A UNESCO - UNEVOC INTERNATIONAL CONFERENCE

VOCATIONAL EDUCATION IN THE ASIA-PACIFIC REGION

REPORT

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UNESCO UNEV●C TAFE SA DEPARTMENT OF EDUCATION TRAINING AND EMPLOYMENT AUSTRALIAN NATIONAL TRAINING AUTHORITY

Conference Report

1. ACKNOWLEDGMENTS

2. FOREWORD   Dr Qian Tang, UNESCO
    Chief, Section for Technical and Vocational Education

3. INTRODUCTION

4. RECOMMENDATIONS FROM THE CONFERENCE

5. MEETING OF UNESCO DELEGATES

6. CONFERENCE STRUCTURE

7. SUMMARY OF DISCUSSION ON THE SEOUL CONFERENCE THEMES

APPENDICES

1. Conference Program

2. Conference Papers

3. List of Participants

Foreword

The important role that technical and vocational education and training (TVET) plays in each country's efforts in developing required human resources cannot be over-emphasised in today's world. Providing learning and training opportunities for citizens to acquire appropriate skills ñ both technical and social ñ is a prime necessity for all countries and governments in order to cope with the rapid social, economic and technological changes.

During the past several decades, UNESCO has been active in the field of TVET with the purpose of serving its 186 Member States' needs. One of UNESCO's major thrusts in this aspect is directed towards reviewing and diversifying TVET systems. This includes a closer articulation between general and vocational education, so as to prepare young people and adults for the world of work. It also includes the development of alternative opportunities to enable every individual to access, at any time, education and training that is compatible with his or her needs.

In 1987, UNESCO held the International Congress on the Development and Improvement of Technical and Vocational Education in Berlin, in the former German Democratic Republic. The Congress led to the creation of the Organisation's International Project on Technical and Vocational Education (UNEVOC) which was launched in 1992, with the goal of strengthening the development and improvement of TVET in its Member States. The UNEVOC activities, implemented in all regions of the world, aim at fostering the international exchange of ideas and experiences; strengthening national research and development capacities and promoting access to information, At present, a network of 165 UNEVOC Centres devoted to system development and information exchange has been established in 110 countries.

Ten years after the Berlin Congress, and facing a new environment created by trends such as globalisation, the enhanced mobility of labour forces, and the rapid advancement of information and communication technologies, many people working in the field of TVET are convinced that it is time to hold another international forum to examine how the field should adapt to these new circumstances. TVET needs new thrusts to make it contribute to both socio-economic and individual development in a more effective way.

To be able to answer such a call, UNESCO is organising the Second International Congress on Technical and Vocational Education in cooperation with the Government of the Republic of Korea in Seoul, from 26-30 April 1999. This event is to be preceded by a series of regional preparatory conferences which help focus on the TVET experience and needs of the countries in different regions of the world.

The UNESCO-UNEVOC International Conference on Vocational Education in the Asia-Pacific Region was one of such regional meetings successfully organised by the Adelaide Institute of TAFE in March 1998. The event, which attracted more than 100 participants from over 20 countries and Australia, made valuable recommendations to UNESCO's regional activities in TVET, and excellent suggestions on the themes that the Seoul Congress should address. The views on the new challenges and issues in TVET from the experts of the Asia-Pacific region will certainly contribute to the success of the Congress, and will also be taken into account when UNESCO's future program activities in the field are formulated.

On behalf of UNESCO, I should like to thank the Australian Department of Education, Employment, Training and Youth Affairs, the Australian National Training Authority (ANTA) and the Australian National Commission for UNESCO for their generous sponsorship to this event. Special thanks are addressed to our colleagues at the Adelaide Institute of TAFE, Ms Madeleine Woolley, Mr John Bartram, Ms Di Booker and many others for their efforts and devotion that made this Conference a very successful event.

Qian Tang, PhD
Chief, Section for Technical and Vocational Education, UNESCO

Introduction

The 'Vocational Education in the Asia Pacific Region in the 21st Century' conference was called to complement the conference being conducted in Melbourne which focused on the major UNESCO report, 'Education for the 21st Century'. The two meetings were held back to back to enable delegates, particularly those from other parts of the world, to attend both.

The conference was made possible through the financial support provided by UNESCO, the Commonwealth Department of Education, Employment, Training and Youth Affairs and the Australian National Training Authority. Without this support, the conference would not have been possible. These funds enabled people from 40 different countries to travel to Adelaide to participate.

The conference was organised to provide input from highly regarded international speakers, debate by panellists and opportunity for participants to continue the debate and contribute to the development of resolutions and themes for consideration in the Second World Congress in Vocational Education in Seoul, 1999. A conference dinner dance was held to enable participants to mix in a social setting.

The organisers were keen to involve people from as many countries and backgrounds as possible in key roles so that no particular group dominated the proceedings.

The organisers would like to thank particularly, the staff and students from the Adelaide Institute of TAFE who contributed in a very real way to the success of the conference; the Tourism students who provided a very professional conference help desk during the meeting; and the students from the training restaurant 'SIT' who very capably catered for the diverse cultural needs of the participants.

The organisers would also like to thank those people from TAFE SA and from RMIT University who acted in key roles by chairing sessions, chairing syndicate group meetings and as panellists to the keynote speakers.

In conclusion, the organisers express their sincere thanks to all participants, some of whom travelled very long distances, for contributing to the conference in a spirit of good will, fellowship and cooperation. They trust that the conference will in some way, help Governments around the world gain an understanding of the importance of a well developed and resourced Technical and Vocational Education and Training System.

John Bartram
Conference Committee

Recommendations

1. GENERAL RECOMMENDATIONS

UNESCO should maintain a leading role in:

a. Assisting Member States to send key staff members to participate in appropriate international and regional activities

b. Offering professional development programs in Member States in key areas

c. Assisting Member States to obtain financial support from international funding agencies

d. Supporting Member States in the development and implementation of national strategies in TVET to address specific socio-economic needs of these countries

e. Encouraging and supporting the development of partnerships between institutions in Member States

f. Encouraging and supporting exchange programmes for students and teachers

2. PROJECT PROPOSALS

2.1 'Entrepreneurial Skills for Small Business' project

The 'Entrepreneurial Skills for Small Business' project commenced in 1994. Member States involved in its development have been Australia, Malaysia, Korea, China, India, Pakistan and Indonesia. Those Member States who have benefited from this project expressed a strong desire that the project should continue. Other countries requested more information so that they may determine how to best be involved.

> *Recommendation 2.1.1*
> *Facilitate publicity and promotion of the project in the region.*

> *Recommendation 2.1.2*
> *UNESCO should support the development and conduct of professional development programs for staff involved in the development of learning materials and in the delivery of the 'Entrepreneurial Skills for Small Business' course.*

Recommendation 2.1.3
Prepare delivery methodology materials including teacher guides and student learning guides for use in the region

Recommendation 2.1.4
Collect case studies from various countries in the region on successful entrepreneurial activities.

2.2 Clearing House Project

The Clearing House Project commenced in 1994, in response to recognition of the lack of available resources on curriculum development and vocational education research. Subregional workshops were conducted in Bhopal, Bandung and Manila to train staff in the collection of data and to encourage the establishment of subregional centres. It was decided that the Adelaide Institute of TAFE and the National Centre for Vocational Education and Research would for the regional hub for the database on curriculum development, open learning materials and vocational education research. The project is supported by all participants.

Recommendation 2.2.1
Strengthen the regional hub for the Curriculum Development and Research Database in the Adelaide Institute of TAFE and the National Centre for Vocational Education Research.

Recommendation 2.2.2
Support UNEVOC Centres in their roles as National Clearing Houses for the Curriculum Development and Research Database through the provision of training in the collection of materials, development of the database at local levels and contribute to the regional clearing house.

Recommendation 2.2.3
Provide expert advise and financial assistance where necessary to assist member states to install appropriate software and hardware and participate in relevant training.

2.3 Key Competencies

The Australian 'Key Competencies Professional Development' package was demonstrated to all international participants during the UNEVOC Centres meeting. As a result of that demonstration, participants were keen to see a project developed which would make similar material available and relevant to their countries.

Recommendation 2.3.1
Establish an expert group to conduct a needs analysis of producing a 'Key Competency Professional Development' package which can be used or adapted by countries interested in this approach.

3. RESEARCH PROJECTS

The first major research project in the region was conducted by the Royal Melbourne Institute of Technology, 'Thirteen Case Studies in Technical and Vocational Education', completed in 1995. As a result of the success of that project, there was a request for further comparative research.

Recommendation 3.1
Conduct comparative case studies which will examine the different approaches
taken by governments in various selected countries to improve the economy
through developing the training sector. Such a study should address issues such
as funding and planning in TVET.

There was also a very strong request for a feasibility study to commence on the development of a 'Skills Passport' or qualifications framework, a move which would see a greater recognition of competencies gained across the region and facilitate mobility of skilled labour. This proposal was very strongly supported by all participants. The tourism/hospitality industry was suggested as an area suitable for a pilot study.

Recommendation 3.2
Examine the feasibility of developing a qualifications framework for the Asia-
Pacific Region. The long term aim of this proposal would be to develop a
common framework which would encourage international cooperation between
governments and institutions.

Meeting of UNEVOC Centres

On Wednesday, 25 March, delegates representing the UNEVOC Centres met with Mr Colin Power, Assistant Director-General for Education and Dr Qian Tang, Chief, Section for Technical and Vocational Education from UNESCO. The UNEVOC Centres which were represented were:

Australia (Adelaide Institute of TAFE and RMIT University)
China
India
Indonesia
Korea
Malaysia
Nepal
Pakistan
Philippines
Russian Federation
Thailand
Vietnam

Other countries represented at the meeting were:

Fiji
Kingdom of Saudi Arabia
Kiribati
Nauru
Samoa
Solomon Islands
Tonga

Also at the meeting were Mr M A Qureshi, former TVE Program Specialist, UNESCO, Bangkok, Mr Hans Kronner (UNESCO, Berlin), Mr Brian Stanford (UNESCO Australian Commission), Mr Raj Dhanarajan (Commonwealth of Learning) and Mr Bernardo Adiviso (Colombo Plan Staff College).

Following a welcome to delegates by Ms Madeleine Woolley, Director, Adelaide Institute of TAFE, presentations were made to the group by Mr Colin Power and Dr Qian Tang on the issues facing vocational education and the role of UNEVOC.

Presentations were made, and discussion took place, on several regional projects.

1. **Entrepreneurial Skills for Small Business**

    Ms Sue Goldman outlined progress to date which stimulated discussion on the future directions of the project. It was recommended that

    > *Recommendation 2.1.1*
    > *Facilitate publicity and promotion of the project in the region.*

    > *Recommendation 2.1.2*
    > *UNESCO should support the development and conduct of professional development programs for staff involved in the development of Learning Materials and in the delivery of the 'Entrepreneurial Skills for Small Business' course.*

    > *Recommendation 2.1.3*
    > *Prepare delivery methodology materials including teacher guides and student learning guides for use in the region*

    > *Recommendation 2.1.4*
    > *Collect case studies from various countries in the region on successful entrepreneurial activities.*

2. **Clearing House Project**

    Ms Di Booker provided a brief overview of the UNEVOC database project and outlined the outcomes of the workshops held throughout the region in 1995-1997. She also demonstrated the database on the National Centre for Vocational Education Research web site. It was recommended that:

    > *Recommendation 2.2.1*
    > *Strengthen the regional hub for the Curriculum Development and Research Database in the Adelaide Institute of TAFE and the National Centre for Vocational Education Research.*

    > *Recommendation 2.2.2*
    > *Support UNEVOC Centres in their roles as National Clearing Houses for the Curriculum Development and Research Database through the provision of training in the collection of materials, development of the database at local levels and contribute to the regional clearing house.*

    > *Recommendation 2.2.3*
    > *Provide expert advise and financial assistance where necessary to assist member states to install appropriate software and hardware and participate in relevant training.*

3. **Key competencies**

    Ms Sue Goldman outlined the contents of the professional development package which has been developed by the former South Australian Department of Education and Children's Services and demonstrated parts of the CDRom disks. It was recommended:

    > *Recommendation 2.3.1*
    > *Establish an expert group to conduct a needs analysis of producing a 'Key Competency Professional Development' package which can be used or adapted by countries interested in this approach.*

4. **Research proposals**

    Mr Adrian Haas spoke about the UNEVOC research being undertaken by RMIT University. It was recommended:

Recommendation 3.1
Conduct comparative case studies which will examine the different approaches taken by governments in various selected countries to improve the economy through developing the training sector. Such a study should address issues such as funding and planning in TVET.

5. **UNEVOC**

Mr Hans Kronner spoke about UNESCO and the role of the UNEVOC Berlin office. He outlined the processes for delegates to become UNEVOC Centres and to keep up to date with UNEVOC events and to receive publications, many of which were displayed during the conference. These recommendations were referred to the general conference and formed the basis for discussion. Each of the recommendations was supported by the conference participants with the addition of an further recommendation concerning the concept of a skills passport or qualifications framework for the region.

Recommendation 3.2
Examine the feasibility of developing a qualifications framework for the Asia-Pacific Region. The long term aim of this proposal would be to develop a common framework which would encourage international cooperation between governments and institutions.

6. **Site visits**

Site visits were organised for delegates during the afternoon of Wednesday March 25 to
*   National Centre for Vocational Education Research
*   Centre for Applied Learning Systems
*   Ngapartji

Conference Structure

Delegates

109 delegates attended the conference representing over 40 different countries across the Asia Pacific Region. Other countries represented included Senegal, Russia, Jordan and Saudi Arabia.

Keynote speakers

The conference was opened by the Lord Mayor of Adelaide, Dr Jane Lomax-Smith who spoke about the importance of vocational education in Adelaide as a 'learning city'. The theme of the role of TVET in the 21st century was picked up by all the keynote speakers and formed the basis for the syndicate groups in each session of the conference.

Speakers and their topics included:

Mr Colin Power, Assistant Director-General for Education - *Challenges of the 21st century*
Dr Munther Al-Masri, President, National Centre for Human Resources Development, Jordan - *Vocational education and the changing demands of the world of work*
Dr Raj Dhanarajan, President, Commonwealth of Learning - *Innovations in delivery of training programs*

The final session of the conference was a panel presentation of case studies in enhancing international cooperation by Mr Chris Robinson, National Centre for Vocational Education Research (Australia), Mr Yu Zuguang, Central Institute for Vocational and Technical Education (China), Dr Bernardo Adiviso, Colombo Plan Staff College and Dr Raj Dhanarajan, Commonwealth of Learning.

Each keynote speaker was followed by a panel response to the issues raised

Discussion of Seoul Themes

Syndicate groups were asked to consider the proposed themes for the Second International Congress on Technical and Vocational Education to be held in Seoul, Republic of Korea, 26-30 April 1999. The outcomes of these discussions were that each theme should consider the following issues:

1. **Challenges for 21st Century**

    Defining the role of vocational education.
    Access to Technical and Vocational Education (TVET).
    Resources for TVET.
    Delivery of TVET.
    TVET and economic development - TVET and human development.
    Role of TVET in poverty alleviation.
    Lifelong learning.
    TVET and linkages with industry, the community and the government.
    Private sector involvement in the delivery of TVET.
    Informal delivery of TVET.
    Teacher training - how to get teachers to adapt to change.
    Training for people to establish their own enterprises as an alternative to training for employment.
    Distance education or flexible delivery.

2. **Improving systems and processes providing continuous education and training throughout life.**

    Encourage and support the development of partnerships to jointly offer programs in developing countries. These partnerships ideally should consider industry, higher education, government, business etc.

    Any initiative must be cognisant of the social, economic and educational context of countries and the limitations of the resources and the level of technology which are available. UNESCO should further develop exchange programs for students and staff. These will enhance the dissemination of curricula and use of different methodologies

    All outreach programs must focus on the needs of special groups. Flexible delivery must be a more important consideration.
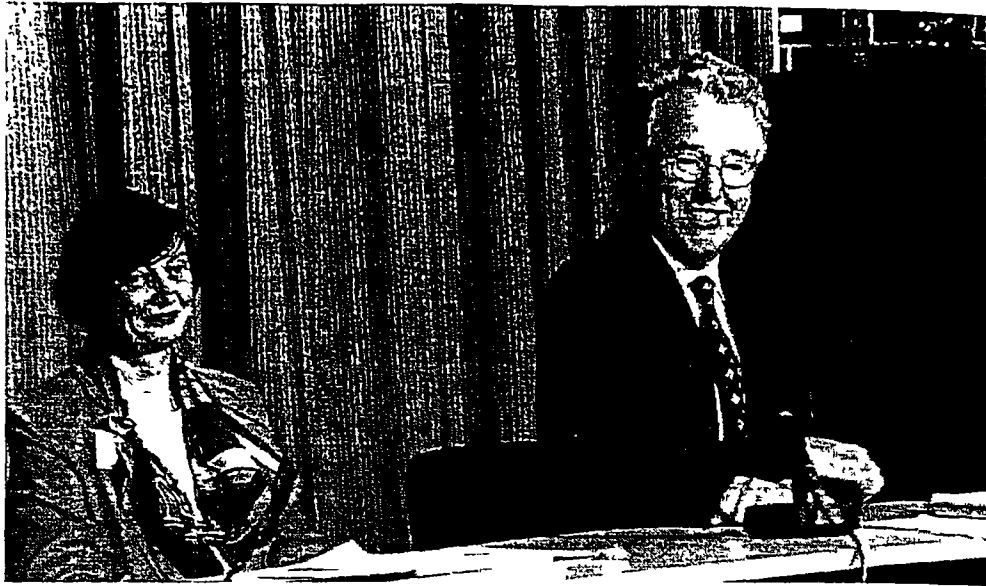
3. Reforming the education and training process

Groups suggested that the title for this theme should be more positive and suggested 'Transformation of the education and training process'. Issues for discussion could include: Initial training of teachers/trainers, including upgrading of competencies to assist with meeting the needs of changing systems.
Information technology.
Standards and assessment processes.
Work and learning interface.
Training for small enterprises, for self-employment and for entrepreneurship.
What will TVET look like in the 21st century.

4. Promoting access of special groups

Suggestions for changes to the wording of the theme to 'Promoting inclusive access to TVET'. Issues for discussion could include:

TVET for marginalised groups and disadvantaged people (out-of school youth, migrants, unemployed, aged, indigenous, demobilised soldiers, refugees).

It was also suggested that studies of successful TVET projects with disadvantaged groups should be developed.

5. Changing roles of government and social partners in TVET

Proposed issues for discussion include:

Role of government or involvement of government in TVET is shifting to deregulation or decentralisation.

Access and equity issues becoming more prominent.

Income generation effort to be encouraged as part of the education process - entrepreneurship training

Need for better planning to enable stronger link between TVET and labour market demand.

Comparative case studies of different government responses to TVET would be useful.

Duplication and demarcation between various agencies should be recognised and efforts made to remove potential barriers to the delivery of TVET (eg. when a number of Ministries are involved in TVET).

Raising the status and profile of TVET.

International copyright - establish some protocols to enable developing countries to gain access to training materials from other countries.

Establish a database of training products (could be part of UNEVOC Clearing House). Community education needs to be included - environmental issues, youth issues.

6. Enhancing international cooperation

International agencies need to support national strategies to support international cooperation rather than commercial activity. Review the use of terms 'developed and developing'.

Establish processes for setting up the international UNEVOC network to facilitate discussion about the issues facing TVET.

Examine the feasibility of establishing an intentional skills passport, to support mutual regional recognition of TVET qualifications.

UNESCO could promote the development of international skills standards.

Use UNEVOC Centres as key players in development of curriculum.

Assist countries with needs analysis for area of curriculum that are urgently needed such as training in land mine clearance.
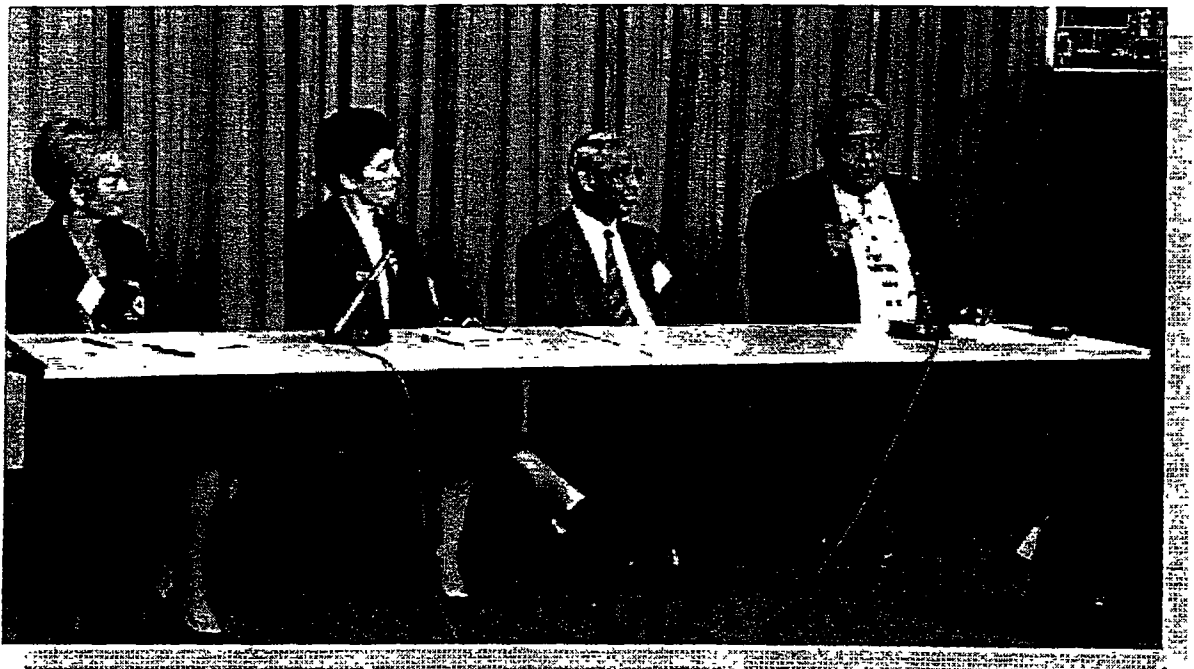
Challenges of the Twenty-first Century

Colin N. Power
Assistant Director-General for Education
UNESCO, Paris

Opening remarks

It is indeed a great pleasure for me to welcome you all, most warmly, on behalf of UNESCO to this UNESCO/UNEVOC Conference in Adelaide. UNESCO is most grateful to the Australian National Commission for UNESCO and to the Adelaide Institute of TAFE, which is a UNEVOC Centre in Australia, for their generous support and whole-hearted co-operation in organising this conference.

As we are marching towards the 21st century, we face many challenges posed by the new environment such as the globalization of trade and labour markets the rapid advancement of new technologies, the transition to a market economy in many countries, etc. This environment has created new requirements on human resources development in every nation.

At this critical moment, many people working in the field of technical and vocational education have expressed the wish to be given an opportunity to meet to review recent trends and the development of this sector of education during the past decade, and to exchange views on strategies and actions that each government will undertake for improving this sector of education in the future. To answer such a call, UNESCO is organising, in co-operation with the Government of the Republic of Korea, the Second International Congress on Technical and Vocational Education, which will be held in Seoul, from 26 to 30 April 1999. Prior to this event, several regional preparatory conferences will be organised for the purpose of reviewing the substantive framework of the Congress from the perspective of the region concerned. This conference of ours here in Adelaide is the first one in the series and we shall try, jointly, to define the priorities and policy focus of the Asia/Pacific region relating to the Congress.

Here I should like to take this opportunity to address some of our perspectives on the new challenges faced by technical and vocational education. These views are by no means final. Instead, I hope they will provoke lively discussions during this conference. I am confident that your opinions and suggestions will contribute significantly to the success of the International Congress next year.

1. The changing demands of the world of work in the twenty-first century

The trends of globalization of trade and labour markets and rapidly changing technologies that characterise the world today impact extensively upon the knowledge and skills needed for employment. This phenomenon implies the need to update continually the knowledge and skills of the work force. It also means that the education and training process should lead to multicultural understanding. Globalization will also require employers to accept qualifications and experience gained in a new and different context. This will present a challenge to us, especially in terms of developing valid and reliable ways of assessment of such qualifications and experiences and comparing them.

The changing nature of employment, the extent of unemployment, migration and the movement of workers from rural to urban settings have significant implications for education for the world of work. These implications include:

- The need to provide for lifelong learning, for continuing and recurrent technical and vocational education, and upgrading of knowledge and skills in step with technological advancement;

- Countries need to develop effective ways of measuring the competencies and qualifications gained in foreign countries with a view to globalising the work process and facilitating the mobility of the work force across countries;

- Individuals must be given the necessary knowledge, skills and attitudes to assume responsibility for their own learning and this should begin in the earliest years of schooling.

The advancement of new information and communication technologies means that there are needs for greater flexibility and responsiveness in technical and vocational education. Today computerisation is evident in almost every area of human activity. Courses in computer technology, both in hardware and software, at various levels of Specialisation need to be offered as widely as possible. The Internet has an important role to play in this sphere. However, it must be recognised that a large portion of the world's population does not as yet have access to this sophisticated technology. A certain period of time will pass until this gap between industrialised and developing countries is closed. Indeed, more efforts have to be made to provide assistance to the least developed countries in this regard. It should also be pointed out that there are concerns that the few most advanced countries in this area of communication will swamp other cultures with their own.

In the sphere of national economies, many countries in the developing world are in transition to a market economy. In order to meet the employment requirements of such economies, restructuring will be required and incorporated into government planning for technical and vocational education. The implications of this phenomenon are that technical and vocational education courses must include in their objectives the understanding of the workings of market economies and the responsibilities to be assumed personally for effective, sustained work and secure employment in the private sector. Education and training systems need to be simplified and made more efficient. Further, people must develop self-learning skills and assume responsibility for their own learning. Because the work force is losing the assurance of a job for life, development of multi-skills is essential to increase employability.

Of prime importance among these is the need to develop entrepreneurial knowledge and skills in order to facilitate self-employment. As the informal sector and small businesses are assuming ever more importance in this respect, efforts must be made to construct bridges between formal and non-formal technical and vocational education. In this regard education for the world of work must also take on responsibilities to engender attitudes and values that relate to the whole of a person's life experience and not just to the generation of resources, to employment and to an income. Education has a great responsibility to address the attitudes and values that would enhance such a development.

2. **Improving systems providing education and training throughout life**

During the past decade, great efforts have been made in many countries to improve the efficiency and effectiveness of their technical and vocational education systems. Needless to say, there is room for further improvement in many ways.

There is a universal need to raise the status and value of technical and vocational education within societies as a whole. A significant factor in achieving this goal is to establish a much closer articulation between technical and vocational education and university education than presently exists in most countries. Coupled with this is the need to establish better economic rewards for those undertaking to offer technical and vocational education programmes. The teaching personnel within such institutions need to be well qualified and possess significant and relevant experience in the real world of work. Further, they need to keep up-to-date their knowledge and skills through links between the educational institution and the employing enterprises.

A closer partnership between technical and vocational education institutions and industry must be achieved. Greater efforts should be made to involve industry in various aspects of the training process, such as curriculum design/development, practical training of students in the workplace, vocational guidance, employment of graduates and training of teacher trainers. Also, technical and vocational education institutions should be given the possibility of using, as appropriate, the machinery and equipment of the enterprises concerned.

Private education/training providers have a valuable role to play. However, they need to be monitored by the relevant authorities to ensure that their standards meet the needs of students and employers. Again, it is essential that the teaching/training personnel be adequately trained in both the necessary pedagogical knowledge and skills, and in the occupational skills relevant to the teaching/training programmes offered.

Flexible access to technical and vocational education and training throughout life should be ensured. To reach this goal, much more needs to be done towards the recognition of prior learning and experience, including the accreditation by the various levels and types of education of previous learning in other institutions or of experience gained in the world of work. This area still demands considerable research in order to establish valid and reliable means of measurement, and to determine what training is essential for effective performance in various occupational fields, and what is non-essential.

The constant changes in the area of knowledge and skills required for a particular occupation, and the need for frequent change in employment, make it imperative that a person acquires the basis for developing further knowledge and skills as quickly and effectively as possible. This demands an adequate knowledge base for developing an understanding of other related areas of knowledge, that is, a core of "generic knowledge", which includes, among other things, basic scientific, mathematical and technological principles. This, in turn, requires an increasing articulation between general education and technical and vocational education.

3. **Reforming the education and training process**

Under the new circumstances described above, the institutional teaching and training process in technical and vocational education needs change and reform.

Curriculum development needs to be undertaken by partners who bring different relevant perspectives to bear in order to ensure that the curricula are relevant. A strategy to ensure that this is achieved is that of the DACUM method where industry personnel, curriculum developers and learners are all actively involved in the curriculum design process. Competency-based technical and vocational education has considerable potential to provide for individual learning paths, relevance, appropriate outcomes, the efficient use of resources, and recurrent learning .

Flexible learning systems must be developed. A way of achieving this outcome is to modularise curricula in such a way as to better ensure adequate entrance to and exit from the learning process. This, of course, cannot be equally applied to all curricula, as that could destroy the logic of important areas of inter-related learning.

Distance education provides for flexibility. Although the word "distance" is used, in essence this is a strategy of learning that is not really determined by geographical location. Persons may learn through distance education even though they live across the road from the educational institution in which they are enrolled. They may choose this option because their work or life commitments prevent them from attending regular classes.

Open learning institutions are developing around the world. They have considerable potential; provided their work is recognised and accredited by other teaching institutions. To achieve this, distance education institutions must offer programmes of the highest standards and demonstrate clearly that they apply rigorously valid and reliable evaluation procedures.

4. The role of government and social partners

Governments always have a central role to play in ensuring the provision of education for the world of work, in providing adequate financing for it, in ensuring that other entities within the nation also contribute to such financing, in addressing the issues of standards, access, lifelong learning, and for innovation. It is universally recognised today that the status of technical and vocational education within our societies must be enhanced if we are to attain the goals of full employability, and maximum and co-operative productivity. Governments must see that the distribution of wealth within the economy encourages participation in the wide spectrum of education for the world of work, and not just in the narrow sphere of "higher order" professions. Education for the world of work will not achieve its national goals until technical and vocational education is given the status it needs to attract a sufficient clientele to meet the manpower needs of the nation.

A factor that sometimes inhibits governments from giving co-ordinated support to education for the world of work is the division of responsibility for such education within a government. Frequently, a number of ministries, such as the ministry of education, the ministry of labour and industry, hold some responsibility in providing technical and vocational education. Their efforts must be co-ordinated. I am very glad to point out that Australia has set a good example of co-ordination of government activities in this respect by putting vocational education and employment under one ministry. Governments also have a primary role to play in developing long-term planning of education for the world of work, and the legislation framework needed to implement it. This may include all areas of government - national, state, regional, provincial and local- depending upon the structure and the constitution of the country. If there are different levels of government involved, it is imperative that they work closely together to ensure that co-operation and mutual support characterise their individual efforts.

It would seem unnecessary to emphasise the role of the employer in helping to meet the need for effective education for the world of work. Yet, in many parts of the world, there is a traditional concept that such education is the responsibility of formal technical and vocational education institutions, and of the government Nevertheless, it is being increasingly recognised that such a narrow concept of responsibilities for this area of education does not meet its needs. The world of work itself has a very significant contribution to make.

The partnership needed between technical and vocational education institutions, governments, private enterprises and unions is especially important with large-scale employers where opportunities and places for technical and vocational education students to gain work experience are multisided and diverse. In order to establish such partnerships, technical and vocational education institutions should closely implicate personnel from the world of work. Their contribution would relate to curriculum development and evaluation programmes, and possibly also involve some role in the governing board of the institution.

Small-scale employers are still the main source of employment around the world. Thus, education for employment within such enterprises is of the utmost importance. The programmes of learning within these enterprises must be very flexible, both in terms of availability and in terms of modes of delivery. This area of enterprise training is frequently found in the non-formal sector of the economy. It needs to be adequately monitored by governments. In some countries, these employers are able to benefit from the training programmes of the large-scale employers. In order to encourage self-employment as a means of buffering the problems of unemployment, considerable emphasis must be placed on the development of entrepreneurial skills. This need is particularly strong in the developing countries. With the increasing number of nations around the world adopting market economy strategies, there is a strong need for courses in developing entrepreneurial skills and small skills for small business management.

Another key player in the reform of technical and vocational education is the trade union. Unions should be involved in formulating national policies for education for the world of work. They must be included as partners with the management so as to ensure adequate continuing education for employees. The pursuit of effective education for the world of work must be one of their primary goals. Their role in this sphere needs to be acknowledged by the nation as a whole and by governments in particular.

5.   **UNESCO's contribution to technical and vocational education**

UNESCO has been playing a very active role in the development of technical and vocational education since the 1960s. In 1962, a recommendation concerning Technical and Vocational Education was adopted as a normative instrument on policy and principles in technical and vocational education. This document was revised in 1974. Later on, in view of the growing importance of this sector of education for social and economic development, the UNESCO General Conference in 1989 adopted a *Convention on Technical and Vocational Education* which aimed at assisting Member States' efforts in reforming and improving their technical and vocational education systems.

In 1992, UNESCO launched its International Project on Technical and Vocational Education (UNEVOC), with generous support from a number of Member States, notably Germany, Japan, Republic of Korea, France and Australia.

During the past several years great efforts have been made, within the framework of this Project, to assist the Member States in enhancing the role, status and attractiveness of technical and vocational education through; providing information on existing technical and vocational education systems in various countries, offering platforms for discussing national policies and practices and exchanging experience, and initiating a number of significant international events including *the Second International Congress on Technical and Vocational Education* in 1999, aiming to attract international attention to, and mobilise resources for technical and vocational education, and to discuss and redefine adequate policies and strategies to this effect.

Many activities have also been initiated by the UNEVOC project to strengthen Member States' national research and development capabilities. One of the most successful examples is the Asia/Pacific Regional Curriculum Development Project co-funded by the Project and the Australian Government. A number of developing nations in the region have benefited from this activity by adopting, in their vocational institutions, an exemplar curriculum of entrepreneurial skills for small businesses, as there is high demand for this with the transition to a market economy.

Establishing a UNEVOC network of institutions is another concrete outcome of the Project. Today 156 UNEVOC Centres and Associate Centres in more than 100 countries are members of this network. Bilateral and multilateral cooperation is being encouraged and supported through the Project. It is our firm intention to provide more support to this network and make it more effective and efficient in the future .

It is noteworthy here that a recent independent evaluation of the UNEVOC Project confirmed that Asia and the Pacific was the most active region as a whole in the implementation of Project activities. On behalf of UNESCO I should like to thank all of you for your active participation in and enthusiastic support for the UNEVOC Project during the past several years.

In view of the Project's achievements, and taking into account the needs in our Member States for international co-operation in this respect, a document on UNESCO's strategy in the development of technical and vocational education is being prepared which, in particular, would seek to develop a long-term "Technical and Vocational Education Programme" as from the year 2000. UNESCO will continue, through this new programme, to assist its Member States in improving and further developing their technical and vocational education systems on a larger scale.

Closing remarks

Kindly allow me before I conclude to say that achievements in the development and reform of technical and vocational education in many countries of the region are evident. This sector of education, through providing a large number of technicians and skilled labour, has made a significant contribution to economic development in this part of the world. Despite the recent economic crisis, the Asia-Pacific region still has great potential to recover after re-adjustment of its economic structure, and is certain to play a leading role again in the world economy. This conference provides an excellent opportunity for all of us to exchange views on devising future strategies for making technical and vocational education more relevant and productive in order to meet the needs of socio-economic development in each country and in the region as a whole.

I wish you a very successful Conference, and a pleasant stay in Adelaide.

Thank you.

The Changing Demand of the World of Work

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Introduction

The role of vocational education in the context of the dynamics and changing demand of the world of work can better be explored through a more comprehensive approach to the overall system of human resources development (HRD). Human resources development, which is mainly implemented through the formal and non-formal systems of education, is the concern of both educationalists and economists. This is so because education is recognized both as a social service on the one hand, and an investment and hence economically feasible activity on the other. The existence of a link between education and economic development is mainly the result of human power needs being translated into educational targets and plans.

The relation between education and economic development is a complex one, because there exists no strict relationship between occupations and levels or types of education. Consequently, the ability and need to design manpower preparation and development systems based rigidly on the needs of employment requirements are questionable. The complexity of the relationship between education and economics is also due to the fact that education can be both a cause and effect of economic development. This applies in particular to vocational education and training (VET), whose quality, size, standards, and diversification of offerings promote economic development on the one hand, and are strongly influenced by such development and work standards on the other. Therefore in manpower planning, which requires, among other things, the matching of supply and demand, such matching should emphasize interdependence, rather than dependence or independence, as a basic strategy.

Figure (1) shows the position of Human Resources Development and Utilization Systems in general, and VET in particular vis-a-vis the systems of manpower supply, manpower demand, and the supply-demand interlinkages, within the relevant social, economic and cultural framework.
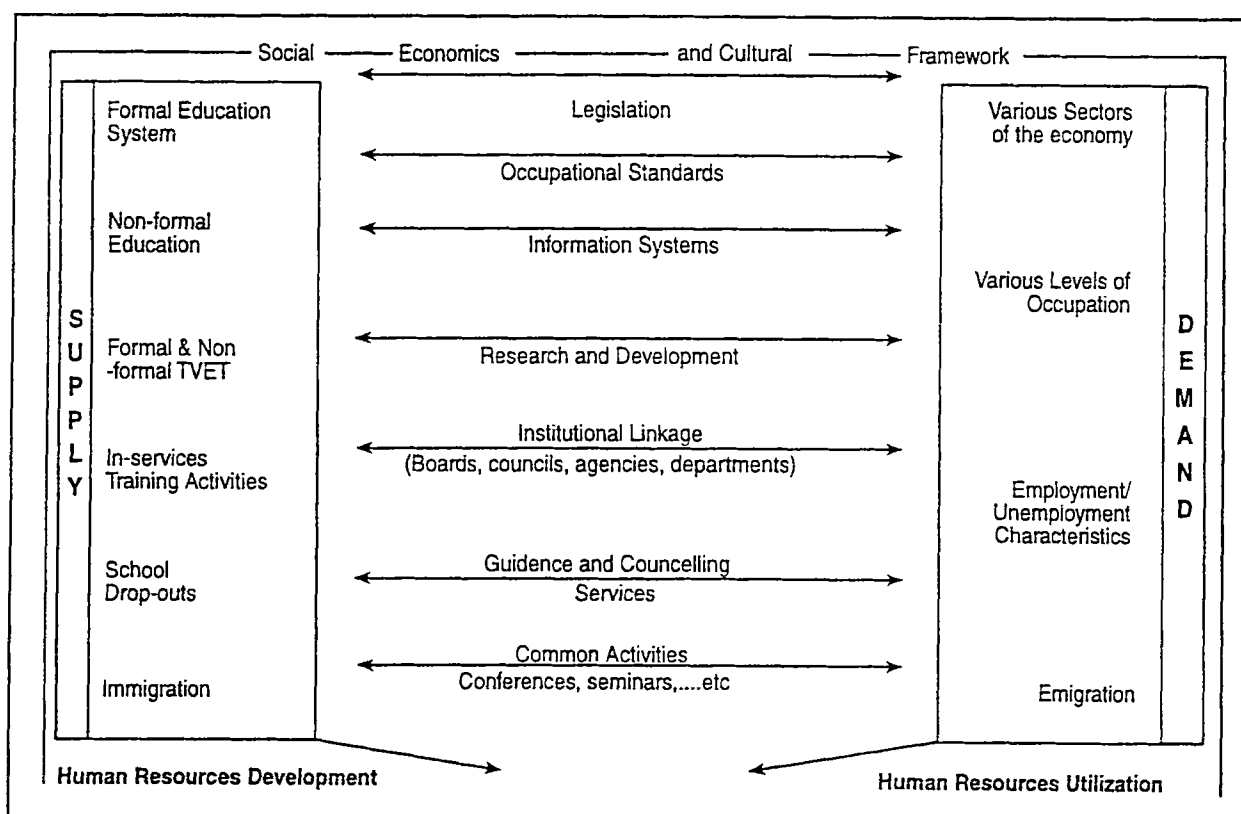

Figure 1: Human Resources Development and Utilization Systems

The criteria used for the evaluation of educational and HRD strategies and systems frequently reveal the differences in the views of economists and educationalists. Thus, the feasibility of a VET system can be assessed through the ability to secure employment, level of earnings, self and social image, job satisfaction, and the degree of lateral and upward mobility on the individual level; and through productivity levels, quality standards and national income figures on the national level. It is difficult, for example, to justify high investment in a VET scheme that tends to accentuate unemployment in certain occupational fields and levels and labour shortage in others; or that leads to unplanned and harmful migration of manpower form rural to urban areas. On the other hand, one should have reservations against VET schemes that tend to prepare a skilled rather than an educated labour force, or that do not enhance the status or work and inculcate positive attitudes towards labour.

To an educationalist, HRD, mainly through formal and non-formal education and training, should first be human and then professional, since such education and training should do more than provide the learner with the skills and knowledge specifically needed for his job, and since occupations are more effectively performed by individuals who are generally, as well as specifically prepared. In the field of vocational and technical education individuals should be prepared to be intelligent users of the means of production rather than mere means of production. An economist, on the other hand would emphasize the need for as accurate a matching of supply and demand in educational and manpower planning as possible, and would in general be sensitive to the 'marketability' of the 'products' of that educational system. Poorly balanced education systems to an economist, are a waste of resources that are usually badly needed elsewhere. Vocational and career guidance, from the point of view of economists, therefore, is oriented more to the fulfillment of market needs and the adjustment of learners' inclinations to such needs, than to the discovery of their abilities and inclinations and the realization of their potentials and educationally justified ambitions.

Planners, are in general frequently faced with the dilemma of whether to sacrifice some of the individual aspirations and social ideals to ensure the adequacy of manpower supply, or to sacrifice the fulfillment of some of the economic needs to better respond to individual claims and social pressures.

They are on the other hand, faced with many questions. To what extent should education be deployed for the requirements of development plans, and hence to what extent should education be planned and controlled? At what stage should specialization through vocational education and training (VET) commence? How broad-based or how narrow-based, and hence what are the components, of any educational programme, especially in VET schemes? What is the role of industry, and the enterprise in general, in VET?

Occupational Levels and Educational Outputs

Every occupation comprises a great number of functions, tasks and skills performed by individuals of varying performance, ability and degree of responsibility, thus requiring different occupational and skill levels as part of the more comprehensive 'division of labour' concept. In practice the skill ladder is usually divided into 'bands' to simplify the process of classification, the hierarchy of responsibility, and the design of humanpower development programmes.

Figure (2) shows a diagrammatic representation of one of the well-known systems of occupational levels and the relation with the outputs of the various educational levels.

Universities

Intermediate colleges
(Technichal and community
colleges)

Professionals

Technicians

Secondary Education
(General Comprehensive and Vocational Education)
(Apprenticeship Schemes)
(2-3 years)

Basic Compulsory Education
(9 -10 years)

Craftsmen and Skilled
Workers

Limited – Skills
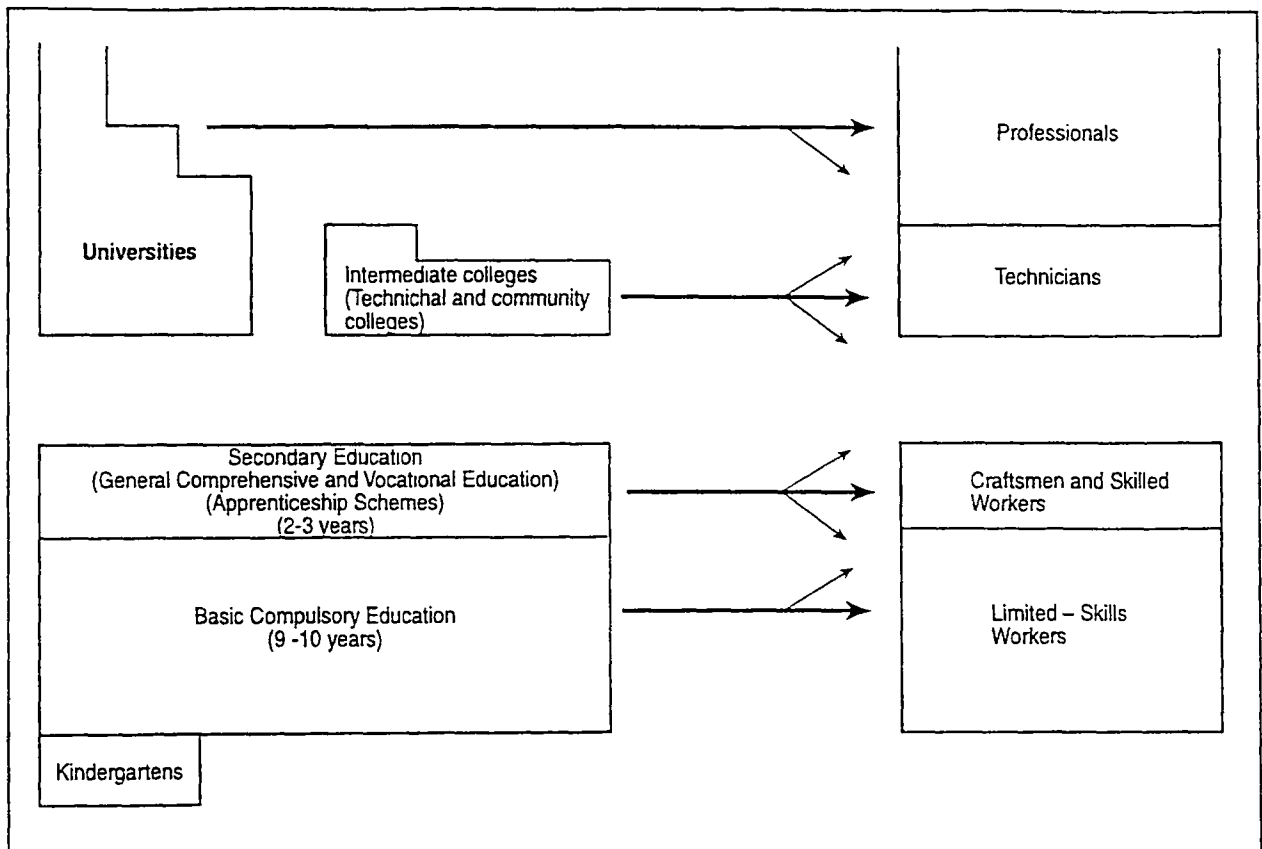Workers

Kindergartens

Figure 2: Occupational Levels and Educational Outputs.

Occupational levels at the top of the skill ladder include professionals and technicians (sub-professionals) who are usually prepared in tertiary level educational institutions; while occupational levels at the base of the skill ladder comprise skilled workers and craftsmen prepared frequently within secondary education or parallel to it. A professional or specialist is in general, prepared in institutes of university level. A sub-professional or technician, on the other hand, is prepared usually in educational institutes of sub-university, but within the tertiary, level of education such as community and technical colleges. The basic occupational levels, which comprise various categories of craftsmen, skilled workers and limited-skills workers, are not usually defined internationally in terms of the required educational levels as is the case with upper occupational levels of professionals and technicians. Different countries have different standards, educational backgrounds and systems of manpower preparation at the basic occupational levels, although it is becoming more and more accepted that such levels lie at least within the senior stage of secondary education or parallel to it, inside or outside the formal education system.

Occupational classifications and standards within the various occupational levels is an area that has important reflections on both the development and utilization aspects of humanpower. Employers should be full partners in the initialization, development and implementation of the relevant activities. Apart from the fact that such classifications and standards should emanate from the changing demand of the world of work, they have direct influence on such matters as wage structures, labour mobility and performance standards of the labour force.

It is worthwhile noting here that the traditional pyramid-like distribution of the labour force among the various occupational levels is gradually being replaced by an ellipse-like distribution in modern economies, as illustrated in Figure (3). A big deficit or surplus at the higher occupational levels can be as much a source of imbalance and economic weakens as a similar deficit or surplus at the basic occupational levels.

Professional

Technicians

Skilled Workers and Craftsman

Limited - Skills Workers

A   B

A: Pyramid-like distribution

B: Ellipse-like distribution

Figure 3: Occupational Levels and Labour Force Distribution

Systems of Vocational Education and Training

Three main systems exist in practice for VET as a component of HRD frameworks and institutions. One or more of such systems might exist in any one country. These systems are:

1. **The school system**

   The school system for VET is usually implemented in formal educational institutions. The trainee, who is thus a student in a vocational school or training centre, acquires his vocational preparation through some approved formal programmes in the educational institution itself, with little or no direct contact with the world of work. The relevant programmes consist usually of general and specialized theoretical components, in addition to the practical component which is implemented almost exclusively in special workshops and laboratories attached to the school. Nevertheless, it is not unusual for a school system to develop some useful links with the world of work. Such links could incorporate training standards, and an element of on-the-job training.

2. **The enterprise (on-the-job) system**

   The enterprise system is implemented on-the-job at the workplace and employers premises. The trainee, who is thus either a full-fledged worker or under special contract, acquires his vocational preparation on-the-job, with emphasis being placed on the practical skills component. Enterprise systems vary between informal traditional apprenticeship schemes on one end, and well-structured apprenticeship schemes on the other end.

3. **The integrated (dual) system**

   The integrated or dual system for VET combines both the school and the enterprise systems. The implementation takes place partially in educational institutions and partially in enterprises, with full coordination. The role of the educational institution comprises usually the theoretical instruction component which might include a general education element in addition to the specialized element. In some schemes, the educational institution provides some elements of the practical skills needed, especially basic non-specialized and back-up skills that cannot be provided by the relevant enterprise. The role of the enterprise, on the other hand, comprises basically all or most of the practical training component, especially for the specialized parts of it. The involvement of employers within the dual system could incorporate, in addition to the provision of training facilities, the appointment of full or part-time instructors; and the payment of apprenticeship wages to the trainees.

   The training programme, including the detailed contents and certification is usually drawn up through full coordination between the concerned parties, although the relevant training standards are expected to be drawn up by the enterprise.

Formal apprenticeship schemes with a substantial off-the-job element is the usual model for dual systems. In such systems, the trainee is, in practice, a worker under training and a student in an educational institution at the same time. In the case of large enterprises, the off-the-job educational facilities can be provided at the employers' premises.

The question of whether vocational preparation should be the responsibility of the education system or that of the enterprise is a major issue, especially in developing countries. If vocational, and hence manpower, preparation is interpreted broadly to comprise any type and level of education and training made available to the individual to prepare him for his future vocation, then most, if not all, of higher education at the professional and sub-professional levels in universities and technician institutes can be classified as vocational preparation. But at these higher occupational levels, the predominant responsibility of the education system is taken for granted; although, in some countries, technician education in particular is a shared responsibility. Therefore, it is vocational education and training for the preparation of skilled workers and craftsmen at the basic occupational levels that is contested in practice between the school and the enterprise.

Those who support a school based model of manpower preparation at the basic occupational levels require that the education system should be responsible for the policy-making, planning and overall content specification and criteria. The rationale for such an approach stems from the view that education is an activity intended for the development of the individual and, thus, encompasses both general and vocational education. Such a view assumes that the enterprise is unable to take overall responsibility for manpower preparation without running the risk that one-sided narrow economic criteria will govern the various aspects of the training programme, including its objectives, content, standards and quality.

The supporters of an enterprise based model of manpower preparation at the basic occupational levels believe that, because such preparation is mainly connected with the requirements of the enterprise, it should have little place in school. The scope of responsibilities of the enterprise in this case includes policy making, planning, standards setting and content specification. Industry-based vocational preparation schemes are, in general, more economical than school-based ones. This is because productive work can more readily be undertaken by trainees, and because of the possibility of utilizing existing facilities, at least partially, instead of establishing new ones. But a major consideration in this respect is the fact that the greater part of the training cost is usually distributed among employers. It is usually argued in support of the enterprise approach that, at the basic occupational levels , the training needs of industry can more effectively be responded to through in-plant training because of its relevance, flexibility, cost effectiveness and ability to offer smooth transition to work. In practice, the school system is often at a disadvantage when new specific training needs emerge, and frequently runs the risk of a mismatch between its output and employment requirements.

In many countries, two separate systems of vocational preparation at the basic occupational levels exist side by side; one is school based and the other is enterprise based. This can partially be attributed in developing countries to the fact that industrial development is rather new and partial. Formal in-plant vocational preparation is thus a newcomer, while a traditional school-based system would have been in existence for some time. The introduction of the in-plant system is usually facilitated by the expanding needs of the new industrial developments and the inability of the education system to respond effectively both quantitatively and qualitatively. One of the main shortcomings in this case is that the two systems usually exist and develop without effective coordination and, sometimes, even with mistrust and rivalry.

Evaluation of Vocational Education and Training Programmes

Three main criteria exist for the evaluation of VET programmes. As will be seen, such criteria are linked with varying degrees to the criteria and changing demands of the world of work:

1. **Internal Evaluation**

    The internal evaluation of VET programmes is generally concerned with assessing the degree of compatibility between the outputs of such programmes and the performance objectives already set out for them. Such evaluation can be implemented through various measures, including the assessment of:

- trainee performance and achievement.
- trainer proficiency and performance.
- training programme.
- training facilities.

Internal evaluation has an indirect link with the world of work, and can be isolated from it. Nevertheless, such a link can be strengthened through the involvement of employers in the assessment of the various elements covered by internal evaluation.

2. Economic Evaluation

The economic evaluation of VET programmes can be considered part of the internal evaluation of such programmes. It is concerned mainly with the assessment of such indicators as:

- efficiency of utilization of training facilities.
- cost-benefit rates.
- lost income by the trainee during the training period.
- extra income gained by the trainee, that is attributed to the training programme.
- comparative studies related to the cost of different VET systems.
- the rise in productivity at the workplace, that can be attributed to the training programme.

As in the case of internal evaluation, most elements of the economic evaluation of VT programmes have an indirect link with the world of work, although an element like the influence of VET programmes on productivity has a direct link with the workplace.

3. External Evaluation

Unlike the internal and economic kinds of evaluation which are inherently inward looking, the external evaluation of VET programmes is outward looking, as it is basically concerned with assessing the degree of compatibility between the relevant programme, including its performance, objectives and outputs, on the one hand; and employment requirements and work needs on the other. External evaluation is especially important in the case of school systems which usually run the risk of loosing contact with the world of work. It can be implemented through various measures, including the assessment of:

- results of follow-up studies on graduates.
- employment-unemployment characteristics of graduates.
- the time lag, if any, between the completion of training and joining employment.
- wage structures.
- adaptation time needed to assume full production status.
- the size and type of special and initiation training that should be provided by the employer.
- feedback information from the employers.
- feedback information from employed graduates.
- productivity and work standards.

It is very clear that a direct link exists between the external evaluation of VET programmes and the world of work. In fact, such evaluation is rooted in the needs and requirements of the world of work.

It is worth noting that a comprehensive assessment of VET programmes takes into consideration all three kinds of evaluation, especially that a positive outcome of one kind does not necessarily indicate that a similar outcome can be expected from the other two kinds.

The Role of the World of Work in VET

The role of the world of work, represented by the various types of enterprises in vocational education and training can be explored through four main functions: planning, financing, implementation, and identification of training needs.

The following is a brief discussion of each of these functions.

1. The Planning Function

The quality and efficiency of VET systems depend, to a great extent, on the quality of planning for such systems. The credibility and effectiveness of the planning function, on the other hand, is closely related to the involvement of all the concerned agencies, not the least of which are the employers whose enterprises are the main target for VET programmes. The involvement of the private sector in the planning function for VET can assume many forms, and can be realized through different measures. These include:

- **Legislation**
  Laws, by-laws and regulations in such fields as labour, employment, education and human resources development, can be utilized to provide the legislative umbrella and legal framework for defining the role of the world of work in the planning for HRD in general, and for VET in particular.

- **Institutional Frameworks**
  The involvement of the private sector in the institutional setups related to the planning for VET can be secured through active and full-fledged participation of employers' representatives in the relevant boards, councils, commissions and committees responsible for the planning and supervision functions at the institution and local levels, as well as on the systems and national levels.

- **Curriculum Development**
  Employers' participation in curriculum development for VET systems and programmes is an important aspect of the private sector involvement in the planning function. Through such participation, the employment and labour market needs of the various VET programmes can rationally be taken into consideration.

- **Information Systems**
  The availability of effective information systems is essential for the provision of the necessary data base needed for planning activities. Information systems in this case should cover both the supply and the demand sides of humanpower. The quantitative and qualitative aspects of humanpower and training needs of the various economic sectors are the major components in such database, which can be secured through full coordination and cooperation between the word of work and the relevant public and private sector agencies.

2. The Financing Function

Practices vary considerably between countries as to the sources and means of funding for VET systems and programmes. In general, VET can be funded through four main sources:

- **Taxpayers**
  Funding from the taxpayers through the state budget is an option which is sometimes resorted to when VET is viewed as a national responsibility which should be shouldered by the whole population according to the income level of the various cohorts.

  This source of funding is common in many countries, especially in developing countries; and is usually utilized to finance school systems of VET. It has the disadvantage of sometimes being inadequate, especially in countries with limited resources, because it is not given due priority in national budgets.

- **Employers**
Funding of VET from industry and business in the private sector is an option that gains credibility when VET is viewed as an activity earmarked for the direct benefit of the employers. Apprenticeship schemes, on-the-job training, and dual systems of training are examples of VET schemes that are usually funded, totally or partially, by employers. In addition to paying the wages of instructors and training officers. In some cases, a special tax or training levy is applied on industrial and business enterprises to secure funding for national VET systems.

- **Beneficiaries**
According to this funding option, the learners, trainees and their families, who are considered the main beneficiaries of the relevant VET services on the individual level, are expected to meet the costs, totally or partially. Training fees, acceptance of reduced wages, and involvement in productive activities, are some of the practices that lead to the involvement of trainees in the funding of VET.

When VET is utilized for the preparation and training of skilled workers and craftsmen at the basic occupational levels, charging training fees is not common practice, except when private (profit or non-profit making) institutions and agencies are the providers of the relevant services.

- **Voluntary Efforts**
Donations, grants and fund-raising activities can be an important source of funding for VET services, especially when such services are targeted to special groups of the population, including the handicapped and the underprivileged.

## 3. The Implementation Function

The role of the world of work in the implementation of VET programmes can be categorized into two main groups of activities. The first group is generally related to in-service training activities for those who are already employed. Such activities are usually of short-duration nature and include such variations as initiation training for the newly appointed employees, re-training for new jobs and skills, and upgrading training to raise the competence of employees and enhance their productivity. The second group is related to pre-service education and training activities, such as formal and non-formal types of apprenticeship, aiming at the full preparation of labour for the needs of the enterprise through a programme of vocational education and training which, in this case, is usually of longer duration and a more comprehensive nature.

The positive role of the enterprise in the first category of in-service training activities for employees at all occupational levels has long been taken for granted, and employers are realizing more and more how important it is to have a comprehensive policy for the development of the skills and abilities of their workforce. The services and facilities needed for such in-service training activities can be provided either "in-house" by the enterprise itself, or by an external agency. It is in the field of the second category of pre-service vocational preparation programmes, to prepare skilled workers and craftsman, that practices and judgments differ considerably, as shown earlier.

4. Identification of Training Needs

The identification of the training needs of the world of work is governed in general by economic considerations and production requirements with the objective of providing the labour force needed in the various fields and at the various levels; in addition to raising productivity, enhancing performance standards, and improving product quality. At the enterprise level, a comprehensive approach to the identification of training needs incorporates the following elements:

- Studying official and unofficial national policies of human resources development, as well as the provisions of socioeconomic development plans. This includes strategies, policies and plans related to education, employment, labour mobility and the expected surpluses and shortages in humanpower.

- Identifying policies and objectives of humanpower development in the enterprise. Such policies should be explicitly or implicitly adopted or should have already been adopted by top management. They include sources of recruitment, extent of modernization, promotion policies, modes of administrative structures and lines of authority.

- Assessing the humanpower situation in the enterprise. An appropriate database would be of great value in this respect. The assessment of the humanpower situation as it exists usually takes into consideration the quantitative and qualitative aspects. The quantitative aspects identify the number of employees in the various departments and administrative units at the various occupational levels. The qualitative aspects, on the other hand, identify the characteristics of the labour force including educational background, work experience, rates of turnover, age profiles, as well as performance standards and potentialities.

- Assessing the humanpower needs of the enterprise. Such assessment also takes into consideration the quantitative and qualitative aspects that are of relevance. Of special importance are the plans for expansion of production activities, rates of labour turnover, modernization and development plans, and division of labour policies.
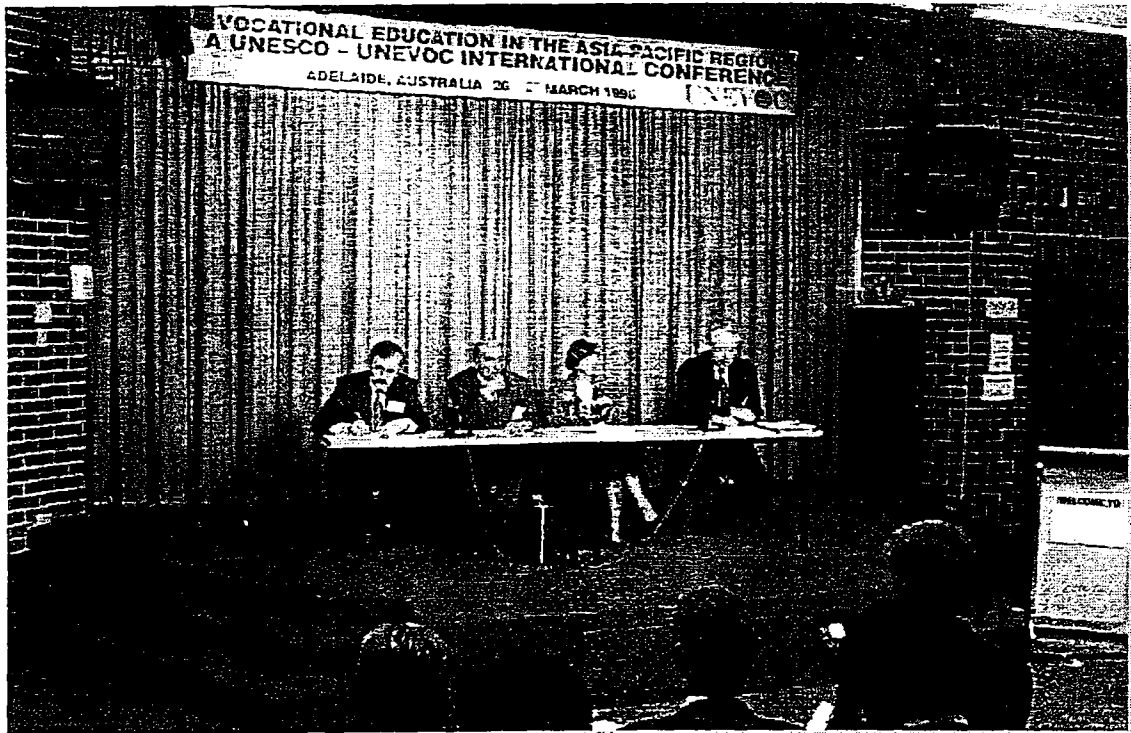
Delivery of Training Programs: Changing Design

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The Commonwealth of Learning, Vancouver

I am entirely certain that 20 years from now we will look back at education as it is practised in most schools today and wonder that we could have tolerated anything so primitive (**John W. Gardner**). Professor Gardner, a former US Secretary of State for Health and Education and Professor at Stanford University, may be a little provocative in his prediction, but as we near the end of this century, and given all that we know about the ways in which technology is influencing the learning environment, it would be difficult not to show some association with these sentiments. With a few *exceptions*, education, as it is currently practised, has undergone little change from the traditions of some nine centuries ago. Yet, there is a strong body of evidence and advocacy that is emerging, and which argues for these *exceptions* to become more common place than the current situation. This presentation will attempt to look at the reasons behind the clamour and consider the requirements for, as well as the response of, the academic and training communities to the change.

2. The provision for learning is becoming more open and accessible. Many factors contribute to this changing educational culture. Important among these are the forces of economics, social and technological. These forces are worldwide in their scope and, in terms of their power, seem to have a profound impact on business practises, manufacturing processes, financial services, government policies and, more recently, in our teaching practises and learning behaviours. It would not be an exaggeration to say that as we approach the end of this century, we are also moving irrevocably in the direction of changing the way we think about information, knowledge and learning.

3. In addition to the environmental change, there is also a change in the nature of those requiring education and training. Communities are no longer contented (nor should they be) to limit access to education and training to the fortunate few who are able, literate, live in urban communities, have access to communications, infrastructure and classrooms, the knowledge of when, how and what to learn and the resources to pay for them. A fairer, kinder and more concerned humanity requires that the education we provide must be made available to a whole range of new clients including:

- **Those who are functionally illiterate**: Apart from about 900 million illiterates globally, there are almost half as many adults who cannot cope with the demands of daily life on the basis of their prior literacy levels.

- **The physically challenged**: Annually, on the continent nearest to you (Asia), about 15 million people become disabled as a result of war, diseases, accidents and malnutrition. Their major hope of self-improvement is to pick up skills for self-improvement.

- **The long-term unemployed**: Long-term unemployment is a debilitating pathology; training people in such situations pose special challenges to delivery and pedagogy.

- **Out of work youth, especially boys**: require vocational training to be part of a productive economy. A combination of apprenticeship, employment and self-education need to be designed to assist them. This group is highly vulnerable to socially disruptive behaviours.

- **Women and girls**: In many parts of the Commonwealth, women and girls still find themselves marginalised from participating in education and training; ways may have to be found to circumvent the social, cultural and economic impediments.

- **Refugees, recent immigrants and non-nationals:** Today, roughly 125 million people live outside their countries of origin. This flow of people for political, social or economic purposes is not expected to slow down. To better enable the process of settling down, educational programmes, teaching language, social and job skills have to be designed and delivered.

4. Apart from the social concerns, individuals and governments are beginning to recognise that planning for "competitive advantage" will require a labour force that has literacy and numeracy skills beyond three to six years of primary schooling (which is the current situation in most industrialised and newly industrialising countries, it is grimmer in all other developing nations). Globally, some two billion people who are in today's workforce will continue to be there well into the first quarter of the next century. Their knowledge and skills will need continuous renewal. To this, we need to add a further one billion young children and adults who will require initial education and training. The level of supply (or lack) of education and training for this huge demand for initial, continuous and lifelong education using present patterns of delivery are, in the words of the much respected Vice Chancellor of the United Kingdom Open University, Sir John Daniel, at a crisis point. The challenge of providing education and training to a huge and diverse population with a variety of learning goals and styles, at an acceptable cost, will require new forms of educational delivery, globally. Notwithstanding the scepticism of many in the academic community, recent reports from agencies such as UNESCO, the Organization for Economic Cooperation and Development and the World Bank seem to say as much. In some ways, the emergence of the new technologies may have something to do with the push to drastically change the nature of the learning environment.

5. In North America, the arrival of the newer technologies certainly seems to have stimulated a resurgence of interest in diversifying methods of knowledge delivery. Almost on a daily basis, one is told that yet another web-based course is available from one university or another. Newer technologies or not, this audience is familiar with the successes of many Commonwealth institutions which took the challenge of providing good quality, mass, flexible and lower cost education for remote learners at the basic and primary (such as the Correspondence School of New Zealand), secondary (as delivered by the National Open School systems of India), technical (presented by the Open University of Sri Lanka), under-graduate (by the Open University of Hong Kong) and post-graduate (through the UKOU and the Indira Gandhi National Open University) levels.

6. Any transformation of the educational system cannot ignore a role for technology in the delivery of that education. There are several reasons why this is so, but a few stand out as immensely important. These are:

    - **The short supply of talent:** On one hand, the planet is filled with highly skilled and talented people in all fields of human endeavour. On the other, critics of global educational systems have constantly bemoaned the fact that, by and large, the academic talent found in our schools, colleges and universities need to enhance the quality of the learning environment beyond levels of mediocrity. We need excellence in our teaching and we need to source our teachers from the best in the community and distribute them to the whole learning community. The Western Governors Virtual University initiative among the North Western States of the USA is, in fact, attempting to do the same thing. This attempt envisages going beyond campus walls to source academic "teaching" talent. Contributors to courses will come from business, commerce, industry and government, and users of the courses will include ordinary people along with thousands of college and university students. This can happen because there is the courage and willingness to use the technological tools of today.

    - **An unmet demand:** Since the end of the last World War, the planet has expanded its educational provision at all levels. While in proportionate terms, we congratulate ourselves for having achieved near universal basic, primary and more secondary and post-secondary education in sheer numbers, the number of people still needing education at all

levels is astronomical. To be a globally competitive economy, the renewal of peoples' knowledge, especially those in the workforce, is vital. If we also include our desire to build a nation of informed and knowledgeable citizenry for the functioning of a healthy democracy, then this planet's demand for educational opportunities is truly staggering. No conventional system of educational delivery can meet this demand. Using technology may provide some relief, and using technology in partnership with others may provide lots of relief.

- **Changing patterns of learning:** Full-time study within time-tabled constraints of the classrooms is only accessible to a few; for many who wish to study, learning will have to occur at a time and place of their choice. The growth of open schools, polytechnics and universities as well as the numerous suppliers of correspondence and on-line education are all manifestations of peoples' desire to learn at their convenience rather than at an institution's call.

- **Just in time training:** The rapid changes that are taking place in the workplace will require training to be delivered quickly. Such training need to be high speed, low cost and should reach small and large groups. Traditional ways of delivering training is time consuming, labour intensive, socially disruptive and entails high cost.

- **Information explosion:** It is said by those who study this area, that the total amount of information which becomes available doubles every four to five years. Stating it another way, the total of all human knowledge that was available to an undergraduate in 1997 will be less than 1% of what will be available to a student in the year 2050. Teachers have to become expert in helping learners navigate through this sea of information rather than pretending to be effective transformers of that information into knowledge for the learners. Students must be trained to bring about this transformation. Those who survive this information explosion will be able to deal with it effectively, and more importantly, turn it into knowledge.

- **The ever-changing nature of learning technologies:** The technologies that are emerging and predicted to emerge are friendlier, faster, cheaper, more accessible and will have greater capacity. Programme developers need not possess complex computing skills – the machines will. Willing teachers, supportive administration and motivated learners can together create a learning environment that is open, interactive and challenging.

7. There are other factors as well, that support the case for greater use of technology in delivering education. Frances Cairncross, in her recent book entitled *The Death of Distance*[1], postulated a set of trends in the new communication environment which will influence the way we live, work and play. Some of the trends, she anticipates, have a direct relevance to our discussion. These include:

- **The death of distance:** The cost of communication will not be determined by distance even in the most regulated environments. Reaching out to students through the electronic highway will be determined more by the willingness of the educational providers to utilise the newer technologies than by fear of inaccessibility because of communication costs.

- **Cost of appliances** will continue to drop even as the computing capacity of the appliance increases. The cost of networked computers of the future should come down to the level of present-day televisions.

- **Location does not matter:** Providers of educational services can be located anywhere on earth and can reach the users of the educational service wherever they may be, providing there is a basic communication infrastructure. Even today, Indian students already have access to, say, courses from North America without having to be in North America. Similarly, courses from India can and should travel across the globe.

- **The size of the organisation** providing the educational service is not relevant; but the quality of the service. Small and specialised organisations can offer their products to large groups and be globally competitive.

- **Content customisation:** Sophisticated pedagogy can facilitate individuals to customise their learning needs. Learning can become either a multi-channel or a mono-channel experience. The final authority on customisation will be the expected learning outcomes of the subject and the learning preference of the student.

- **People as the ultimate scarce resource:** The really difficult challenge for institutions will be to recruit people with the necessary skills to perform the tasks required as well as train and retrain those already in service to work in the new environment.

- **Emergence of globally used language:** The emergence of English as a dominant second language of science, technology, business, and international relations as well as education and training, will mean the availability of globally useable knowledge products. There will be an increase in the choice of educational and training courses.

- **Communities of cultures** can be developed. The opportunity to make available content in other languages to a larger and dispersed audience will be feasible. Declining costs and ease of communication tools will make available, the vehicle to disseminate other cultures and traditions.

8.   Advocating the use of technology, especially one that propounds **remote learning,** will require some fundamental changes in the current system. These changes will challenge institutions that provide the educational service; they will test user capability for such services and question governments' policies and regulations. The following may be important for serious consideration:

- The first challenge is the re-orientation of our **teachers and the pedagogy** they apply to their vocation. The fraternity still has to come to terms with a new type of learner and a learning environment that encourages the learner to be independent. Whether it is a radio or television programme, print or web-based instruction, it is recognised that individuals are capable of self-learning if provided with cleverly and sensitively designed instruction, but are poorly equipped to utilise the technology, imaginatively and non-mechanically.

- The second challenge is **to change the nature and structure of our 'teaching' organisations.** The traditions of teaching and the views on learning have resulted in organisational structures that are almost and completely centred on faculty. From the design of the curriculum to its transformation into learning experience; from decisions relating to assessment of prior learning to elements of exit standards; from administrative arrangements to academic governance; and from delivery systems to learning schedules.

- The third challenge is to remove **the 'time' driven element** from today's schools, colleges and universities. These are ruled by time, prescribing when, in his/her life, a student can or is ready to learn and the length of time required for learning. A report of a task force to the International Council for Distance Education[2] recorded: "*The instructional paradigm, therefore, holds learning prisoner to time constraints applied by an arbitrary force or by the preferred work schedule of a faculty member. In the desired [new] learning paradigm, learning becomes the primary driving force and, since learning can occur at any time and at any place 24 hours every day, the constraints of time are removed*". The technologies allow those who provide education to break the rule of time.

- The fourth challenge is overcoming the perceptions and the fear **of faculty to the changing nature of their roles and values as well as the rewards** of the new learning environment. There is a real, though unfounded, fear on the part of faculty of losing total control of the teaching and learning environment. This fear manifests itself in many forms. Some teachers express anger at the perceived loss of academic freedom and

others express disdain at the 'commoditisation' of knowledge; some express dismay at the loss of employment and others worry about the loss of quality. Learner centrality in the educational environment does pose enormous challenges to the teacher. It requires pedagogical skills, especially in a technology-mediated environment which many of today's teachers are either inadequate in or totally lacking. Serious steps have to be taken to reduce the anxiety of teachers and alienating them from a development that is so crucial to academe and its survival.

- The fifth challenge is the **appropriateness of the curriculum**. Providers of educational services, whether of the formal or informal kind, cannot continue to behave as though their services and the knowledge products that they develop have little relevance to the world of work and living. The real world has been going through a dramatic change – learning and training are needed by people who will have to function in a globalised economy and the information age. These learners need to understand themselves through an understanding of the world (UNESCO's Delors Commission)[3], and should have the following skills:

  - *Communication skills* to work in a multicultural environment;
  - *Problem solving*: that requires the ability to frame problems, to ask the right questions and to apply the information technologies to solve them;
  - *Working in teams*: made up of individuals with different backgrounds and cultures. Part of these skills will also include skills of leadership and negotiating and the ability to collaborate; and
  - *Self-learning skills*: to be a lifelong learner would entail identifying what needs to be learnt and how to acquire that learning.

- The last in my list of challenges has to be the **access to technology** (telephone, television, radio, Internet) by learners. Even as we near the end of the century, some 500 million people may not have made their first telephone call let alone use the Internet. Most of the non-users are found in Sub-Saharan Africa, South Asia and Latin America. In her book, *The Death of Distance*, Frances Cairncross[4] quoted an International Telecommunications Union report, which stated that in some African nations (Sierra Leone, Uganda, Zimbabwe), the number of people has been increasing faster than the number of telephone lines. While in the short-term, this seems to be a big impediment, the longer-term view, by all accounts, appears to be promising.

9. However, the high level of scepticism that is being encountered among academic circles around the world is not promising. There is a certain fear that the use of technology and the promotion of networked learning will lower the value of the educational experience, erode quality irreparably, diminish jobs and job opportunities, eliminate academic freedom and inquiry and demean scholarship. This scepticism coupled with fear has led, in some cases, to campus unrest and, in others, from outright hostility to experimentation, innovation and application. Change has never been achieved without discomfort. Those vested with the leadership of our academic communities can only attempt to reduce the level of acrimony, encourage open debate and discussion and provide as many training and retraining opportunities as possible to facilitate this major cultural change.

10. Technology, whether it is print or multimedia, does not teach; the techniques we adopt simply enable the delivery of teaching from narrow to mass catchments, and simultaneously shift the responsibility of learning away from the teacher to the learner. In the process, it transforms the relationship between teachers and learners. While we are entering the era where multimedia and hypermedia are bringing together, under one umbrella, the essence of print, audio and video signals, computer-assisted instruction, conference and group learning, at the heart of the teaching and learning transaction will be institutions and teachers.

Our challenge is to create pedagogies of learning within which modes of delivery will contribute to effective learning. Before the arrival of the newer technologies, communities of distance educators around the world have been at the forefront of conducting changes in the educational environment. The circumstances under which practises have been developed, took into account the requirements of learners who used distance education and also needed:

- **Increased and flexible access to information** (isolated learners, preoccupied with other demands of living, require a variety of channels to access information on both academic and administrative matters);

- **Increased and flexible opportunities for interaction between mentors and peers** (freedom from time-tabled environments to conduct their learning);

- **Increased student time on tasks** (pacing the learning through devices that set tasks and deadlines for judicious absorption of information, skills or knowledge and completion of learning);

- **Opportunities to control their pace of learning;**

- **Learning that is relevant** to their daily lives (curriculum that is appropriate and sensitively transformed into learning experience);

- **Greater response to their individual circumstances** (mass education does not necessarily have to dehumanise the learning process); and

- **Regular and sensitive encouragement** to continue their learning (counselling for success).

11. As the forces surrounding the educational environment impel educational institutions to move away from being elitist, exclusively high-cost, campus-based and faculty-centred to one where the focus is the learner, access is mass, cost is low and the world is the campus, some fundamental shifts in the methods of teaching and learning, will have to take place. Accompanying these shifts will be the legitimate concerns about the quality of the venture. This is especially so in societies that have traditionally held education in high regard. Those of us who ventured into distance education between the mid-sixties and seventies will recollect, with pain, the stigma of the commercial correspondence schools culture that we inherited and which has taken the better part of the last 30 years to leave behind. On the basis of these three decades, let me briefly reflect on a few aspects of quality that we need to remind ourselves, even as the fascination for remote delivery of education becomes increasingly popular.

12. By deliberate design, practitioners of distance education have been instrumental in making some fundamental changes to long-held beliefs about where, when and how teaching and learning should take place. The critical issue is not where the students are located, but whether they can interact with a teacher or teaching programmes. Bringing about the desired levels of interaction between students, teachers and programmes will require subscribing to a list of good principles. Many of you know these principles, but in the context of this keynote, let me reflect a little:

- **Good practise recognises the need for students to be well informed** about the courses that are available to them. Courses of study vary in many aspects even within a programme. Well-designed courses should be transparent before students enrol; details such as aims, objectives, course synopsis, the position of the course in a programme, expected quantum of work, tasks expected of students and the criteria that will be used in recognising completion of the course. Students need to make adjustments and preparations before the course begins;

- **Teacher – learner contact** is an essential part of a good educational environment. These occasions are not only good for motivating learners but also helpful in the context of overcoming learning problems. Learners are also able to use these occasions to measure their value systems about their studies and their future;

- **Active learning is healthy:** Students do not learn much from memorising facts and reproducing set answers; they derive greater benefits by being active in their learning. Talking, listening, observing, discussing, writing and relating their experiences and applying them in the context of their lessons are all part of an active learning process. Good practise in distance teaching does this effectively;

- **Peer support in learning** is highly beneficial. Sharing one's ideas and responding to the ideas of others improve thinking and increase understanding. Learning can improve if it is a team effort rather than a collection of solo performances. Study centre facilities provide valuable opportunities for peer-supported learning;

- **Feedback and encouragement:** Having an idea of what you know and what you do not, can be a focus for future learning. Regular feedback on their performance helps students learn better and more seriously;

- **Paced learning:** Using time effectively is critical for students; what this means to teaching is a clear understanding of appropriate pacing of the learning through tools such as assignments, tutorials, broadcast programmes, computers, conferencing, etc.; and

- **Learning pathways** must be mapped to facilitate different styles of learning.

13. Apart from good practise, which must be a vital consideration for the delivery of distance education, there are three other aspects of distance and open learning that are crucial to its good health. These are:

- **Access:** Supporters of open learning will claim that their educational mission is to provide access and equality of opportunity for learning, especially to individuals and groups who have been denied this before. As has been argued before, success in providing access is not a sufficient condition for claiming greater opportunity. 'Equality of opportunity is a matter of outcomes, not merely resource availability;' in other words, providing access is merely a starting point and equality can only be achieved if the people provided with such opportunities are assisted in achieving their goals.

- **Cost considerations:** Cost-efficiency and effectiveness of open education systems are overriding concerns for all of us. These considerations have a major impact on policy issues and any measurement of the quality of a distance education system will have to take account of costs and benefits.

- **Infrastructure:** Delivering education to students off-campus needs infrastructure that is supportive of the teaching and learning environment. This infrastructure should have, among other items, the following essentials:

  - Those delivering content must have **the skills to use teaching methods that are resource-based;**

  - Such **teachers must be trained and provided with the technology** to perform of their tasks;

  - Adequate provision for **students to have access to the emerging communications and information technologies;**

  - Management reconfigures institutional resources and **invests them in the production of knowledge products** and the pathways to deliver the products; and

  - Management prepares itself to cope with **a diverse make-up of its students, their goals** and the context within which they learn.

14. Finally, even as the practise of open, flexible and remote learning moves from the margins of educational practises to centre stage, its full potential of contributing to national development, equalising opportunities for all and drastically changing the nature of teaching and learning, still continue to be untapped. In another context, Bill Gates,[5] in his book, *The Road Ahead*, reflected that " *. . . we are all beginning another great journey. We aren't sure where this one will lead us either, but again I am certain this revolution will touch even more lives and take us all further*". It seems to me that how much further we can go with the delivery of high-quality education is capped not by technology and even other resources, but by our own professionalism and imagination. Simply relying on present habits or knowledge of instruction and technologies will not be enough. We will be required to put in place, organisations and people who can deliver courses at any location chosen by the learner. We need partnerships and associations, which will work in a linked network of providers, thereby providing unlimited choices to the learner. We need new strategies for course development and certification. And we need arrangements that will link students among themselves; link students and tutors and tutors and tutors; we need a fresh look at our curriculum and we need a curriculum that is dynamic – not one that confines learners to fixed points, but one that is seamless and open. I am told that we have the knowledge, experience and skill to do them. More crucially, we also have today, the technology to enable us to achieve these ideals. What is needed is the vision to make them a reality.

[1] Carincross, Frances. (1997). *The death of distance: how the communications revolution will change our lives.* Boston, MA : Harvard Business School Press. p.303.

[2] Hall, James W. (1996). *The educational paradigm shift: Implications for ICDE and the distance learning community.* Report of the Task Force of The International Council for Distance Education Standing Committee of Presidents. Open Praxis. Vol. 2, 1996. p. 32.

[3] Delors, Jacques (Commission Chair). (1996). *Learning, the treasure within: Report to UNESCO of the International Commission on Education for the Twenty-First Century.* Paris, France : UNESCO.

[4] Cairncross, Frances. (1997). *The death of distance: how the communications revolution will change our lives.* Boston, MA : Harvard Business School Press. p. 303.

[5] Gates, W. (1995). *The Road Ahead.* The Penguin Group, USA.