largely failed to create the cohesive, homogeneous, and highly skilled human knowledge capital needed to form the knowledge society and to participate

The performance of Arab students, from countries that have universalised basic education to countries that are still troubled by elitism at this phase, rarely rivals that of their counterparts elsewhere in the world

Arab societies brim with fine minds and gifted individuals who do not have the opportunities to grow and fulfil their potential

Clearly, the “lights of knowledge” have not reached all in the Arab region during the last quarter of the twentieth century. Rather they have remained the preserve of an elite – a relatively extensive one in some countries and a considerably narrower one in others

effectively in the knowledge economy. What improvement has been achieved in school life rates between 1970 and 2000 has been sluggish. In addition, with only a few exceptions, female school life expectancy continues to lag behind that of males, albeit in varying degrees from one country to the next. The overall portrait of adult knowledge capital in each Arab country today gives the impression of “a home spread across many houses”: some of the younger adults possess a solid knowledge capital, others do not; the older adults, on the whole, are poorer in their knowledge assets than younger ones; female adults, both young and old, have less knowledge capital than males, at levels, moreover, that often plunge to zero or next to zero due to the rampant illiteracy among elder female adults. Clearly, the “lights of knowledge” have not reached all in the Arab region during the last quarter of the twentieth century. Rather they have remained the preserve of an elite—a relatively extensive one in some countries and a considerably narrower one in others.

The mediocre situation regarding knowledge capital among adults in most Arab countries and the worrying situation regarding availability of opportunities for the formation of knowledge capital in children and youth in around half the Arab countries may have their roots in the limited financial resources at the disposal of these countries. Yet, painstaking study of the circumstances surrounding knowledge capital formation through education shows that Arab countries, in general, have not been tight-fisted in their spending on education, but rather have been clearly deficient in their attention to the factors conducive to the better quality and efficacy of education. Progress towards this end begins when educators and the general public reach the conviction that it is impossible to form solid knowledge capital without dedicating sufficient time to the instruction and learning processes. Thereafter curricula based on a well-grounded educational philosophy must be designed, as well as a clearly defined vision

of the type of citizen that should be formed and the requirements for their formation, inclusive of the properties of the human resources involved in this process. The formative process, in turn, will require promoting among all concerned with the educational process, including learners, a culture conducive to productivity, achievement and quality; a culture of responsibility and accountability, and a culture based on information acquisition and exchange and the taking of decisions based on reliable knowledge.

To compound the grimness of the situation, all major education and training reform projects have failed to accomplish their objectives and overcome the flaws existing in the various structures and institutions of the education systems.

Moreover, a closer look at individual Arab countries reveals their isolation and great variation in terms of performance and on the ground reality, these huge differences being well recorded on all the human development indices. What happens in Morocco, Oman, Libya, or Bahrain in human resources creation has nothing whatsoever to do with what happens in any other country. If some Arab governments are allowed even a glimpse at the experiments undertaken in other Arab countries, it is via international and regional organisations and then they rarely attempt to benefit from these experiments. Equally rare are their attempts to coordinate with each other, even minimally, on the formulation of educational policies and plans. The same applies to the academic communities involved with education in these countries, who have failed—except for rare occasions—to set up networks to promote interaction and the exchange of expertise in spite of the perpetual calls for such action in view of the demands of globalisation, one of the most important components of which is effective networking between individuals and institutions.

The problems that this chapter has brought to the fore in the course of its examination of Arab knowledge capital

reveal the breadth of the gap that continues to separate the state of Arab knowledge capital from the advances in knowledge and the ongoing knowledge revolution elsewhere in today's world. We can sense how wide this gap is when we realise that Arab knowledge capital as shaped at the various phases of the education process still provides evidence that our educational system, in spite of the many efforts dedicated to alleviating its critical condition, is still a long way from serving the society of knowledge, freedom, and development.

The poor quality of education almost across the board in Arab countries and, indeed, the quantitative deficiencies in many of them, reveal that our dream of using education as the avenue to becoming masters of nature and of our fate—the great dream of the Arab Renaissance—remains thwarted. Some of the obstacles have been inherited from the past, but others are rooted in our failure to properly manage our problems in education and turn them to the service of our aspirations for a knowledge society and to realise comprehensive human development.

Before defining the general outlines of a strategy for entering the world of knowledge, we will turn first, in the following chapter, to the current situation and the horizons of information and communications technology in Arab knowledge performance. Not only is ICT intimately connected with education and training, it opens the avenues to the economy, the media, and the various other realms that require information for the construction and operation of their projects.

Some of the obstacles have been inherited from the past, but others are rooted in our failure to properly manage our problems in education and turn them to the service of our aspirations for a knowledge society and to realise comprehensive human development

End Notes

- ¹ "Adult" is defined here as of fifteen years or older.
- ² See Statistical Annex, Table 9.
- ³ See Statistical Annex, Table 10.
- ⁴ See Statistical Annex, Table 11.
- ⁵ It should be borne in mind that this index takes into account only the three above-mentioned education indicators, namely, the adult literacy rate, secondary enrolment (in its lower and upper stages), and tertiary enrolment. Index values run from zero to ten and show the position of the country relative to all other countries appearing on the index. Thus, the index for the highest 10 per cent of countries falls between nine and ten, the next 10 per cent between eight and nine, and so on.
- ⁶ See Statistical Annex, Table 12.
- ⁷ A decline in the value of the education index does not necessarily mean a decline in the absolute values for the education indicators entered to create the index. Rather it implies that the relative position of the country in question according to the education indicators has declined, or in other words that it has either indeed witnessed a decline in the indicator in question or that those indicators have risen for that country but to a lesser degree than those of other countries that are jockeying for their place on the scale.
- ⁸ See Statistical Annex, Table 13.
- ⁹ The Arab region always seems to rank no higher than sixth among the world's regions on the commonly used indicators (see for example Statistical Annex, Tables 14 and 15).
- ¹⁰ It is important to distinguish knowledge-based human and social skills from human and social behaviour influenced by factors connected to individual makeup, such as personal motives, personality traits, and other elements that shape personal identity.
- ¹¹ Bontis adopted an approach in the regard whose most important applications are to be found among commercial and industrial firms primarily concerned with innovation and which advocate attention to intellectual capital as a leading component of a company's wealth, alongside its material and financial wealth. The intellectual capital of a company consists primarily of its human capital (and the knowledge and know-how it possesses) and its structural capital (the organisational structures, databases, internal processes and external relations). For further information see, in addition to Bontis's writings above, the following works, as well as the Journal of Intellectual Capital and World Bank documents on the subject:
 - Edvinsson, Leif, and Malone, Michael (1997). *Intellectual Capital: realizing your company's true value by finding its hidden brainpower*. Harper Business, New York.
 - Stewart, Thomas (1997). *Intellectual Capital: the new wealth of organisations*. Doubleday/Currency, New York.
 - Harris, Louise (2000). "A Theory of Intellectual Capital" in *Advances in Developing Human Resources*, vol. 2, no. 1, pp.22-37.
 - Litschka, Michael, Markom, Andreas and Schunder, Susanne (2005). "Measuring and Analyzing Intellectual Assets: An Integrative Approach" in *Journal of Intellectual Capital*, vol. 7, no.2, pp. 160-173.
- ¹² There are no precise statistics available for Saudi Arabia on this matter; however, application of the available data allows us to allocate this country a place as given within brackets. We have used the same method to place other countries when the available data permits.
- ¹³ See Statistical Annex, Table 16.
- ¹⁴ Lebanon, Iraq, and Saudi Arabia are the exceptions to the general rule regarding compulsory education which is restricted to elementary school. Even this remains unapplied, as is the case with other Arab countries in which compulsory education officially extends to the end of the intermediate level. In the Sultanate of Oman there is no defined duration for compulsory education.
- ¹⁵ See Statistical Annex, Table 17.
- ¹⁶ This indicator refers to the total number of years children of a certain age can expect to spend in formal education from the primary to the tertiary levels, presuming that the overall enrolment rates in a country remain constant over the course of a given year. The upper limit in this indicator is 20 years, or the number of years it generally takes to complete formal education with a PhD. This indicator does not factor in repetition rates (which are generally high in Sudan and in Arab countries influenced by the French system such as Mauritania, Morocco, Algeria, Tunisia, and Lebanon) or the education drives some nations occasionally undertake leading to surges in post-elementary school enrolment rates. However, it remains a valid tool for drawing comparisons between

countries and providing a picture of their relative progress with respect to the general level of education that a given generation of children can obtain, other factors being equal.

- ¹⁷ See Statistical Annex Table 17. Note that Syria, Saudi Arabia and Somalia are not listed due to the lack of statistical data sufficient to calculate this indicator.
- ¹⁸ The blue curve represents the exponential relationship between the two variables, the other line shows the polynomial relationship between them. Palestine and Somalia are not included in this or similar figures due to the lack of available data on per capita GDP in Palestine and the state of education in Somalia.
- ¹⁹ Figures 3-2 through 3-7 were assembled by Ramzi Salama, Report core team member, from data available at the UNESCO Institute for Statistics.
- ²⁰ Identified as the most prevalent form educational phase in the Arab region, it consists of nine years of primary and intermediate education. Calculations have therefore been made on this basis, even for countries that use a different system, as is the case with the Jordanian system and the new system in Oman.
- ²¹ See Statistical Annex, Table 18, which excludes Palestine and Somalia, due to the lack of data, and the Comoros and Djibouti, which are special cases due to the virtual absence of Arabic language instruction in their curricula.
- ²² It should be borne in mind that a one per cent difference in the amount of time allocated to a subject is equivalent to about 100 class hours in the basic education phase. This is not inconsiderable.
- ²³ See Statistical Annex, Table 19.
- ²⁴ These countries, in order of their results, were Lebanon, Jordan, Tunisia, Egypt, Bahrain, Palestine, Morocco, Syria, Saudi Arabia, and Yemen.
- ²⁵ These countries, in order of their results, were Jordan, Bahrain, Palestine, Egypt, Syria, Tunisia, Saudi Arabia, Morocco, Lebanon, and Yemen.
- ²⁶ Kuwait and Morocco took part in the international study on fourth-grader reading skills, ranking thirty-fifth and thirty-sixth out of the thirty-seven participating countries or regions. Their average scores were very low compared to the overall global average (see the report by the International Association for Educational Achievement, PIRLS, 2003). Jordan, Tunisia, and Qatar participated in the study on maths, science, and reading acquisition conducted by the Organisation for Economic Cooperation and Development. In maths they ranked fifty-second, fifty-fourth, and fifty-sixth respectively out of fifty-seven participating countries; in science they ranked forty-fourth, fifty-fourth, and fifty-sixth out of fifty-seven; and in reading they placed at forty-seventh, fifty-second, and fifty-fourth out of fifty-six participating countries. In all areas, their results were far below the global averages.
- ²⁷ These countries, in the order of their widely differing results, are Dubai/UAE, Lebanon, Jordan, Tunisia, Bahrain, Syria, Egypt, Algeria, Morocco, Oman, Palestine, Kuwait, Saudi Arabia, and Qatar.
- ²⁸ These countries, in order of their widely divergent results, are Dubai/UAE, Jordan, Bahrain, Syria, Tunisia, Oman, Kuwait, Lebanon, Egypt, Algeria, Palestine, Saudi Arabia, Morocco, and Qatar.
- ²⁹ These countries, in order of their widely divergent results, are Dubai/UAE, Algeria, Morocco, Tunisia, Kuwait, Qatar, and Yemen.
- ³⁰ These countries, in order of their divergent results, are Dubai/UAE, Algeria, Kuwait, Tunisia, Morocco, Qatar, and Yemen.
- ³¹ The above tests were conducted in the participating countries with the support of the UNDP regional office for Arab countries. We took the results of the three participating regions of Canada as representative of a single country.
- ³² See Statistical Annex Table 20. Statistical data is lacking for five countries: Lebanon (which likely belongs to the first category), Djibouti, Iraq, Somalia, and Sudan (which most likely fall into the third category).
- ³³ Given as the ratio of females to males.
- ³⁴ In addition to Somalia, for which there are no accurate statistics. Statistical data on this point is also lacking for Saudi Arabia.
- ³⁵ See Statistical Annex, Table 20.
- ³⁶ See Table 3-2.
- ³⁷ To these we can add the Comoros, Djibouti, and Somalia, for which we have no precise statistical data.
- ³⁸ No statistical data are available for Somalia.
- ³⁹ See Statistical Annex, Table 11.

- ⁴⁰ Accurate statistics are not available for the countries between brackets. However, the congruence of the data justifies their appearance as shown.
- ⁴¹ As mentioned earlier, our purpose in analysing curricula data from the 1990s, which is to say before some countries introduced curriculum reforms, was to gain insight into how the educational system was preparing those who, today, stand at the threshold of their independent occupational and social careers. Few countries have upgraded their curricula since that time. Morocco and Oman are among those that have, but their reforms in this regard are too recent to judge in terms of efficacy.
- ⁴² The Libyan system requires specialization at a very early age, following the end of basic education. From this point, students are streamed at the secondary level of education into one of six branches, three in the arts and humanities (literature and media, social sciences, and economy) and three in the sciences (basic sciences, engineering, and life sciences). These streams feed into similar specialisations in tertiary education.
- ⁴³ This analysis is based on the data on secondary educational tracks available in the World Data on Education data base, published by UNESCO International Bureau of Education, Geneva:
<http://www.ibe.unesco.org/Countries/WDE/2006/index.html>.
- ⁴⁴ For example, among the applicants for the terminal year of general secondary education in Lebanon in 2008, 7.8 per cent applied to arts and humanities, 11.9 per cent to general sciences, 32.9 per cent to life sciences, and 47.4 per cent to social sciences and economy. In this context, it is important to note that the Confederation of British Industry recently (11 August 2008) sounded the alarm that only 7 per cent of British sixteen-year olds opt for a triple science GCSE (secondary school programme) covering physics, chemistry and biology and that such a low rate threatens the future of British industry. See, for example, the following web page (accessed on 22 August 2008): [http://www.inthenews.co.uk/news/science/bright-kids-should-study-triple-science-\\$1235850.htm](http://www.inthenews.co.uk/news/science/bright-kids-should-study-triple-science-$1235850.htm).
- ⁴⁵ Interested readers may find it useful to examine the philosophy curricula adopted in Morocco and Lebanon.
- ⁴⁶ See Statistical Annex, Table 21.
- ⁴⁷ One can not help but be impressed by the great attention prominent French intellectuals and the French government itself, even at the presidential level, devote to the question of the knowledge that should be taught, in general and at the secondary educational level in particular. The subject is under constant debate, and the concern also manifests itself in the attention accorded to it by periodicals, the numbers of intellectuals and educators who contribute to the discussions, and the relevant web pages and forums on the internet. For further information see:
- Bourdieu, Pierre et Gros, François (1989). "Rapport pour un enseignement de l'avenir." (This report was produced by a special committee formed at the request of the French president with the purpose of delineating "the primary orientations for the gradual transition to educational content needed to keep pace with the evolution of science and society."
 - Domenach, Jean-Marie (1989). *Ce Qu'il Faut Enseigner: pour un nouvel enseignement général dans le secondaire*, Éditions du Seuil, Paris.
 - Isambert-Jamati, Viviane (1990). *Les Savoirs Scolaires. Enjeux Sociaux des Contenus d'Enseignement et de Leurs Réformes*. Éditions Universitaires, Paris.
 - Morin, Edgar (1999). *Les Sept Savoirs Nécessaires à l'Éducation du Futur*. Éditions du Seuil/UNESCO, Paris.
 - Sciences Humaines, 2001. "Quels Savoirs Enseigner?" , Mensuel No. 121, Novembre 2001. Presses Sorbonne Nouvelle, Paris.
- ⁴⁸ Morin, Edgar (1999). *Les Sept Savoirs Nécessaires à l'Éducation du Futur*, Editions du Seuil/UNESCO, Paris.
- ⁴⁹ Tunisia has experienced a downturn in interest in the technical stream in recent years.
- ⁵⁰ See Statistic Annex, Table 22. Djibouti has been excluded from this analysis because the total enrolment in secondary and tertiary education during this period is marginal.
- ⁵¹ By way of comparison, during the same period in Eastern European countries, for example, more than 70 per cent of students followed the technical secondary school track (see Majallat Mustaqbaliyyat, March 2001, in Arabic).
- ⁵² These countries are Egypt, Tunisia, Bahrain, Jordan, Lebanon, Syria, Yemen, Algeria, Morocco, and Sudan.
- ⁵³ Available data on some countries indicate an imbalance in the distribution of technical secondary students across the major specialisations, these being business administration and information systems, industry, agriculture, tourism, and health and human services. The imbalance favours business administration and

information systems. The available data includes, for example, that pertaining to the tracks of candidates for the general secondary school entrance exam in Jordan (see the Jordanian Ministry of Education website).

⁵⁴ See Statistical Annex, Table 23.

⁵⁵ For example, available statistics on the qualifications of adults in Saudi Arabia indicate that it would take 88,000 more doctoral level graduates, or three times the current number of PhD holders, for this country to rival developed countries in this area. Saudi Arabia compensates for this shortage through imported expertise, among which are more than 16,000 PhD holders and 40,000 MA holders (source: statistics on the Saudi Arabian Ministry of Economy and Planning website: www.mep.gov.sa, on 17 February 2009).

⁵⁶ For example, in 2004, Algeria's Minister of Higher Education and Scientific Research announced that Algeria needed 24,400 new teachers in order to meet the needs of the country's universities over the next four years (Algeria's *Al-Watan* newspaper, 16 July 2004).

⁵⁷ This was the opinion of academic officials from the Lebanese University and private Lebanese universities at the beginning of the 2008-2009 academic year.

⁵⁸ According to a UNESCO study on higher education in Iraq in 2003, only 28.2 per cent of the country's university teaching staff possessed doctoral degrees. This ratio is extremely low by any standard.

⁵⁹ Experts agree that a higher education system cannot fulfil its function unless at least 70 per cent of teaching staff have doctoral qualifications (with a sufficient diversity in their disciplines and specialisations). In addition, the staff members must not be so encumbered with teaching responsibilities as to be prevented permanently from engaging in research connected with the subjects they teach, towards which end they should receive all possible support and facilities (library, Internet access, opportunities to take part in conferences, etc.) so that they can remain in close contact with the latest developments in their fields.

⁶⁰ See Statistical Annex, Table 24.

⁶¹ Each country's needs for qualified educators can be estimated accurately on the basis of actual enrolment figures or projected enrolment figures at the various phases of education. However, this requires making certain assumptions with regard to enrolment rates at each level, numbers of students per class, teacher course load, educational support services to be provided by the educational system, and other such variables. Indeed, this is generally the practice in planning processes for human resources for the education sector.

⁶² See Statistical Annex, Table 25.

⁶³ Libya may be the only exception to this rule. According to the available information from Libyan official sources, there is a surfeit of students enrolled in these disciplines. Higher Education officials in Libya say that about 28 per cent of first year university students enrol in health disciplines, especially human medicine, because this field is open to secondary school graduates who have completed the required tracks that feed into these disciplines. No additional qualifications are required and there are no upper limits to student numbers.

⁶⁴ See Statistical Annex, Table 24.

⁶⁵ See Statistical Annex, Table 26.

⁶⁶ The results listed in this table reflect the performance of 623 students from twelve universities in the following nine Arab states: Lebanon, Syria, Jordan, Palestine, Egypt, Sudan, Yemen, Algeria, and Morocco.

⁶⁷ We should also note the considerable variation in the performance of students from the relevant university in Egypt, who ranged from the lowest to the highest grades on the scale. This contrasts with the performance of students from one of the universities in Lebanon and the universities concerned in Yemen, Jordan, and Algeria, who were clustered at in the lower grade categories. Only one university in Morocco and another in Lebanon tested above the lower end of the scale.

⁶⁸ As these tests were held in specific Arab universities, we can not generalise from their results to all universities in these countries or to all states.

⁶⁹ The results listed in this table reflect the performance of 295 students from seven universities in the following six Arab states: Lebanon, Syria, Sudan, Yemen, Algeria, and Morocco.

⁷⁰ The term "adult" in this chapter refers to members of society who are aged twenty-five and over, as distinguished from youth (ages 15 to 24) and children (ages 6 to 14). However, because of the lack of detailed statistics on the literacy of adults as defined here, statistics on this issue refer solely to all persons of majority age, which is to say both youth and adults, following the practice of UNESCO.

⁷¹ See Statistical Annex, Table 9.

⁷² The scale cites nine degrees of learning: illiterate, literate, primary level, intermediate level, general secondary

level or the equivalent, post-secondary level lower than the bachelor degree level, the bachelor degree level, the pre-doctorate graduate level, the doctorate level.

⁷³ See Statistical Annex, Table 27.

⁷⁴ The calculation of primary school enrolment rates was used as a springboard for the calculation of the rest of the rates. It was estimated that half of those not enrolled at this level were illiterate and the other half literate. Then, it was assumed that those not in secondary school five years after this level had completed only the primary level, that those not in higher education after an additional five years had completed secondary school, and that those enrolled in higher education had completed the first university phase. This approach naturally tends to inflate somewhat the actual level of schooling attained.

⁷⁵ See Statistical Annex, Table 28.

⁷⁶ <http://www.mep.gov.sa>, on 17 February 2009.

⁷⁷ This scale is divided into nine levels of schooling: illiterate, literate, primary level, intermediate level, general secondary level or the equivalent, post-secondary level lower than the bachelor degree level, bachelor degree level, pre-doctorate graduate level, doctorate level.

⁷⁸ It is useful to observe, here, that the average level of education among imported labor in Saudi Arabia (of whom 86 per cent are male) is 2.58, or between the primary and intermediate levels. If we grant for the sake of argument that the knowledge society requires skills of at least the secondary school level, the imported labor in Saudi Arabia that meets this criteria, if large in numbers (967,380), makes up only 31 per cent of the total (33 per cent of these are male and 21 per cent female). Meanwhile, the overwhelming majority of foreign workers (of whom there are 2,125,554) range from the illiterate and literate levels (12.5 per cent and 29.3 per cent respectively) to the primary and intermediate school levels (12.3 per cent and 14.6 per cent respectively). This majority makes up the uneducated manual labor and semiskilled labor force in the country.

⁷⁹ Note that this measurement is purely quantitative and has no bearing on the actual quality of the knowledge capital individuals have acquired. The data mentioned earlier in this chapter on the ratios of class time allocated to the various items on the basic and secondary school curricula indicate that the highly idiosyncratic approach to the formation of human resources in Saudi Arabia may not equip these resources to participate effectively in the knowledge economy as it is understood in the context of globalisation.

⁸⁰ See the second to the last column in Table 28. Note that we used an overall average of 2.5 per cent annual population growth for the entire region. It follows that these results should be considered provisional until the necessary data is available to be able to calculate the actual educational capital for adults in the manner used for Saudi Arabian citizens mentioned in Box 3-7.

⁸¹ Note that this approach has led to results very close to the results from the calculation of the actual average educational level attained by adults in Saudi Arabia.

⁸² The scale consists of six grades, each consisting of 16.66 per cent of the total. Thus the highest grade (from 84 per cent to 100 per cent) is excellent in terms of the ability to participate in the knowledge society. This is equivalent to the level attained by advanced industrialised countries, which is a literacy rate above 95 per cent and an average school life expectancy of no less than 13 out of 18 possible years. The second grade (between 67 per cent and 83 per cent) is good and the third (between 50 per cent and 66 per cent) is the lowest acceptable level. Grades lower than these point to various degrees of inability to participate in the knowledge society.

⁸³ See Statistical Annex, Table 29.

⁸⁴ The performance of the students from Dubai is an exceptional case that merits closer study. However, it is noteworthy that Dubai citizens account for only about 25 per cent of the total number of students in the emirate's schools, that more than 80 per cent of the total number of students are enrolled in private schools in which 95 per cent of the student body are non-citizens, and that non-citizens make up 40 per cent of students enrolled in government schools. See Dubai Statistics Centre website http://www.dsc.gov.ae/DSC/Pages/Statistics%20Data.aspx?Category_Id=0226 (accessed on 19 January 2009). See also Box 3-8, which features an analysis of the contribution of non-public schools to education in Arab countries.

⁸⁵ The average performance of Bahraini students in maths and sciences is a remarkable exception to that of students from the other Gulf countries.

⁸⁶ See Statistical Annex, Table 30.

⁸⁷ See Box 3-1: "The Aims of Education for All."

⁸⁸ Apart from Iraq and Saudi Arabia which undertook extensive reforms recently.

- ⁸⁹ Finland, for example, whose students perform very well in comparative international scholastic achievement tests, has made it obligatory since 1979 that all candidates for teaching posts in all phases of the education system and for other posts of responsibility in the educational process have at least a Masters degree in education.
- ⁹⁰ For instance, a UNESCO report observes that teachers in seven Arab countries on the whole meet national criteria for the qualifications necessary to practice the teaching profession, whereas everyone is perfectly aware that in many of the countries concerned the said qualifications start at a secondary school degree, which by no means can ensure the optimum performance of educational tasks. Moreover, even a Bachelor's degree should not be considered sufficient qualification unless it is linked with a teacher education qualification of a sufficient duration and that meets internationally recognised quality standards.
- ⁹¹ In the simulation, it was assumed that if about 50 per cent of a certain age group enrolls in higher education, then 10 per cent of it should join the faculties of education (which train the teachers and other education specialists for the various educational levels). However, given the severe shortages in the Arab countries, as a whole, in this domain, and the ascertainable need of their education systems for highly qualified staff, an even higher proportion of enrolment in this stream of higher education is needed.
- ⁹² The quantitative data treated previously indicate that Bahrain and Libya are the only two Arab countries that have managed to attract large numbers from diverse sectors of their populations into employment in the educational system. All other initiatives aimed at qualitative development, such as those set into motion in Qatar, Oman, and the UAE, have yet to bear fruit.

