

Pre-University
Education Index

Preamble: The Importance of Pre-University Education and Its Role in Achieving Knowledge for Development

The pre-university education sector is of critical importance to development, owing to its prominent role in establishing the foundations for building human capital, its intimate links to other aspects of development, and its unique quality as both an input to, and an output of the knowledge system. Global acknowledgment of the importance of education in this context has steadily increased and a degree of convergence is now evident across numerous regional and international reports in terms of their intellectual approaches and methodologies.

The Organisation of the Islamic Conference (OIC) declares that, “education is fundamental for the future prospects of most of the developing countries ... [and] remain[s] at the core of human capital formation”.¹ Meanwhile, a 2011 World Bank report describes education as a “strategic development investment”,² and UNESCO concludes that education is “fundamental for just, peaceful, adaptable societies without poverty ... Education is a right, a foundation and prerequisite for sustainable development”.³ Finally, the Arab League’s Plan for the Development of Education in the Arab World considered education to be “one of the pillars for comprehensive transformation; the fundamental producer of knowledge capital and institutional and social capital”.⁴

The subject of pre-university education constitutes a key focus for the Arab Knowledge Report (AKR) 2010/2011, as “the main entry point for preparing young Arabs and equipping them with the knowledge, skills and values that will enable these future generations to contribute in building the knowledge society and global competitiveness”.⁵ Employing both primary and secondary research, the report assessed the performance of Arab education systems and their outcomes at secondary level, as well as their interaction with enabling environments. With respect to the relationship between education and development, the AKR discussed

the problem of change in education systems, pointing to the existence of a strong dialectical relationship between education and society, summarised in the following key question - where should that change begin? “Should we start from the educational system and its input, governance and processes to get learning output that is able to achieve democracy and social and economic progress and engage in the era of knowledge? Or should it be from the society and its economic, social and cultural contexts, which build the educational system, provide its resources and shape its educational environment so society can get the desired output from the human elements supporting access to the knowledge age?”⁶

The report stressed the necessity of “adopting comprehensive and complete policies of educational reform and economic and social development, and making educational reform an integral part of comprehensive development plans”.⁷

Approaches in Comparing and Monitoring the Educational Systems and Their Development⁸

Interest in comparative education dates back to the early nineteenth century and the work of Marc-Antoine Jullien (1817).⁹ However, credit for reviving and re-activating this concept must go to the International Association for the Evaluation of Educational Achievement (IEA), which began in the 1960s to discuss the problems associated with the assessment of pupils and educational institutions with a view to establishing an associated project to enable comparison between education systems on an international scale. The interest in assessing academic achievement spread in the 1980s to a number of countries around the world (including France, the United Kingdom, the United States and others) who took the lead in setting national standards for assessing and comparing their educational conditions with those of key comparison countries.

Since the World Conference on Education in Jomtien,¹⁰ which launched the first global initiative to achieve universal education,

international organisations have liaised with a broad range of relevant authorities to determine the measures countries must adopt in order to achieve the main goals of Education for All by 2015. A multi-track evaluation and comparison process has revealed that assessing advancement by relying on quantitative data on education systems (confirmed by rates of enrolment, dropout rates, number of classrooms, etc.) is no longer adequate for measuring sustainable development. Rather, serious attention must be devoted to quality advancement, as reflected in the nature of the skills acquired by learners. The dawn of the third millennium witnessed a broad range of developments in the area of media and communications, as well as the emergence of the concept of globalisation and far-reaching international evaluation studies such as those undertaken by the UN Educational, Scientific and Cultural Organisation (UNESCO), the IEA, the Organisation for Economic Co-operation and Development (OECD), and many other international organisations that sought to measure progress in education. This inspired the development of indices that would enable comparisons within and between education systems, representing a vital tool in gauging advancement and a step towards achieving competitive knowledge societies.¹¹ The Arab region is not exempt from this movement and has featured, to varying degrees, in numerous studies and reports examining various aspects of education systems - most notably student achievement by subject and level.¹²

With the launch of global preparations for the post-2015 period, issues of quality in education rose to prominence, as did discussions concerning education indicators. The latter featured prominently in the literature of Ministries of Education and in the extensive reports produced by international organisations featuring indicators that would form the basis for further development and reform of education systems.¹³

Importance of Education Indices

If the role of education systems as driving forces of development has become axiomatic,

their success in fulfilling this important function – particularly in the Arab region – has fallen short of expectations and remains outside the realms of global competition. The significant challenges being faced today make education indicators all the more important. Four of these challenges are presented below; the first two are universal and apply to other systems around the world, while the third and fourth are specific to much of the Arab region.

- The first is the nature of the system itself, characterised by the variety of its components and their multiple interactions that demand extraordinary abilities among its leaders and senior practitioners. This, in turn, imposes conformity on policy-makers and education leaders, and a requirement for objective and accurate information about both how the system functions and where it fails. This should assist relevant stakeholders in making sound decisions and adopting informed policies, something that cannot be achieved in the absence of clear, accurate indices.
- The second is represented by the substantial transformations in human life that underscore the need to forecast and prepare for the future. These transformations, triggered by the global technological and knowledge revolutions as well as the phenomenon of globalisation, must be anticipated and confronted by nations through adequate strategic measures. Ensuring this forecasting process is both scientific and organised requires the use of carefully selected indices, able to explore possibilities, anticipate potential events and consequently to present potential scenarios and alternatives. From this perspective, acquiring suitable, accurate indices on the Arab region may be considered an important measure in building the future of education.
- The third is the difficulty in securing the financial resources necessary for operating these systems. In light of the economic and political crises that the Arab region is undergoing, it is no longer easy to secure the budgets required for the imple-

mentation of educational policies. It has therefore become imperative for those in charge of the education sector to compile accurate supporting data that provide assurances to governments and donors of the good management of allocated resources and any additional disbursements that are needed. Such evidence would be difficult to obtain without approved and credible indices.

- The fourth is posed by the gap between Arab education systems and advanced systems around the world, and the measures required to bridge this gap by achieving greater efficiency in the areas of planning, monitoring and evaluation in order to focus strategic decisions and development efforts on the core issues that constitute opportunities for progress. This process is fraught with difficulty, however, and therefore requires reliable indices that can both measure the distance to the goal and indicate the best means with which to achieve it. Without this, resources and efforts will be wasted, and projects and programmes will remain subject to random and misleading self-assessments.

Methodology for Constructing the Pre-University Education Index

Methodological Tools

The process of constructing the Pre-University Education Index utilised the same resources presented in the general methodology,¹⁴ adapted to the features of the sector:

- A desk review examined regional and international reports in order to explore the means and methodologies adopted in comparing education systems and measuring their evolution. The review also investigated specialised databases to reveal their structure and content, with a view to determining which aspects might be successfully employed in an index on pre-university education, whilst also attempting to specify limitations that would be applied based on the requirements

of current circumstances in the Arab world. In this regard, the UNDP Human Development Index (HDI),¹⁵ the OECD report “Education at a Glance” (which features the development indices of the European Union countries),¹⁶ UNESCO’s report “Education for All,”¹⁷ and the report of the Arab League Educational, Cultural and Scientific Organisation’s (ALECSO) Arab Observatory for Education were all examined.¹⁸

- A regional workshop held in Tunisia in early September 2015 and involving experts from various Arab countries assembled a rich pool of expertise directly related to both pre-university education systems and the production and use of indices. Also present were experts from regional and international organisations familiar with the development of indicators and relevant statistical methods.¹⁹
- In-depth online consultations with experts in the context of building the Pre-University Education Index were conducted in parallel to the aforementioned regional workshop. Discussions focused on the conceptual and technical issues relating to the construction of the Index. These individual consultations, launched during the workshop and continued thereafter, enabled the external validation of the Index, as detailed later in the section discussing the external validity of the initial version.
- Three background papers were produced on the following topics:
 - The current state of pre-school education in the Arab countries and the indicators employed in assessing and monitoring its development;²⁰
 - Regional and international experiences in the development of quantitative indicators relating to pre-university education and knowledge in general, including its importance and related methodological problems;²¹
 - Constructing an Arab knowledge index, a leading step in the Arab Knowledge Report series.²²

Preparatory Stages for Building the Index

The various stages of the process of building the Pre-University Education Index are detailed in the previous chapter.²³ These can be summarised as comprising a preparatory stage, beginning with the collection and description of information and ending with an attempt to critically analyse the indices currently employed; and a construction stage that began by formulating an “alternative” index and setting its technical specifications, and concluded with validity tests and data application. The findings of the first stage were as follows:

Major Global and Regional Education Indices

- OECD indicators: At the end of the 1980s, the OECD launched a programme entitled Indicators of Education Systems,²⁴ involving the production, collection and publication of a set of indicators on the condition of education in its member states. These indicators cover a wide range of subjects, including schooling rates, pupil tracks, education system output, pupils’ achievements, educational institutions and their environment, education systems, costs, resources available to education systems, and the attitudes and expectations of the “users” of these systems. This matrix of indicators was further developed with each new edition by combining or splitting focus areas or by introducing additional elements. Despite the distinct conceptual and technical accuracy of these indicators, some experts observed that the project suffered notably as a consequence of the volume of work required to calculate the indicators, and that the results presented in the final reports were overwhelmed by statistical data to the detriment of in-depth qualitative interpretation.
- UNESCO indicators: The UNESCO database on education is considered to be the most comprehensive source of data for regional and international reports in this field. These indicators are organised into 15 themes: out-of-school children, entry, participation, progression, completion, literacy, educational attainment, international student mobility in tertiary education, human resources, financial resources, school resources and teaching conditions (both employed only in Africa), adult education (Latin America and the Caribbean only), population and system. One of the indices that attract the greatest national and international attention is the Education for All Development Index, a composite index measuring progress towards achieving education for all as a whole. Owing to difficulties of data collection, however, this index has focused on the four goals considered to be the most quantifiable: universal primary education; adult literacy; gender; and education quality. In the context of monitoring development goals for post-2015 evaluation, 16 core indicators were recently adopted as international education indicators covering the various sectors of education and tracking progress on the national, regional and global levels.²⁵
- World Bank indicators: The World Bank considers education to be a significant driver of development and one of the most powerful instruments for improving health, gender equality, peace and stability. Consequently, it attributes great importance to education evaluation processes in order to understand what education can achieve under various different conditions. World Bank Open Data identifies education among its 20 main topics.²⁶ It contains 30 indicators that are directly linked to pre-university education, specifically in terms of enrolment (12 indicators, 3 of which measure gender parity), expenditure (4 indicators), progression and persistence (11 indicators), human resources (2 indicators) and out-of-school children (2 indicators), in addition to literacy (ages 15-24, 3 indicators). Most of these indicators rely on data from the UNESCO Institute of Statistics.
- ALECSO indicators: The list of indicators adopted by ALECSO’s Arab Observatory for Education (*Marsad*)²⁷ includes about 50 indicators measuring

various aspects of the pre-university education system and – to a lesser extent – higher education. The results are presented in regular reports highlighting quantitative and qualitative developments. This package of indicators measures six dimensions: enrolment (10 indicators); equity and equality of opportunity (12 indicators), quality (13 indicators), efficiency (7 indicators), feasibility (2 indicators) and readiness for the knowledge economy (6 indicators). It is noteworthy that prior to establishing Marsad, ALECSO used to periodically issue Hawliyat (education yearbooks presenting an overview of education in general, and an adult learning yearbook covering activities to eradicate illiteracy). However, these Hawliyat suffered throughout their publication from a clear lack of data due to the unresponsiveness of several Arab countries and the lack of serious attempts to establish networks and surveys, in addition to the different methods employed by countries to produce indicators.

- UNDP indicators: Education is one of the focus areas of the HDI, a composite index produced by the UNDP which contains three relevant indicators:²⁸
 - Educational attainment, including the proportion of the population that has completed secondary education; literacy rate (ages 15 and older); and the proportion capable of writing, reading and understanding a short paragraph about their daily life;
 - Gross enrolment rates for the three stages of education (primary, secondary and tertiary);
 - Quality of education, calculated through the performance of 15-year-old students in areas such as reading, mathematics and science; the proportion of trained teachers in primary school; and the percentage of respondents who expressed satisfaction with the quality of the education system in Gallup World Polls.
- ABEG Indicators:²⁹ ABEGS, established in 1975, works towards enhancing cooperation and coordination in the areas

of culture, education, science, information and the strengthening of relations between the Gulf states. With respect to indicators, the ABEGS provides detailed information about all its member states. According to its website,³⁰ country indicators are still presented separately, with reference to the website of each country's Ministry of Education, and with no common list of indicators for all the member states in the Bureau.

Analyses of Commonly Employed Indicators

The following observations are based on an initial review of available education indicators:

- Indicators are categorised according to a variety of different classifications. Despite the prevailing concern with functional analysis, there are classifications based on cost, activities and results, often complemented by social and cultural environment, as manifested in the OECD report “Education at a Glance” and the reports on the “Condition of Schools” and “Geography of Schools” produced by the French Ministry of Education and Higher Education and Research.³¹

There are also classifications based on the basic units of the system – such as institutions, students, teachers etc. – and this is the case in some of the work produced by the UNESCO International Institute for Educational Planning (IIEP). It is also possible to adopt a classification based on broader horizontal axes such as the level of knowledge of the students and their preparedness for professional and social life, as well as equity in the measurement of the education system's efficacy. The classification based on ‘resources/activities – processes/results’, complemented by demographic and social characteristics, is considered one of the most suitable and reader-friendly forms of analyses, owing to its similarity to explanatory models. Another form of classification is based on the intended goals of the evaluation, such as that adopted by UNESCO in

monitoring Education for All, as well as the European Union's indicators.

- The uses of indicators may be classified according to two main objectives:
 - Description: Detailing the current state of education systems, the way in which they operate, their outcomes and the way they can be changed. Such a description would be employed for evaluation, monitoring, observation and adjustment or for the purpose of conducting local, regional and international comparisons.
 - Forecasting: This category of indicators focuses on desired characteristics in order to predict progress in performance. These indicators may also be used to devise projections to support educational decision-making regarding development trends, and would help in confronting potential changes and requirements. An example would be monitoring population growth and its impact on the rate of enrolment, and making projections to identify the resources required to cater for an expected influx.
 - Despite the significant roles the various indicators play in informing education decision-making and reforms in many countries, they remain constrained by an economic perspective that overlooks other equally important dimensions of development, such as personal and social dimensions. In this context, a criticism expressed in the EFA Global Monitoring Report of 2009 considered measurements of the quality of education to be incomplete owing to their focus on basic skills (reading, mathematics and science) at the expense of other dimensions of equal importance such as values, abilities and non-cognitive skills.³²
- The indicators vary in terms of the accuracy of their analysis between those that employ averages and general estimates, and those that provide in-depth analysis of disparities within the system. The issue of depth and accuracy is particularly relevant in dealing with education outcomes, since most systems depend on both national exams and international assessments. In the absence of a standardised scale for the degree of difficulty of national examinations or for pass marks and correction procedures, year-on-year comparisons of results – and their use as indicators of system efficiency – should be treated with great caution.
- The process of employing indicators is problematic owing to various factors including lack of data, differences in classifications, methodologies and population estimates,³³ conceptual differences (determining and defining variables), and technical aspects (formulation of indicators), as well as errors in the interpretation of results.³⁴ It is impossible to compare results on various countries that adopt different definitions or groupings (such as age groups). For example, in the Education for All indicators, there is a difference in how countries define early childhood programmes; some limit them to the 3–5 year age group, while others expand this to include children up to 6 years old. This leads to misleading results with a 'reduced' raw average rate for the former and an inflated rate for the latter.
- The indicators are also criticised for their exclusive concentration on cognitive aspects of education, ignoring those relating to character-building (emotionally, socially and in terms of value system and behaviour). Current comparative studies and the data they provide, along with the data available in international education databases, focus mainly on the aspects and outcomes of the education process that can be easily measured and quantified. As a result these aspects and outcomes become a "front, based on which the performance of the education system is judged",³⁵ and that attracts the concern and efforts of governments. Development is not achieved by employing strength and determination alone, however, and requires the building of a "quantitative system that

would strengthen and invest in the service of individuals and societies. If not, education systems will continue to adopt the concept of the ‘factory’ school that dictates information, instead of the ‘educating’ and ‘enabling’ school that prepares for life, builds character and equips young people for a better future”.³⁶

Presenting the Pre-University Education Index

The First Draft of the Index

Based on the conclusions of the investigation and analysis stages regarding the available indicators and their limitations, three key foundations were set for the production of a composite index to measure the efficiency of pre-university education systems:

- The first is intellectual; it lies in the vision that matured through the AKR series that linked knowledge with development and introduced the goals of joining the broader knowledge society and establishing individual knowledge economies within the framework of an integrated project. Such a project requires the production of high-efficiency human capital with effective cognitive skills (reading, scientific and other skills), social skills (values, attitudes and behaviour dedicated to the principles of positive citizenship and active interaction in daily life) and economic competencies (ability to integrate with the labour market and contribute to developing the economy), among others. It also aims to provide enabling environments that nurture and motivate the acquisition, production and localisation of knowledge.
- The second is methodological; the assessment of knowledge performance is not to be confined to variables based on cognitive outcomes. The construction of the Index is based on a comprehensive conception of knowledge, set within a network of

relations wherein personality factors interact with household factors and political, social and economic conditions, and in which local conditions interact with the rapidly changing international context. This approach is validated by previous experiences in this area (IAE, UNESCO and OECD) which confirm that any reading of the reality of these systems will remain incomplete if outcomes are examined in isolation to the factors and conditions that produce them. Furthermore, achieving quality and the advancement of cognitive performance requires accurate diagnoses of education services and their enabling environments.

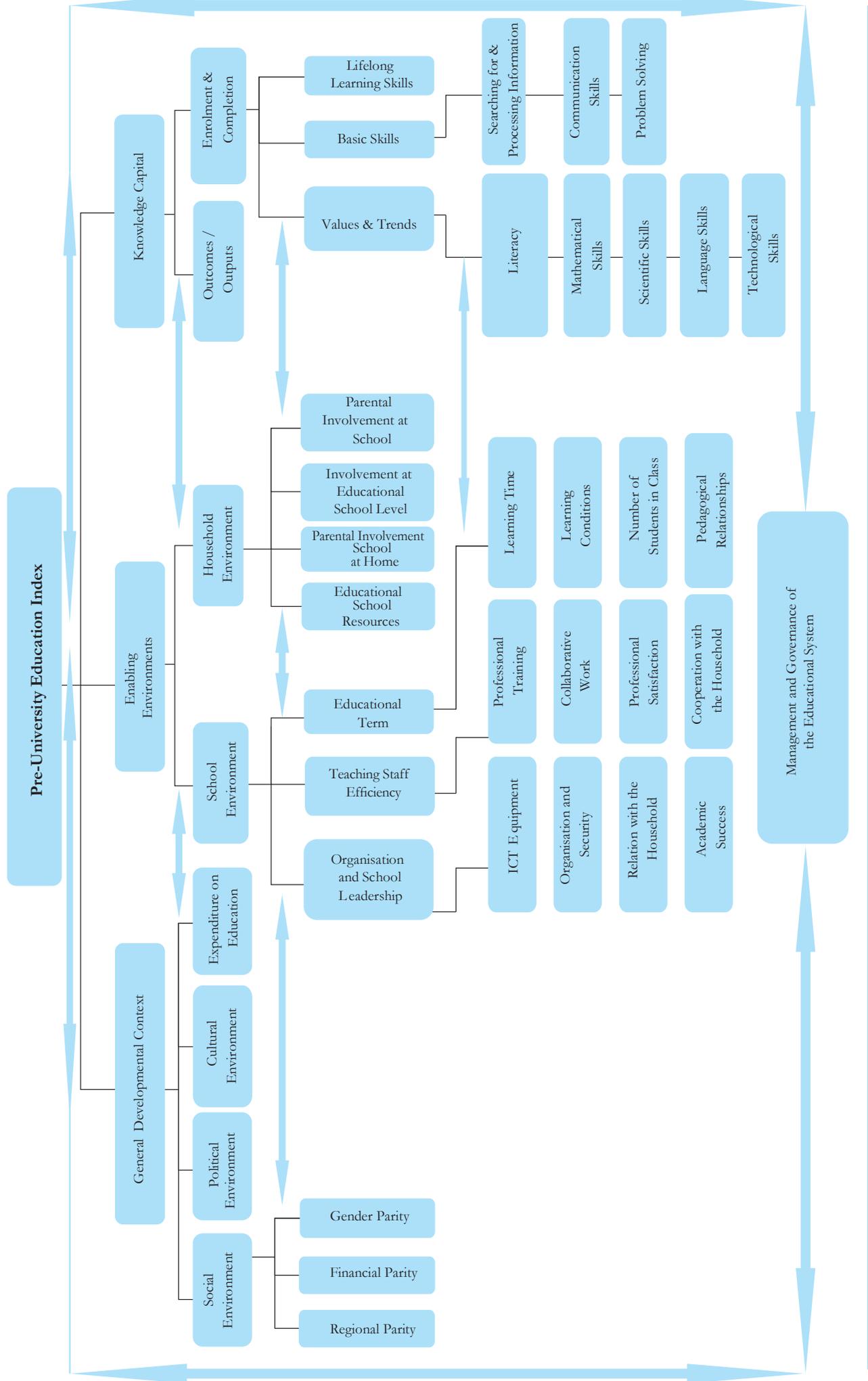
- The third foundation may be considered strategic; the production of indicators is not to be viewed as the ultimate goal, and their importance will not be measured by what they conclude in terms of quantitative data, but rather how they can inform decision-making on education and assist in devising effective and sound development policies. This cannot be achieved unless indicators cover the entire range of fundamental components of education systems. The former president of the IEA, Alejandro Tiana, has stated that the matter is not about evaluation for the sake of evaluating, but rather facilitating the improvement of education. Tiana indicates that it is necessary to understand all the basic factors that could affect educational achievements, as well as how they interact with one another and are reflected in educational actions and outcomes.³⁷

Based on the above, the intellectual model of the Pre-University Education Index is presented in Figure 1.

Model Constituents and Their Significance

The proposed model is based on that employed by the HDRs issued since 1995 and later by the AKRs. This places people at the

Figure 1:
Intellectual Model of the Pre-University Education Index



centre of sustainable development, which will not be achieved without recognising the following:

- People are the leaders and motivators of change; development strategies both stem from, and affect, people by enhancing their capabilities and expanding their choices. Development literature agrees that the success of development and related strategies, as well as its ultimate sustainability, are inextricably linked to the availability of active human capital capable of developing itself and its society, as well as confronting global changes and interacting with them in a positive way.
- The process of enabling individuals is one of the most important mechanisms for achieving transformation. From the perspective of human development, this not only relates to investment in individuals, training them to enhance their productivity to achieve development growth, but also to increasing capabilities, knowledge and financial resources for the sake of all.

Subsequently, the objective of the proposed model is for the pre-university education to achieve the highest levels of efficiency based on four main foundations: (1) securing active knowledge capital (education outcomes); (2) providing an enabling environment both in the household and at school that acts as a catalyst and provides motivation; (3) ensuring a suitable general development context; and (4) implementing effective management and governance of the education system.

Knowledge Capital

The saying that people are the real wealth of nations and that human development is a process of “enlarging the choices of individuals” encapsulates the understanding that the power of any country and its ability to achieve an ‘awakening’ are both linked to what it possesses in terms of trained and qualified human capital. It follows that the effectiveness and activity of each individual lies in what each possesses in terms of skills, values and behaviour that may

prepare them for continuous creativity and innovation. A rapid response is therefore required to meet the ever-changing needs of the global environment. Based on the aforementioned, two groups of indicators were selected:

- Enrolment and completion indicators: These are of a quantitative nature and measure the availability of opportunities for the next generation of children and young people to attend school and complete the necessary period of education in each of its various stages.
- Outcome indicators: These relate to quality and report the outcomes of the education process in terms of students’ acquired knowledge, skills and values, including:
 - Life-long learning skills: These are crosscutting skills required at all levels and in all disciplines as they are basic cognitive tools for continuing lifelong self-learning. The literature identifies a set of skill cores: searching for and processing information; problem-solving; communication with others (both written and oral); language skills (Arabic and foreign); and technological skills, noting that the last two AKRs were the first to present new tools to measure these skills in the Arab region.
 - Basic skills in the areas of reading, mathematics and science.
 - Value indicators: These constitute a dimension missing from current indices, despite the increasing interest they have generated within educational discourse. The latest UNESCO report, “Rethinking Education: Towards a Global Common Good”, states that education is not only the acquisition of skills but also incorporates the values of respect for life and human dignity required for social harmony in a diverse world.³⁸ Understanding that ethical issues are fundamental to the development process can counter the current dominant

discourse. Such an understanding enhances the role of education in developing the capabilities required for people to lead meaningful and dignified lives.³⁹

Enabling and Motivating Environments

Enablement can be defined as a multidimensional social process that gives people control over their own lives - a means for enhancing the power enjoyed by people in their societies.⁴⁰ This process is based on adopting policies, procedures and legal institutional structures, as well as providing the financial, cultural and educational resources required to overcome marginalisation; thereby guaranteeing equal opportunities for individuals to utilise society's resources and participate in knowledge-based decision-making. Enablement in the field of education is beneficial in preparing individuals comprehensively and to a satisfactory level, equipping them with the skills to absorb knowledge and contribute to its production. In order to achieve this goal, establishing a suitable enabling and motivating environment is an inevitable requirement, encouraging active and effective participation in the process of building knowledge. According to the AKRs, the enabling environments are manifested in all forms of support provided by society to youth for the purpose of building capabilities and skills at various stages of their development. Based on this perspective, these environments were categorised into two types according to their direct or indirect impact on educational gains:

- Household foundation: It is now known that the ability to learn is not determined by genetics, but is rather the result of a continuous process of preparation. This process begins in the early stages of childhood as children develop sensory, motor and cognitive skills, discover their physical surroundings and interact with others while absorbing the values of society. It is these developments and actions that determine their readiness for school learning. In order for this process to be successful, children must enjoy a household foundation that enhances the value of the individual and develops a sense of
- School environment: If the foundations for building children's personalities and their learning capabilities in the household have been established, their tendency to develop and improve will thereafter be determined by their school environment. In providing an attractive educational climate, suitable facilities and a scholastic structure adequate for learning, school is considered to be the second main foundation that complements the social nurturing process. In addition to being considered a social environment encompassing a broad spectrum of children from different cultural, social and economic backgrounds and regions, the school is entrusted with the responsibility of providing suitable support for the needs of pupils, on a basis of positive discrimination, as well as establishing and inculcating the principles and social values of positive citizenship and the norms of coexistence. In order for schools to succeed in fulfilling this function, they must achieve a quality leap that transforms the

traditional restrictive practices of ‘stuffing minds’ into real ‘enabling’ practices. Such a transformation must be based on at least three key foundations:

- Educational opportunities in class that foster intellectual capabilities and human values through the availability of equipment, educational tools and aids in addition to a prudent selection of pedagogical activities responding to the characteristics of the pupils and their various needs;
 - An efficient staff of educators that is competent in the pedagogical material it delivers, up-to-date with the latest developments in education and endowed with the necessary educational skills to evaluate and enhance its own performance via continuous professional development;
 - Effective school organisation and leadership both of which are required for transforming the institution from a ‘factory’ operating according to existing stereotypes into an ‘organisation’ that is governed democratically through partnerships and characterised by openness to its surrounding environment.
- Expenditure on education: Education is both an investment and a process of production that requires the creation of suitable conditions as well as sufficient financial and human resources to mobilise the process of knowledge production in a direction that guarantees a high level of returns. These requirements cannot be achieved without adequate financing and prudent expenditure policies that maximise the benefits to students. It is true that there is a clear trend of increasing education expenditure in the Arab countries; however, this conceals a distribution problem, given that the greatest share is consumed by wages and infrastructure at the expense of learners. Extensive literature proves the existence of a positive relationship between learners’ shares of educational expenditure and education quality, supporting the addition of this indicator in measuring the efficiency of pre-university education.
 - Educational attainment: The changes brought about by the information revolution have undermined traditional pedagogical models reliant on questionable traditional curricular systems. In light of the growing role of informal education, schools are no longer the only institutions responsible for educating young people and forming the basis of their knowledge, culture and values. The experiences of the developed nations, however, have proved that a revival in education is only achievable if it is achieved with the participation of all sections of society, and that such participation will not comprise a meaningful and active partnership without raising the general level of education of society. As such, educational attainment in society was selected as an indicator quantifying the availability of a social incubator that acts as a strong support base for schools and their programmes.
 - Political climate: The transformation of the education sector and its ability to achieve its goals as a key element in development is also dependent on the prevailing political climate. The absence of a climate that provides stability and security,

A Suitable General Developmental Context

An effective education system is distinguished by its complexity, the multitude of its constituents and their various interactions, as well as by the nature of its relationship with the general context in which it operates (political, economic, social, etc.). The general developmental context comprises a key element in the composition of the Pre-University Education Index. Despite an understanding of the multiplicity of the contextual dimensions, concern was focused initially on four fundamental aspects: financial resources, represented by expenditure on education; a cultural dimension represented by the educational attainment of the general population; a political dimension represented by the political climate; and a social dimension represented by levels of social justice.

- and guarantees both good governance of resources and the eradication of all forms of corruption, is a major factor obstructing such a transformation. Therefore, it is vital that serious and effective control and accountability mechanisms are put in place to prevent any actions that might undermine the returns from education. The recent armed conflicts and political upheavals experienced in some countries of the region, in addition to the increasing threat of terrorism, have created an ongoing social crisis that has adversely affected schooling; effectively placing education “under fire”.⁴¹ Such factors dictate that any index seeking to measure the efficacy of education in a given country must take into consideration variables related to the prevailing political situation in that country.
- Social justice: There are several reasons for selecting this factor, including its growing importance in recent decades owing to the accelerated drive to achieve knowledge economies and the associated effects of this process on the most vulnerable groups in society. Another is the link between knowledge and economic growth and the dependency of both on social justice highlighted in the third AKR “as a prerequisite for national social policies. These policies should support and build the capacities of individuals and expand the opportunities for participation in the various sectors...”⁴² Three axes of social justice were focused on in the Index:
 - Gender equity based on the Gender Parity Index: The rise of the term and concept of empowerment in the 1980s developed into a prerequisite for building a strong economy, establishing a more stable and just society, and enhancing the well-being of women, men, the family and society as whole. Empowering women increases both their level of education and their awareness of their rights, duties and ability to bear shared responsibility in caring for children and the family. Most importantly in development terms, empowerment feeds higher productivity and enhanced opportunities for economic independence and participation in public life. Such is the clear significance of this variable in the Index.
 - Material parity quantified by the Multidimensional Poverty Index: Early attempts to address poverty mostly focused on money and specifically income disparity - an issue that was integral to social and economic problems in many developing countries. Currently, however, approaches to combatting poverty have witnessed a transformation in terms of their key concepts and tools of measurement, with new discussions involving non-monetary poverty, human poverty or multidimensional poverty. The UNDP’s Multidimensional Poverty Index, therefore, employs a comprehensive approach that incorporates various aspects of deprivation affecting health, education and living standards.⁴³
 - Regional parity defined by indicators of territorial disparity: Numerous studies that include the Middle East and North Africa (MENA) region indicate the presence of an increasing gap in levels of education between the inhabitants of urban and rural areas attributed to developmental disparities between the two. Social and economic levels are lower for households in rural areas, reflecting negatively on rates of enrolment in education and its outcomes. In this regard, the Global Monitoring Report (2013)⁴⁴ concluded that there was insufficient data for understanding the impact of the dynamics of the relationship between rural and urban life in the MENA region, and identified the reduction of disparity between them as a major challenge in providing the necessary services to meet the millennium development goals in the region. Based on this perspective, there is a need to investigate this phenomenon as a feature of the Arab region, since any discussion of creating equal opportunities and establishing social justice will remain a mere ineffectual political rhetoric in the absence of a subjective and accurate diagnosis of the realities of poor and marginalised areas.

Initial Composition of the Pre-University Education Index

The initial selection process resulted in a list of 120 indicators distributed throughout the various components of the model illustrated above. All have been subjected to examination to ensure two important attributes in particular:

- Conceptual connotation, through reference to the definition and statistical bases for each indicator. This process enabled the exclusion of duplicate indicators, i.e. those with different labels that in reality present the same information.
- Availability of data, through reference to acknowledged official databases, the number of countries for which sufficient relevant data has been collected, and the period for which such data is available. This process provided the pivotal link between desired and available indicators, and led to the dismissal of certain indices due to the presence of duplicated data on identical or similar factors. Indices that were considered to be of particular significance, and for which there was no alternative, were retained within the model for use at such time that relevant data become available. These include indicators concerning the availability of efficient administration and governance in education. Thus, a list containing 110 indicators was compiled, representing the complete set of variables employed for launching the process of generating the various indicators.⁴⁵

Testing the External Validity of the Index's Initial Version

The assessment and verification of the validity of any measuring tool are considered fundamental steps in determining its ability to satisfactorily measure its subject. For this purpose, a series of internal and external consultations were conducted; the former were held periodically with the core team members and the Index's technical team via direct person-to-person meetings. Some of the external consultations took place online via email, but most occurred during a workshop held

in Tunis in September 2015. Representatives from 10 Arab states attended the workshop, comprising a selection of experts in a variety of specialisations relating to the two areas of education and index generation. The event revolved around the discussion of several issues, the most important of which were the structure of the Index and all of its various constituents, the relative weights of these constituents (equal or different) and the criteria for determining weighting where applicable. The most important points discussed were:

The Significance of the Index to the Arab Region

In general, the proposed composition of the Index was considered suitable and the participants expressed their approval for the goal of constructing a composite index that goes beyond dealing with a random and dispersed package of indicators that cannot provide an integrated reading of the reality of education and its various interactions in the region. They considered that this in itself would be an achievement, particularly in view of the fact that international indices are now widely discussed, yet the Arab region remains largely removed from this arena and does not possess any of its own.

The Vision Behind the Index

Some participants observed that the vision focused principally on mainstream education and inquired whether this was a deliberate approach, pointing out that comprehensive concepts of knowledge call for the inclusion of the role of informal education. Some comments highlighted the multiplicity of philosophical approaches to pedagogy adopted across the Arab countries, and questioned the possibility of measuring knowledge development at an Arab level given such diversity. In this regard, the participants supported the systematic approach adopted by the model that proceeds from outcomes (knowledge capital) and links them to inputs and processes by focusing on the severe problems experienced in the Arab region. However, access to credible data that truly reflect the Arab situation remains to be the greatest problem.

Constituents of the Composite Index

Participants acknowledged that the proposed model was well integrated and comprehensive in terms of the fundamental dimensions of education systems that are widely established in modern pedagogical approaches. The Index places emphasis on qualitative outcomes and considers the value aspects that have become a fundamental axis in educational discourse at the highest level. It places itself in harmony with global trends by exploring lifelong learning skills and stressing the importance of sub-indicators selected to support the major elements and foundations of the Index that facilitate an analysis of the weaknesses and strengths of education systems in the Arab states. The participants also highlighted significant dimensions that were absent, including:

- Pre-school education and its comparison with pre-university education;
- Enrolment and completion indicators for all stages of education;
- Indicators concerning disadvantaged groups such as the disabled and dropouts;
- The issue of gender parity in relation to indicators of 'knowledge capital'.

Lack of Required Data for Assessing the Index

One of the major problems facing those who produce and employ indices is the extent of data availability and sources. The workshop attendees agreed on and underscored this problem, but nonetheless concluded that this initial version of the Pre-University Education Index could be produced using currently available data. On the benefits of developing a new index, most participants agreed that the approach used to construct a composite index for monitoring the efficiency of pre-university education represented a significant addition to existing resources, as the many indices currently in circulation are patchy in terms of their coverage and do not reflect an integrated and interactive picture of the condition of education in the region. Most of the participants also agreed that the validity of the Index would not be undermined at this stage by employing secondary data originating from other acknowledged sources, providing that

these data are gradually replaced by primary data collected specifically for the Index.

Weighting of the Index Components

Opinions were divided between those who viewed the need to assign weights in accordance with the importance of each element while agreeing on assigning priority to the outcomes, and those who were more inclined to adopt equal weights. Following the scientific explanation presented by the expert statistician, however, agreement was reached to implement an objective method employing the following measures:

- Collecting relevant experts' suggested weightings for each component, then calculating an average;
- Comparing the weights obtained from the experts with those issued in the statistical process;
- Adopting the most convincing weight distribution, but giving priority to the statistical process.

Recommendations

During the course of the discussions and the conclusion to the workshop, the participants presented a set of recommendations, the most significant of which were as follows:

- Remain realistic and avoid drifting into the realm of complicated or inapplicable indices, especially in light of the lack of available data even in international databases and the reluctance of most Arab countries to reveal data, especially those relating to expenditure;
- Ensure flexibility concerning the constituents of the Index in order to allow the inclusion of updates (replacing some elements with others) without affecting the validity of the composite index;
- Establish a plan relating to data collection in order to avoid dependence on other sources, especially in view of the compo-

sition of the Index which allows for the inclusion of variables for which no data are presently available;

- Work towards expanding the surveys conducted for the second and third AKRs46 to include as many of the Arab countries as possible, with a view of achieving standardisation and development, especially as tests adopted to measure cognitive skills are considered fundamental for life-long learning at educational levels not currently covered by international tests;
- Establish collaboration agreements and enter into partnerships with regional and international centres and organisations concerned with indices and data in order to minimise the effort and cost of data collection;
- Establish a future vision for developing the Index and disseminating it on the broadest possible scale. This requires the preparation of a technical guide with detailed instructions regarding its use and information explaining how its findings may be of benefit in establishing policies for developing systems of education.
- With respect to the presentation of results, the proposals varied between those who supported the idea of producing the results in the form of ‘features’ to assist countries in need of an in-depth understanding of present conditions by providing a basis from which to move towards reform, and those who believed that the results should be produced in the form of country rankings that would engender competition, encouraging those listed to improve their position. A proposal was also advanced to produce the results according to groups of countries with significant similarities, or in geographical groupings.

Conclusion

It is an incontestable fact that education is a primary tool in building the future of nations and represents a gateway to achieving

knowledge society. However, for education to succeed in fulfilling its mission of securing human capital that is capable of producing knowledge and carrying the torch of sustainable human and social development, education systems must rely upon insightful and vigilant policies. Such policies must satisfy the requirements of the present without being distracted from exploring and preparing for the future. In this historic era of transformation at all levels, Arab policy-makers in education face overwhelming challenges. These challenges compel them to introduce methodological systems for monitoring and assessment that both identify the benefits and diagnose the difficulties associated with education provision, thereby enabling them to lead with competence and success.

This understanding constitutes the framework for this work, which aims to produce a composite index that efficiently measures pre-university education in the Arab region. The production of the Index carefully responds to modern concepts of education which consider pre-university education to be a comprehensive means of preparing pupils for life-long learning, and takes into consideration interactions with an enabling environment as well as general contextual circumstances. To build the Index, data were selected from acknowledged international databases; however, the lack of data for some of the sub-indicators led to their exclusion from the structure of the composite index. Indeed, this is a clear manifestation of one of the key challenges to be addressed in the next stages of developing the Index.

Initial data-processing showed consistency between the variables, where the Cronbach’s alpha coefficients ranged between 0.860 and 0.891, with the exception of the sub-pillar on reading skills which appeared consistently weak. This weakness may be attributed to the lack of variables, since only two were adopted. The first variable employed comprises the results of the Programme for International Student Assessment (PISA), which covers only four Arab countries; the second is UNESCO’s adult literacy rate. This confirms the need to review this category by replacing variables

and/or enriching them with new additions. Statistical data-processing confirmed the weight distribution allocated using Budget Allocation, with the highest weight of 40 per cent given to the Human Capital sub-index, and with equal weights (20 per cent) given to each of the three other sub-indices: Enabling Environment, General Development Context and Management and Governance of the Education System. The value of the total composite Index ranged between 23.30 and 67.35, and a country ranking consistent with the general trends revealed by other previous indicators.

Despite the significant achievement inherent in its construction, the current version of the composite Pre-University Education Index, remains in need of further testing and development. First and foremost, a solution to the obstacle of data availability is required. As long as there is a lack of data, it will not be possible to objectively judge the practical and scientific qualities of the Index. Furthermore, later stages of development should also include the introduction of performance standards and benchmarks in order to prevent the Index from becoming a descriptive representation of data and statistics with limited utility in supporting decision-making.

The issue of data availability must be addressed through networking with those institutions handling education-related data at both the national and international levels, leading to increased speed and efficiency in its acquisition. Furthermore, in order to address the lack of data for some suggested indicators, action is urgently required to construct methodological instruments to enable relevant collection in

accordance with a master plan that takes into consideration priorities and common standards of accuracy and objectivity (governing concepts and data collection methods, etc.)

The intention is to also enrich the proposed composition of the Index through the addition of other indicators that introduce, to a greater extent, the notions of justice and equality and their relationship with the foundations of the pre-university education system. Such additions would further promote the principles of transparency and accountability, and contribute to determining the position of the education system in relation to its responsibilities towards neglected groups and areas. It will also be beneficial to link the Pre-university Education Index and its foundations to the outcomes of the follow-up and review of the Post-2015 Development Agenda and the Sustainable Development Goals. In particular, such a link may focus on findings regarding selected indicators and goals, thereby adding a global dimension that would facilitate international comparison.

The greatest challenge in terms of building this Index is the development of a long-term vision for a package of indicators that may be utilised in various contexts while keeping pace with ongoing developments in theories of education, learning and psychological and educational measurements. This vision should also remain open to the influence of global transformations with a view to enhancing opportunities for Arab countries to establish active participation in the arena of knowledge competition and avoid remaining mere spectators.

Endnotes

1. Organisation of the Islamic Conference 2008.
2. World Bank 2011.
3. UNESCO 2008.
4. League of Arab States 2008.
5. UNDP and Mohammed bin Rashid Al- Maktoum Foundation 2012 (reference in Arabic).
6. UNDP and Mohammed bin Rashid Al- Maktoum Foundation 2012 (reference in Arabic).
7. UNDP and Mohammed bin Rashid Al- Maktoum Foundation 2012 (reference in Arabic).
8. This section was based on a background paper of Mohamed Matar (2015).
9. Jullien 1817 (reference in French).
10. UNESCO 1990.
11. Rutkowski 2008.
12. UNESCO-UNICEF, Monitoring Learning Achievement (MLA) and Conditions of Teaching and Learning (CTL), a joint international programme monitoring the quality of education and learning achievement, covering around 80 countries; IEA, Trends in International Mathematics and Science Study (TIMSS), a study covering more than 60 countries along with 14 benchmarking entities (including Bahrain, Jordan, Kuwait, Lebanon, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Syria, Tunisia, the United Arab Emirates (Abu Dhabi and Dubai included separately), and Yemen); OECD, Program for International Student Assessment (PISA), covering in its latest edition in 2012 all 34 OECD member states and 31 partner countries and economies (including Jordan, Qatar, Tunisia and the United Arab Emirates); and IEA, Progress in International Reading Literacy Study (PIRLS), the 2011 edition of which covered 49 countries including 6 Arab Countries (Kuwait, Morocco, Oman, Qatar, Saudi Arabia and the United Arab Emirates (Abu Dhabi and Dubai included separately)).
13. OECD 2014.
14. Refer to the chapter on “Concepts and Methodology” in this report.
15. UNDP 2006 and 2014 (references in Arabic).
16. OECD 2012, 2014.
17. UNESCO 2015.
18. ALECSO: The Arab Observatory for Education 2015 (reference in Arabic).
19. Refer to Appendix 2 for the list of participants in the workshop on pre-university education.
20. Ridha Sasi 2015 (background paper).
21. Mohamed Matar 2015 (background paper).
22. Ahmed Ouzzi 2015 (background paper).
23. Refer to the chapter on “Concepts and Methodology” in this report.
24. OECD 2012.
25. UNESCO Institute of Statistics 2015.
26. World Bank 2015.
27. The Arab World Education Index: AWEI. ALECSO: The Arab Observatory for Education 2015 (reference in Arabic).
28. UNDP 2006 (reference in Arabic).
29. Arab Bureau of Education for the Gulf States 2015b (reference in Arabic).
30. Arab Bureau of Education for the Gulf States 2015a (reference in Arabic).
31. Ministère de l'Éducation nationale, de l'Enseignement supérieur et de la Recherche en France 2014 and 2015 (references in French).
32. UNESCO 2009 (reference in Arabic).
33. Haut Conseil de l'évaluation de l'école 2005 (reference in French).
34. Renard 2001 (reference in French).
35. Najoua Ghriss 2014 (reference in Arabic).
36. Najoua Ghriss 2014 (reference in Arabic).

37. Tiana 2001 (reference in French).
38. UNESCO 2015.
39. UNESCO 2015.
40. Lord & Hutchison 1993.
41. UNICEF 2015 (reference in Arabic).
42. UNDP and Mohammed bin Rashid Al-Maktoum Foundation 2014 (reference in Arabic).
43. Abdul Hamid Nawar 2014 (reference in Arabic).
44. World Bank 2013 (reference in Arabic).
45. Refer to the Annex, Table A1 for the list of the indicators employed, along with their sources and weights.
46. These surveys were conducted among high school and university students from four countries, for the Second and Third AKRs respectively. The two surveys differed in terms of focus areas, yet both focused on measuring skills, general knowledge and opinion.