Session 2:
Vocational Content in Mass Higher Education:
International perspectives and policy trends

Vocational Content in Mass Higher Education:
The Arab States Perspective.

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INTRODUCTION
To investigate the issue of the vocational content in higher education (HE), two major dimensions need to be explored. These are: (i) the extent of orientation of HE programmes and services to the world of work, i.e. the relevance of such programmes and services to socioeconomic needs and developmental priorities of society at large, including labour market requirements. (ii) The weight, content and methodology of the applied and practical component in the various disciplines in HE.

Vocational Education (VE), especially for the preparation of skilled workers and craftsmen at the basic occupational levels, has traditionally been considered in many societies a less prestigious alternative reserved for young people who have been judged to be unable to benefit from general or academic education. But, if by vocational education is meant that type of education that prepares the individual for a job and to take up employment in a certain field of economic activity, then most of higher education in universities and post-secondary non-university institutions can be considered vocational education, preparing learners to become professionals, sub professionals and technicians, as the case may be. Consequently, the importance of both dimensions of the vocational content in HE becomes obvious.

The different approaches to the status of VE are rooted in the basic differences among the different philosophical theories regarding this issue. The idealist and experimentalist philosophies of education give inferior and superior status respectively to VE in their treatment of the aims of education. Since work and applied activities constitute a major part of the individuals` life, and occupy a considerable part of his time, education which aims, among other things, at the development of the learners, should not be indifferent to issues related to work and applied activities which, should figure prominently in educational objectives, services and practices.
Vocational Content in HE: The Relevance Dimension

One of the major aspects and objectives of the vocational content in higher education is the role that such content plays in securing and promoting the relevance of the outputs of HE to developmental needs and labour market requirements or, in general, to the world of work. To ensure and strengthen the relevance factor, all inputs, processes and outputs of educational offerings and programmes should be critically viewed and streamlined to support the concept of relevance. The following are some of the practices and frameworks of action that would be of help in this respect, at the national and institutional levels:

- Planning for and ensuring the availability of an adequate supply of professionals, specialists and technicians for the various fields of socioeconomic activities to avoid, for example, undue shortages that would hamper developmental efforts. Obviously, this requirement can be responded to mainly through policies and approaches at the national level in cooperation with all stakeholders. The diversification of educational offerings in HE institutions has to be guided by local and national needs in addition to, as is the case in the Arab region, by regional needs. Furthermore, it is becoming more and more important nowadays to take into consideration international needs.

- The availability of reliable and timely information systems about the supply and demand sides of human resources, including indicators and characteristics of inflow from the education system to the labour market, economic indicators and trends, labour market characteristics and job opportunities. Such information systems would be of help to planners and policy makers to influence the quantitative and qualitative aspects of HE at the national level. They will also be of help to HE institutions to guide their policies priorities at the institutional level, and to potential learners and job seekers to enhance their ability concerning a rational and well-informed choice of educational programmes and careers.

- Conducting labour market studies, surveys and needs assessment that can be utilised to enhance the vocational content of educational offerings, and hence the relevance to the world of work. Follow-up on graduates` performance at work, their income and professional progress through tracer studies is one important example of such studies. Other examples include studies related to cost-benefit and rate of return assessments, as well as employers` opinions and judgments concerning the relevant educational programmes.

- Securing the involvement and partnership of representatives of the world of work, on the individual and corporate levels, in higher education policy-making, strategies, plans and implementation activities. On the corporate level, such representation can target trade unions, professional associations, civil society institutions and employers` associations. The importance of an active and effective role of employers in human resources development, on the supply side of the formula, stems from the fact that they are the users and beneficiaries of the output of HE institutions and programmes. Their involvement and partnership can be established at the national, institutional (university), college or discipline levels, and can be instituted through the relevant councils, boards, commissions and committees at the planning, implementation, funding and evaluation levels. The following are some
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examples and models of employers representatives` involvement in HE activities: (i) The assessment of learners` standards, especially at the end of the educational programme. Such assessment can cover project work, theses, performance tests, etc. (ii) The design and development of curricula and performance standards. (iii) The provision of on-the-job training to cover some of the applied components of the educational programme, during and after the termination of such programme. (iv) The exchange of lecturers and professionals between HE institutions and enterprises through special arrangements and cooperative agreements. (v) The provision of accreditation and quality assurance services.

To assess the relevance factor in Arab HE systems, two elements need to be explored. These are the quantitative and qualitative aspects of relevance. Unlike the case of intermediate university education offered by post-secondary non-university institutions, such as community colleges and the like where some shortages exist in many Arab countries, there does not seem, on the quantitative side, to be a shortage in university facilities, services and beneficiaries in most Arab countries, especially when taking into consideration the large number of Arab students who study abroad. One meaningful indicator in this respect is the relatively high unemployment rates among university graduates that frequently exceed average national unemployment rates. This leads to the conclusion that it is the qualitative rather than the quantitative relevance to the world of work that is of priority in Arab university education at present. One important weakness in the nature and experiences of faculty and teaching staff in Arab HE institutions is that such faculty is predominantly drawn from the world of academia. In most cases, professors, associate and assistant professors spend all their career in HE institutions, teaching and researching with little or no effective exposure to the world of work. The advent of mass education in Arab systems of HE, that showed a significant turning point less than two decades ago served many social needs and democracy of education ideals. Nevertheless such positive developments on the social front were not accompanied by enough and adequate measures to secure the relevance of HE outputs to the world of work, qualitatively and quantitatively.

THE APPLIED ACTIVITIES IN HIGHER EDUCATION

As mentioned earlier, one of the aspects of the vocational content in higher education is related to the applied and practical activities that usually form an integral part of the relevant educational programmes. Several types, models and practices of such activities can be found in HE. The nature and extent of these activities vary according to: (i) Area of specialization of the educational programme under consideration, i.e. whether such programme relates to the applied sciences, pure sciences, social sciences or humanities. (ii) Level of the relevant HE programme, i.e. whether it relates to undergraduate university education, post-graduate university education, or intermediate university education for the preparation of technicians and subprofessionals. (iii) The academic recognition and status given to the applied and practical activities in the education system as a whole. Such
recognition or status manifests itself quantitatively through the weight and share of these activities in the concerned educational programme, and qualitatively into the practices, methodologies and implementation procedures adopted, as explained later.

The following is a quick, review of the most common types and models of applied and practical activities in HE programmes, with special reference to Arab Universities:

1. Laboratories
   Laboratory facilities are usually utilized to support, prove or further explain the theoretical knowledge acquired in lecture hall settings, rather than to initiate such knowledge. Laboratory work is more identified and found in the applied and pure sciences than in the social sciences and humanities.

2. Workshops
   Workshops provide similar services as laboratories, although they tend to highlight practical and manual skills, and to impart relevant experiences. In general, workshop activities tend to have less direct and looser relation to the relevant theoretical knowledge.

3. Field Work
   Field work or on-the-job training, although frequently utilised in HE, is rarely an integral part of higher education programmes in Arab universities except some times in such disciplines as agriculture and engineering. Where it exists, field work can be found in different structures, such as on-the-job training during summer vacations, which can be mandatory or non-mandatory. In rare cases, block release systems are utilised, whereby learners are released for one term or more towards the end of their educational programme, and are placed in relevant enterprises.

4. Project Work
   Project work with applied and practical content, especially in the applied sciences, is frequently an integral part of the educational programme, and implemented towards the end of such programme.

5. Post-Graduate Training
   Post-graduate training through placement in enterprises after graduation is not uncommon in Arab university systems, although such requirement, when mandatory, is restricted to specific fields. The following relevant models and practices can be identified:
   - Post-graduate on-the-job training and experience is an integral and mandatory part of the educational programme. In this case, academic recognition is incomplete without such post-graduate training. This applies in particular to the medical professions.
   - Post-graduate on-the-job training and experience is not an integral and mandatory part of the educational programme, but rather a mandatory requirement that is prescribed by the relevant professional associations or unions as a pre-requisite for joining the profession. This applies in particular to the law professions. In this case, a law graduate can practice as a lawyer only after he spends one or two years, apprenticed with a practicing lawyer. He might also be required to defend a thesis in front of
a panel of experts and professionals, usually representing the relevant association or union.

- Post-graduate on-the-job training and experience is neither an integral part of the educational programme, nor is it a mandatory requirement for joining the profession, but rather a pre-requisite and condition for employment. Such condition is specified by some employers who either provide the necessary services themselves in a formal or non-formal manner, or state it as a requirement for employment. This applies in the case of the engineering professions. It is not unusual to find specialised agencies, both not-for-profit or for-profit, that provide the relevant services in cooperation, sometimes, with employers.

6. The Parallel Path
This is an educational model that avoids, to some extent, the traditional academic path that transfers learners from secondary to higher education. According to this path, the educational background of learners can be of a more vocational nature. On the other hand, the HE institutions themselves are less academically and more vocationally oriented than traditional universities. Admission standards and criteria are more flexible. Thus, the "ivory tower" is by-passed instead of attempting to change its rules and criteria.

7. Other forms and models of applied activities in HE such as sandwich systems whereby learners alternate between the HE institution and the enterprise, or day-release systems whereby learners spend part of the week in the enterprise, are not common in Arab universities.

One of the organizational matters that face departments in HE institutions, when making arrangements and time schedules for the applied and practical components of the various disciplines, is the need to secure synchronisation between theoretical and practical parts. The tendency is usually to arrange for the theoretical part to precede the practical one, especially when the latter is offered in laboratories and workshops, with the (not so accurate) assumption that practical applications are mainly intended to support, explain or prove theoretical knowledge. It is not an exaggeration to say that this is a biased attitude that has its roots in the theory of knowledge, by assuming that knowledge is basically of a theoretical and mental source, while practice and experience is the mere utilisation of knowledge, as stressed by the "idealistic" philosophy. A more balanced approach to this issue is realised if other educational philosophies about the sources of knowledge are taken into consideration, such as pragmatism and experimentalism that adopt the view that experience and practice can be more important a source of knowledge than the mind. For John Dewey (Democracy and Education, pp.169, 321,395), as an example, actual knowledge and fruitful understanding can only eminate from practice and experience. Ibn Khaldoun, the Moslem sociologist who lived in the fourteenth century asserts that experience and vocation can produce mental powers and knowledge.

It is of interest to note that, in general, many of the criteria, rules and regulations that are applied to vocational education in general, and to the vocational content in higher education in particular, are borrowed or imposed by the structures, criteria and specific requirements of general, academic or liberal education. Such criteria and
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rules include issues of planning, implementation and evaluation. A few examples as shown below will help to explain this point. It will be clear from most of these examples that the advent of mass higher education accentuates the relevant shortcomings:

- Learners in higher education institutions are usually required to spend 2 to 4 times the number of work hours in applied (laboratory or field) activities as they are required to spend in the classroom or lecture hall to get a similar credit for their work. Thus, while one lecture session of less than one hour duration is evaluated at one unit of work, 2 to 4 laboratory or field hours need to be spent in applied activities to be given similar recognition, irrespective of the actual value of the content or outcome of both activities.
- Applied and practical work in laboratories or in the field is usually either modestly supervised or relegated to teaching personnel with lower academic status. The advantages of face-to-face interaction or participatory involvement with learners is not considered advantageous or necessary in applied as in theoretical efforts. Needless to say, in many situations the opposite is true.
- In most universities, post-graduate studies comprise components of course packages and some genuine research work. Here again, it is not unusual to undervalue the practical or applied elements in both components.
- When field work and on-the-job training constitute a requirement or mandatory component of HE programmes, especially in the case of the applied sciences, as in engineering and medicine, such component is usually undervalued and poorly supervised, with the result that it becomes in practice a pre-requisite activity with little, if any, weight in the learner’s performance assessment.

In general, therefore, a balanced approach to the synchronisation issue between theory and practice can fruitfully be adopted. According to such balanced approach, some concepts and theories can benefit more by being followed by relevant practical applications to support, explain or prove the theoretical content, while other concepts and theories can benefit more by being preceded by some practical applications and applied tests to explore and lead to such concepts and theories, in a fact-finding manner. Another element of the balanced approach is that applied and practical activities should be as well supervised as academic ones. Furthermore the value and credit given to each should be built on merit basis and outputs of the learning process.

**Career Guidance and Employment Support Services**

One of the components of the vocational content in higher education, which is not well taken care of in many HE institutions, concerns the services related to career guidance and counseling for learners at the admission stage as well as during the educational programme. Career guidance services thus have two inter-related elements: the educational element that helps the learner to choose the appropriate study programme, and the vocational element that helps him later in the choice of vocation within his field of specialisation. Both elements, especially when
accompanied by active employment support services, can provide important linkages between HE and the world of work, thus strengthening channels between the supply and demand sides of human resources.

The relevant services can be summarised in three components:

1. Availing timely and up-to-date information about job opportunities and labour market characteristics and trends on the demand side, as well as about the nature of educational offerings and services on the supply side, to help in the informed choice of career on the one hand, and study programme on the other.

2. Helping the learner to better identify and assess his abilities and aptitudes. To be effective, the relevant activities and services are better introduced in the different stages of pre-university education.

3. Promoting learner's skills that facilitate his transition from school to work. Such skills include job-search, self-assessment, interviewing, applying for jobs, etc.

Another kind of services that can be offered by HE institutions, and that complement career guidance and counseling services, is related to employment support services. Apart from the benefits to the learner and to the HE institution itself through promoting its image, such services provide useful links and channels with enterprises and help, through appropriate feedback inputs, to rationalise the content of educational programmes.

In general, career guidance and employment support services are weak in Arab HE systems, and when they exist in a modest form, they are directed more towards serving labour market needs and utilising available job opportunities than towards fulfilling individual self-realisation needs and responding to his aptitudes. Educationists are aware of the need to avoid situations whereby, in extreme cases, individuals` abilities and aptitudes are twisted and distorted to fit labour market needs. The example of the square peg and round hole applies here, with detrimental effects to both. This is yet another example where predominantly demand-driven approaches to human resources issues can reflect negatively on both the supply and demand sides. Mass education in HE systems can potentially have negative effects on the coverage of career guidance and employment support services. Nevertheless, the advent of modern information and communication technologies and the accompanying on-line e-services, made it possible not only to widen the base of beneficiaries from such services, but also upgrade their quality, widen their scope, and further professionalise their content.

**Vocational Content of Teacher Preparation Programmes**

In addition to all the objectives, justifications and criteria for the vocational content in higher education programmes mentioned earlier, such content in pre-service teacher preparation programmes assumes additional importance and deserves further attention, because of the nature of the end users and beneficiaries, i.e. students in different cycles and types of pre-university (primary and secondary)
education, who benefit considerably from a pragmatic approach to learning, whereby the applied aspects, both in content and methodology, permeate the learning process and environment.

In most Arab education systems, pre-service preparation for teachers takes place at two levels: the intermediate university level for employment in the pre-school and primary cycles, and the university level for employment in the secondary cycle. In some countries like Jordan, the university level is mandatory for all cycles. Both levels require an adequate component of pedagogical content either during or after the subject oriented or specialised component. The weakness that is frequently encountered in the implementation of the pedagogical component concerns the ineffectiveness or near absence of the vocational content which can be highlighted through a variety of forms. One of such effective forms is placement in schools, working and training under the guidance of senior teachers, and subject to adequate supervision, follow-up and assessment.

**THE VOCATIONAL CONTENT IN HE AND THE KNOWLEDGE ECONOMY**

Much is said nowadays about the knowledge economy and the knowledge society, which are associated strongly with the onset of globalization in the various socioeconomic activities, including educational services, in reference to the trend where knowledge, including scientific and technological development, is becoming the major driver of social and economic growth as well as the major source for the creation of wealth, exceeding in importance and weight other drivers and sources like natural resources, capital, etc. Needless to say, human resources will remain the key to all related efforts, being both the objective and target on the one hand, and the tool and means on the other hand, for socioeconomic development.

Under such criteria for the knowledge economy and the knowledge society, it is appropriate to refer to the need to educate and train the "knowledge worker" through the various fields and levels of the education system, including higher education. The characteristics of the "knowledge worker" can be realized by ensuring the attainment of three packages of skills. These are:

1. Professional or occupational skills related directly to the occupational or job profile that is targeted by the educational programme, including the relevant knowledge, skills and attitudes. Other skills include the utilisation of modern information and communication technologies, as well as various professional and organisational needs.

2. Higher mental and developmental skills including critical thinking, problem solving, innovation, entrepreneurship, self-learning, risk-taking, etc.

3. Communication skills and attitudes, including team-work and adaptation to work environment and cultural differences.
Taking into consideration the above mentioned skill packages, the needs of the world of work that have to be catered for by HE institutions in order to subscribe to the knowledge economy can be summarised as shown hereunder. Educational systems vary considerably in the extent to which they have responded to or approached some or all of these needs:

1. Avoidance of narrow specialisations. Highly specialised skills should be built on a wide base of knowledge and skills in order to widen the scope of job opportunities for the learner, so that he is better equipped for lateral and upward labour and social mobility in his career.

2. The establishment of in-built bridges between the world of academia and the world of work, and hence between the supply and demand sides of human resources, as explained elsewhere in this paper.

3. Enough emphasis should be placed on the abilities and skills of how to learn and how to utilize what has been learnt, rather than what, where and when to learn.

4. Enhancing the ability of the learner to utilise the diversified nature of the sources of knowledge.

5. Education programmes should be structured as to produce entrepreneurs and job creators, and not just job seekers.

6. The special needs of small and medium-size enterprises, which invariably have major roles in world economies, should be responded to.

7. Socioeconomic developmental needs and labour market requirements should influence, but not dictate, the content of the relevant educational programmes. A balanced supply-demand-driven system of human resources development is to be targeted.

8. Working for an enterprise does not necessarily require working in the enterprise. "Distance and e-working" is becoming a feature of the world of work in as much as "distance and e-learning" is becoming a feature of the world of academia.

9. Career guidance and counseling, as well as employment support services, need to be incorporated or coordinated with the traditional functions of HE institutions.

10. A multi disciplinary interdisciplinary approach to the design of educational programmes should be taken into consideration as much as possible.

11. Educational programmes should be structured with a clear objective of preparing potential "knowledge workers", with the characteristics referred to earlier.

12. The structural and regulatory barriers and walls between formal and non-formal education need to be demolished, to facilitate and enhance life-long-learning and sustainable development.

13. Finally, and considering the diversified nature of the spectrum of disciplines and programmes offered by HE institutions regarding the liberal and applied contents, the need arises for the vocationalisation of liberal education and the liberalisation of vocational education.
One important aspect of the globalisation of educational services, which is associated with the knowledge economy and the knowledge society, is on-line and e-learning. The mushrooming of e-learning and distance systems of higher education is taking place in Arab HE systems, as in other international systems, on two fronts: (i) as support to traditional systems in what is sometimes called blended education, (ii) as stand-alone systems offering distance on-line learning programmes. Obviously, distance and e-learning services have a potential to contribute, immensely to enhancing the trend towards mass higher education, reaching a wider base of beneficiaries with more diversified social and geographical backgrounds. The potential of thus promoting the democratization of higher education can only be secured by effective economic and social policies and plans to help avoid the dangers of the "digital divide" phenomenon, whereby the knowledgeable become more knowledgeable because they have the necessary means and accessibility to become so, while those with little knowledge do not progress or they might even become less knowledgeable.

The influence of e-learning on the vocational content in higher education depends upon the vocational dimension under consideration, i.e. the relevance to the world of work, or the applied and practical content of educational programmes. Such influence is generally positive and supportive as far as the "relevance" dimension is concerned. This is so because e-learning offerings tend to be more life-oriented and professionally supportive, especially that a good proportion of the learners are usually adults at work. On the other hand, the influence can be negative regarding the applied and practical components of educational programmes. Attempts to counter this deficit through "modeling" and other technological aids have failed to be a real substitute to hands-on practical applications. On-line learning has in general accentuated the weakness of the applied and practical components of HE programmes.

Another important aspect of the globalization of educational services, which is also associated with the knowledge economy, and which has been further promoted by modern information and communication technologies, is the expanding trend towards life-long learning (LLL) through both formal and non-formal educational systems and services.

Although an old concept in many cultures, including Arab and Moslem cultures, life-long learning is assuming greater importance and higher status due to the nature and rhythm of knowledge and technical developments, including continuous and accelerating developments and changes in the world of work, acute competitiveness, and increasing labour mobility, thus highlighting the need to continuously upgrade the abilities of the individual after joining employment, improve his performance, update his skills, and enhance his adaptability to new developments and work environments.

It is expected that LLL programmes, services and systems would be mostly linked to, if not frequently built on, the priorities and requirements of the world of work on the one hand, and the abilities and needs of the learner on the other. This necessitates
that such programmes and systems have a strong vocational content, especially in their relevance to societal needs.

The major role of HE systems and institutions in any LLL national efforts is two-fold: (i) HE institutions should be active partners in providing the relevant services and facilities. Other partners include enterprises, professional associations, business and technological incubators, private sector training providers, etc. (ii) HE programmes should instill in learners the skills and attitudes towards life-long learning, including self-learning, adaptability, entrepreneurship, and other communication and higher mental skills.

**LABOUR MARKETS AND COMMODITY APPROACH TO HIGHER EDUCATION**

To be responsive to the needs of the world of work and the requirements of the labour market, higher education, which is a major component and venue of human resources development, is sometimes considered to have many characteristics of a commodity. Although a commodity approach to HE could be welcomed by economists, educationists would look with suspicions to such a concept. Nevertheless, a commodity approach to HE has advantages to be maximized and disadvantages that need to be dealt with and minimised. The major advantages are:

- Commodity producers diversify their products and are responsive to the needs, priorities and tastes of consumers. In the case of HE, the consumers are the learners, the employers, and the community at large.
- Commodity producers are expected to adhere to local and international standards and specifications, including health, safety and environmental criteria. Such standards for HE include, in addition, various educational considerations.
- Marketing efforts are major activities of commodity producers to promote demand and consumption that is linked with quality and cost. Similar efforts have positive effects for HE.
- Competition is a salient feature among commodity producers, resulting in better quality and lower costs, as well as the withdrawal from the market of inefficient producers. Similar considerations have advantageous effects on HE.
- The economics of production is an intrinsic feature of the process of commodity production, with the objective of maximizing returns and increasing benefits. A similar approach to HE services would be advantageous.

On the other hand, a commodity approach to higher education has some disadvantages that can be summarised as follows:

- Profit making is usually a main objective of commodity production. For-profit HE institutions are not, in general, favoured in education systems, although they are becoming more and more available in many Arab countries where such institutions are owned by profit-making companies, share-holding or otherwise.
• Commodity producers usually avoid producing commodities that are not justified on economic grounds, either because of the small market and low demand, or because of high production costs and investments. In the case of HE, such criteria for production are not acceptable, as they might exclude some educational programmes and services that are needed for national priorities and the public good.

• Commodity production is characterised by a minor role of the public sector in funding and general organisational aspects. In higher education, an active and promotional role of government in funding, side by side with other sources, is valuable.

• Economic considerations and factors prevail in commodity production. In the case of HE, a combination of economic, educational and sociocultural factors are taken into consideration.

• Those involved in the production of commodities, whether on the planning, administrative or productive level, consider their work a profession. Those who are similarly involved in education consider their work a mission that incorporates a profession or, at least, a profession that incorporates a mission.

Admission Standards and Criteria

The regulations and practices that govern the admission standards and criteria to higher education institutions affect, maybe indirectly, the vocational content in higher education. A flexible approach that would promote the diversification of sources and in-flow channels to HE programmes from formal and non-formal systems of pre-university education, including academic and vocational streams and backgrounds, while upholding adequate admission standards, would reflect positively on the vocationalisation of the learning environment in general. Linking university education, to a great extent, to formal academic streams of secondary education, as is the case in most Arab universities, does not help in this respect.

Another important issue that is related to admission standards and criteria to HE institutions has to do with the national university entrance examinations concerning their content and governance. Regarding their content, such national examinations are usually predominantly subject-centered with little, if any, applied content. As for the governance aspect, the predominant model in all Arab countries is that where the providers of formal pre-university education, i.e. Ministries of Education and the like, administer and implement these examinations, rendering them supply-driven to a great extent. The model of having national autonomous agencies where all stakeholders including HE institutions, civil society, the private sector and providers of pre-university education, are represented to ensure a balanced supply-demand-driven approach to national pre-university tests is yet to be acknowledged and developed.

Mass education in HE programmes at the under-graduate and post-graduate levels is changing the picture towards a better vocational content. The wider spectrum of social and age groups, especially working adults who join part-time programmes, is helping to change the texture of higher education systems, slowly but surely. One of
the relevant indicators in this respect is the fact that a good proportion of theses and project work is related to life and labour market issues and requirements.

**Vocational Content in HE Research Activities**

Scientific research and technological development (R&D) is one of the major functions of HE institutions. Such function is undertaken either through independent research projects, contracted or otherwise, or through post-graduate studies. The vocational content of HE research activities can be explored through four dimensions. These are:

1. Guiding post-graduate research themes to be more of a vocational nature, in the sense that such themes would shed light on, or find solutions for, issues derived from the world of work. Such applied research would require usually the availability of channels and linkages with enterprises and the civil society.

2. Enhancing the role of HE institutions in contracted research, whereby private sector enterprises and civil society institutions, as well as public agencies, initiate or participate in identifying and funding targeted research work that is directed to serve their developmental needs. Contracted research is obviously a guaranteed means towards the vocationalisation of higher education. Post-graduate studies and research activities in Arab universities are mostly financed by the supply side of the human resources formula, i.e. governments and/or learners, with limited participation from enterprises and employers. This renders the response to the needs of the world of work inadequate.

3. Strengthening the applied and practical component of the research programmes, and highlighting the experimental approach to investigations and knowledge-seeking, keeping in mind that experiences can create knowledge.

4. Promoting research work that is related to the various issues and models of technical and vocational education and training (TVET) that is usually intended to prepare learners as skilled workers, craftsmen and technicians. Compared with general education, TVET suffers from lack of sufficient basic and applied research. TVET themes that can benefit from research and post-graduate work in universities include systems, comparative studies, socio-cultural influences, the economics of operation, etc.

5. If one scans through the multitude of M.Sc. and Ph.D. theses that are at present being mass produced by Arab universities, an insignificant proportion will be found to deal with TVET issues.
**THE DEMAND-SUPPLY DILEMMA IN HIGHER EDUCATION**

Much is said about the need to render education in general, and higher education in particular, more relevant to the world of work and developmental needs of society. Arab Universities are frequently criticised for their weak linkages and channels with the labour market. The traditional "ivory tower" image of universities can still be traced in the offerings, methodologies and outputs of HE institutions, which are often referred to as "supply-driven". Voices, and sometimes "noises", about the need for a demand driven approach to HE are abundant. Needless to say, it is as bad for HE to be predominantly demand driven as it is to be predominantly supply driven. Neither labour market requirements and economic considerations, nor individual needs and humanistic ideals should alone dominate education systems. A balanced approach that adopts the comprehensive concept of human resources development is needed. This is so because people are the means and tools as well as the aim and purpose of development and progress. Human development in general, and human resources development through all types and levels of formal and non-formal educational programmes in particular, is thus the key to growth and progress in the various economic and social sectors. The structure and content of education systems, including HE, should therefore incorporate two major complementary dimensions: the sociohuman dimension that caters for the individual aspirations and human ideals, and that is patronized by educationists, and the economic dimension that highlights societal needs and labour market requirements, and that is traditionally championed by economists.

The advent of globalization, accompanied by many knowledge miracles and technological breakthroughs that ushered many societies into becoming or approaching knowledge economies, helped to a great extent to bridge the gap between the approaches of educationists and economists to the concept of human resources development, and consequently to solve the demand-supply dilemma in higher education.

The figure below illustrates the comprehensive structure that encompasses human resources on both the supply and demand sides, including the linkages and channels between both sides. It is to be noted that in any society, such structure is influenced as far as the nature of its deliverables is concerned by the relevant economic, social and cultural criteria and values in that society. Special attention should be given to the channels and linkages between the supply and demand sides. These include as shown in the figure, and as explained elsewhere, relevant legislative tools, standards and classifications, information systems, R&D activities, career guidance and employment services, and institutional linkages such as councils, boards, etc.
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Figure 1. Comprehensive structure
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