



Emerging Challenges and Trends in TVET in the Asia-Pacific Region

Shyamal Majumdar
Editor



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Edited by

Shyamal Majumdar

*Colombo Plan Staff College for Technician Education
Manila, Philippines*



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PREFACE

The globalization of trade and commerce, the rapid technological changes in Information and Communication Technology (ICT) and the advances in the knowledge economy are bringing forth new challenges in technical and vocational education and training (TVET) around the world, in general, and the Asia-Pacific region, in particular. The region currently stands at a development crossroads. Many countries are confronted with the need to balance the goal of becoming globally competitive and at the same time achieving inclusive growth, if the region is to succeed in realizing sustainable development.

Certain countries have made some progress using TVET as an effective platform for skills training and re-training and for the inculcation of life-long learning for the populace in the twenty-first century. A few countries are slowly gearing up towards this end with more responsive TVET structures, policy frameworks, curricula and orientation to bring about the desired urgent reforms and national strategy rationalizations.

Coming on the heels of a successful series of regional programs conducted by the Colombo Plan Staff College for Technician Education (CPSC) and the dynamic exchange of information and data on TVET of its various member countries, CPSC has decided to invite prospective Contributors to put relevant data together under one cover in this essential reference tool. The book is intended to serve as an initial offering in the field of TVET to provide relevant information that can be utilized as a reference, guide and as a basis for further development of TVET in the member countries. This is an initiative which can be carried out jointly by CPSC, in close coordination with its member governments together with the various development and educational organizations, researchers and interest groups operating in the region.

The book is divided into two major sub-topics: Section I The Emerging TVET landscape in the Asia-Pacific Region and Section II TVET Systems, Emerging Challenges and Trends in TVET: Country Perspectives. The first four thematic papers in the first section discuss regional level trends and challenges as independent assessments of the TVET landscape. The sixteen subsequent country papers in the second section have been solicited by CPSC and are authored by various TVET administrators, implementors and experts who have worked closely with CPSC and in the process have made significant interventions and impact through technical training and policy assessment and in sharing common TVET goals and aspirations. For a better understanding of the context and structure operating in the countries, visual representations of the education system or in some cases the TVET structure within that system are provided in most contributions. In the case of Afghanistan, focal ministry structure is provided to illustrate the functioning and division of labor within a given system.

Through the data herein presented, it can be deduced that the Asia-Pacific region is never short of potentials. The region, in fact, can capitalize on an effective cross-sharing of lessons learned and experiences gained in TVET together with a deep

PREFACE

sense of regional inclusiveness that can take off from present limitations and rise above the challenges.

This publication on TVET in the Asia-Pacific region is an attempt to compile the latest trends and challenges in the area as well as to draw out the emergent trends and challenges, country-wise. It is the latest of the country profile reports on TVET. In some cases, some explicit transformations or policy changes have taken place in some countries in the course of putting this reference together. This may render some structures outdated, but nevertheless useful in understanding how new systems and structures have evolved in the recent two years.

The authors have been encouraged to expand their discussions to include the various challenges and trends that influence, in part or on the whole, the implementation of TVET programs and initiatives at the national level. To a certain extent, common challenges are observed in most countries; among them are the low level of competence of the teachers, outdated curricula, skills mismatch, fragmented TVET efforts by the national governments resulting in various TVET providers, an absence of quality assurance systems and endemic policy weaknesses. Other factors are brought about by the influence of cultural, economic, social as well as political conditions or any combination of such circumstances in each country.

CPSC, as a regional center of excellence, keeps a close eye on TVET structures and developments in its member countries to enable the College to assist them in TVET strategic planning and advisory, as well as in the conduct of demand-driven technical training programs. This publication is intended to be disseminated as another important TVET regional reference.

It is hoped that this book will serve as a source of TVET information and knowledge on what the neighbor countries are doing, in which areas and under which frameworks have they been successful in. It is further hoped that this reference book can help countries with almost similar backgrounds and who are confronted with the same difficulties assess their current status, present directions and potentials within the purview of their distinct country settings, skills shortages, industry opportunities and policy environs.

CPSC does not guarantee the accuracy of all the data included and the presentation of all the opinions expressed.

CPSC acknowledges with deep thanks and appreciation the contributions of the authors for sharing their inputs, experiences and critical thinking to come up with their respective papers to arrive at an in-depth compilation of regional and country information and data on TVET. Sincere acknowledgement also goes to the Associate Editors, Dr. Rajesh Khambayat, Dr. Suresh Kumar Dhameja and Mrs. Violeta Laraya, who assisted in reviewing and editing the papers meticulously, with the CPSC team led by Ms. Kenneth Barrientos, Mr. Aldrich Mejia, Ms. Marileth Enriquez, Mr. Vergel de la Paz and Ms. Casey Alvarez, who toiled to help CPSC achieve the objectives of this project.

Prof. Shyamal Majumdar, Ph.D.
Director General

EXECUTIVE SUMMARY

The twenty articles in this book describe various aspects of technical and vocational education and training (TVET) in sixteen participating countries of CPSC in the Asia-Pacific region. These countries are in various stages of development not only in their respective educational systems but also in their paces of socio-economic advancement. Some like Japan, Korea and Singapore are more technically and technologically sophisticated than the others and as a result have TVET systems that are likewise more highly developed. Some of the countries are large, area- and population-wise like India, Pakistan, other territories are divided by steep mountain ranges like Bhutan and Nepal while the others are island nations, like Fiji, Maldives and Papua New Guinea, separated by bodies of water making networking and communications difficult and problematic. Some countries have high levels of literacy and numeracy while others are still struggling to provide access to basic education for its people. Some countries in post-conflict areas have had to contend with the devastating effects of war on its people, infrastructure, political disturbance and the social fabric of society. The geographic spread of these countries spans the desserts of Afghanistan on the western edge of Asia to Japan and Korea to the Far East and the island nations of Fiji and Papua New Guinea in the South Pacific. However, there is a common thread that runs through all these participating countries in the Colombo Plan region – the acknowledgment of the important role that technician education and training has to play in each country's efforts to improve the quality of life of its people. This is the uneven TVET playing field where CPSC has to operate. It has to evolve and arrive at strategies that can address the peculiar needs of each member.

The CPSC member countries constitute about one-fifth of the world population in an area of the globe that is poised to become the next center of growth. No matter the extent of developmental inequalities that exist, all these countries are one in their recognition of the important role that TVET can play as an engine of growth in their respective milieus. Various approaches have been put in place that is intended to give the TVET systems the much-needed impetus to play this role. This book seeks to put together under one cover as much information and insights about TVET from the experts and practitioners as well as policy makers of the countries concerned. The articles present both macro and micro views of TVET, underscoring its current status, emerging trends, best practices and the challenges that beset TVET systems on the national fronts. In a number of the countries included in this book, TVET concerns are addressed severally either through the Ministry of Education for its education stream or the Ministry of Labor for the training component. This approach has often resulted in multi-pronged TVET programs with many instances of duplication of efforts and often unintended dissipation of resources. These circumstances have been recognized in a number of countries and steps are being taken to consolidate efforts and to merge institutions as is the case in Thailand and in Malaysia. For the serious researcher, a closer examination of the ways in which this matter has been addressed presents an

EXECUTIVE SUMMARY

interesting window into the society that TVET seeks to serve, future development projections and pathways laid out to be pursued. What is most engaging is the realization that, in almost all countries, concrete steps have to be taken in order to rationalize their TVET systems to avoid duplication of mandates or the frittering away of already limited resources among the institutions and agencies currently involved in TVET implementation. Many countries also realize the need to bring about a new mindset on how TVET programs and courses are perceived by its target clients, starting from the parents, who usually lead the way on how TVET is regarded, to the students, both the youths and the adults who may need re-training, and the TVET implementers as well as the policy makers. In many instances, TVET offerings are considered as poor second choices by its target clients. The case of how Singapore has addressed this issue through its polytechnic system may serve as an interesting model. The portions of the articles that showcase the “best practices” that each country has set in place also present an overview of how TVET programs and systems are being adopted or adapted, given individual national limitations and social and cultural barriers and economic constraints.

The problems that beset the TVET systems in these countries seem to be of the same nature regardless of the level of maturity a country is already in. The challenges on how to develop curriculum and training programs that will respond to the skills needed by industry seem to be a common concern. Many authors mention the gap between the skills needed by industry and those that the students acquire at the end of the training programs. How can this gap be addressed? A stronger public-private sector relationship has to be fostered. Most countries suggest that industry has to take an active involvement in the training programs that will produce the kind of workers who are equipped with the desired skills. There is also the need to provide workers with the skills and credentials and personal work ethics that can make them competitive in the global work arena. There is also the necessity to evolve new teaching-learning materials that will keep in step with the latest developments in the international work arena. Many countries realize the imperative to train and develop knowledge workers, independent thinkers, who are able to function in a constantly changing global environment. Many authors also underline the importance of industry working closely with the training institutions and other agencies so that the students will have access to the latest technology and equipment used on the shop floors and for the trainers themselves to have some grounding on current industry practices. Malaysia has a program in place that seeks to address this deficiency. By the same token, the importance of having a widely-accepted qualification and accreditation system has also been brought to the fore. Having such a system in place will help workers gain internationally-recognized credentials that can help them cross borders in order to work. It will also enable those wishing to continue on to higher education to do so through a ladderized system of education. A number of countries have underscored the lead role that an accreditation system under the CPSC can take in this regard.

On the whole, the twenty articles can provide the reader/researcher with a comprehensive appreciation of the status of TVET in sixteen countries in the Asia-Pacific region with their respective problems and issues. The book is an attempt

to collect under one cover a comprehensive body of TVET information which can be used as a handy reference tool not only by serious researcher but also national policy makers. Some of the articles describe best practices that some countries have implemented in response to their peculiar needs in TVET. They can be used as models by other countries that may be looking for “systems that worked” and to learn from and to “avoid the mistakes committed.”

While it is realized that no one solution can exist given the gamut of challenges and concerns and the magnitude of resources that may be required and the preferred changes in mindset among TVET clients in order to implement the desired reforms, the fact remains that almost all of the authors recognize the need for certain drastic changes to take place so that TVET can take its rightful role as the engine for growth in their own countries. Through all these challenges, the Colombo Plan Staff College for Technician Education is geared up intensify efforts towards building the Asia-Pacific region through technical and vocational education and training for peace, harmony and sustainable growth in the knowledge era.

ABBREVIATIONS

A

<i>ADB</i>	Asian Development Bank
<i>AEB</i>	Adult Education Board
<i>ANM</i>	Auxiliary Nurse Midwives
<i>APACC</i>	Asia Pacific Accreditation and Certification Commission
<i>AQF</i>	Australia Qualification Framework
<i>ASDP</i>	Afghanistan Skills Development Project
<i>ATP</i>	Apprenticeship Training Program

B

<i>BVQF</i>	Bhutan Vocational Qualifications Framework
<i>BMET</i>	Bureau of Manpower, Employment and Training, Bangladesh
<i>BTEB</i>	Bangladesh Technical Education Board

C

<i>CAT</i>	Community Applied Training
<i>CBT</i>	Competency-Based Training
<i>CITI</i>	Construction Industry Training Initiative
<i>COL</i>	Commonwealth of Learning
<i>CPP</i>	Career-Path Program
<i>CPSC</i>	Colombo Plan Staff College for Technician Education
<i>CST</i>	Cooperative Study Training
<i>CTEVT</i>	Council for Technical Education and Vocational Training, Nepal

D

<i>DACUM</i>	Developing A Curriculum
<i>DoE</i>	Department of Education
<i>DOS</i>	Department of Occupational Standards, MoLHR, Bhutan
<i>DPCCE</i>	Department of Polytechnic and Community College Education, Malaysia
<i>DTE</i>	Department of Technical Education, Bangladesh
<i>DTET</i>	Department of Technical Education and Training, Sri Lanka

E

<i>EBT</i>	Employer-Based Training
<i>EEZ</i>	Exclusive Economic Zone
<i>EIF</i>	Employment Insurance Funds
<i>EPC</i>	Entrepreneurship Promotion Center
<i>ESTP</i>	Employment Skills Training Project
<i>ETF</i>	European Training Foundation

F

<i>FAO</i>	Food and Agriculture Organization
<i>FANA</i>	Federally Administered Northern Areas
<i>FATA</i>	Federally Administered Tribal Areas
<i>FMDL</i>	Flexible Modular Distance Learning

G

<i>GCE</i>	General Certificate of Education
<i>GDP</i>	Gross Domestic Product
<i>GNH</i>	Gross National Happiness
<i>GoA</i>	Government of Afghanistan
<i>GTZ</i>	German Technical Cooperation Agency

H

<i>HDI</i>	Human Development Index
<i>HEI</i>	Higher Education Institutions
<i>HIC</i>	High Income Country
<i>HOTS</i>	Higher Order Thinking Skills
<i>HRD</i>	Human Resource Development

I

<i>IBT</i>	Institution-Based Training
<i>ICT</i>	Information and Communication Technology
<i>IDA</i>	International Development Association
<i>ILO</i>	International Labour Organization

ABBREVIATIONS

<i>ISO</i>	International Standards Organization	<i>MSWL</i>	Ministry of Social Welfare and Labor
<i>IT</i>	Information Technology	<i>MVTT</i>	Ministry of Vocational and Technical Training
<i>ITB</i>	Industrial Training Board		
<i>ITE</i>	Institute of Technical Education	<i>N</i>	
<i>ITTHO</i>	Tun Hussein Onn Institute of Technology	<i>NAITA</i>	National Apprentice and Industrial Training Authority, Sri Lanka
J		<i>NATTB</i>	National Apprenticeship and Trade Training Board
<i>JICA</i>	Japan International Cooperation Agency	<i>NAVTEC</i>	National Vocational and Technical Education Commission, Pakistan
<i>JTA</i>	Junior Technician in Agriculture	<i>NC</i>	National Certificates
K		<i>NCSD</i>	National Council for Skills Development
<i>KE</i>	Knowledge Economy	<i>NCVET</i>	National Council for Vocational Education and Training
L		<i>NMC</i>	National Central Methodological Center
<i>LIC</i>	Low Income Country	<i>NTT</i>	National Teachers Training
<i>LMI</i>	Labor Market Information	<i>NITTTR</i>	National Institute for Technical Teachers Training and Research
<i>LMIS</i>	Labor Market Information System	<i>NISTE</i>	National Institute of Science and Technical Education
M		<i>NGO</i>	Non-Governmental Organization
<i>MASM</i>	Mongolian Agency for Standard Metrology	<i>NSDP</i>	National Skills Development Program
<i>MCUD</i>	Ministry of Construction and Urban Development	<i>NTC</i>	National Training Council, PNG
<i>MDGs</i>	Millennium Development Goals	<i>NTTA</i>	National Technical Training Authority, Bhutan
<i>MDS</i>	Millennium Development Strategy	<i>NTTTC</i>	National Technical Teacher Training College
<i>MDTS</i>	Medium Term Development Strategy	<i>NVQ</i>	National Vocation Qualification
<i>MES</i>	Modular Employable Skills	O	
<i>MECS</i>	Ministry of Education Culture and Science, Mongolia	<i>OECD</i>	Organization for Economic Cooperation and Development
<i>MIC</i>	Middle Income Country	<i>OJT</i>	On-the-Job Training
<i>MIT</i>	Ministry of Industry and Trade, Mongolia	<i>OVEC</i>	Office of the Vocational Education Commission
<i>MoE</i>	Ministry of Education	P	
<i>MOHE</i>	Ministry of Higher Education	<i>PED</i>	Provincial Education Department
<i>MoLHR</i>	Ministry of Labour and Human Resource	<i>PIU</i>	Project Implementation Unit
<i>MoLSAMD</i>	Ministry of Labor, Social Affairs, Martyrs and Disabled, Afghanistan	<i>PMR</i>	Penilaian Menengah Rendah
<i>MQF</i>	Malaysian Qualification Framework		

ABBREVIATIONS

R		<i>TPSD</i>	Technical and Professional Support Division, Department of Human Resources
<i>RMC</i>	Regional Methodological Center	<i>TSP</i>	Time Sector Privatization
<i>RPL</i>	Recognition of Prior Learning	<i>TTTI</i>	Technical Teachers Training Institute
<i>RSDP</i>	Rural Skills Development Program	<i>TVEC</i>	Tertiary and Vocational Education Commission
<i>R&D</i>	Research and Development		
S		U	
<i>SDC</i>	Staff Development Centers	<i>UN</i>	United Nations
<i>SDF</i>	Skills Development Fund	<i>UN-ESCAP</i>	United Nations Economic and Social Commission for Asia and the Pacific
<i>SDPA</i>	Skills Development for Poverty Alleviation	<i>UNCED</i>	United Nations Center for Education Development
<i>SEAMEO-VOCTECH</i>	Southeast Asian Ministers of Education Organization-Regional Center for Vocational and Technical Education and Training	<i>UNESCO-UNEVOC</i>	UNESCO UNEVOC International Centre in TVET, Bonn
<i>SPM</i>	Sijil Pelajaran Malaysia	V	
<i>SSC</i>	Secondary School Certificate	<i>VE</i>	Vocational Education
<i>SSDP</i>	Special Skills Development Program	<i>VET</i>	Vocational Education and Training
<i>STAR</i>	Skills Training at Resort	<i>VHS</i>	Vocational High School
<i>STP</i>	Special Training Program	<i>VQI</i>	Vocational Qualification Institute
<i>STS</i>	School to School	<i>VSDP</i>	Village Skills Development Program
<i>STVC</i>	Skills Training Voucher Scheme	<i>VTa</i>	Vocational Training Authority
<i>STW</i>	School to Work	<i>VTC</i>	Vocational Training Center
T		<i>VTPC</i>	Vocational Training and Production Centers
<i>TAVED</i>	Technical and Vocational Education Division	W	
<i>TEVTA</i>	Technical Education and Vocational Training Authority	<i>WTO</i>	World Trade Organization
		<i>WTS</i>	Work to School

**SECTION I:
THE EMERGING TVET
LANDSCAPE IN THE ASIA-PACIFIC REGION**

SHYAMAL MAJUMDAR

1. EMERGING TRENDS IN TVET IN ASIA AND THE PACIFIC REGION: CPSC'S RESPONSE

INTRODUCTION

In spite of the large-scale geographical, economic and demographic diversities among the Asia-Pacific countries, the countries in the region share many common challenges and are confronted by general issues which have to be addressed in order to improve the quality and relevance of technical and vocational education and training (TVET), enabling them to gain a competitive edge in the growing knowledge economy. The Asia-Pacific region has distinguished itself in the past decade as the world's most rapidly developing region. It now accounts for more than 35% of the world gross domestic product (GDP) in purchasing power parity terms (ADB, 2008). However there are large variations and disparities in economic growth among the countries.

Despite this impressive economic progress, a growing body of evidence points to serious human resource development-related problems that require urgent attention if the region is to sustain its progress. First of all, a large number of Asia-Pacific countries still remain mired in poverty. Even in the rapidly growing developing countries, there are substantial pockets of poverty and unemployment. Overall, growth throughout the region has been non-inclusive. Large-scale economic growth with widespread urbanization along with direct foreign investments has fueled the demand for more skilled workers. A severe shortage of skilled manpower is apparent in both the organized and unorganized sectors. In many countries today, the labor market has to reckon with a growing shortage of skilled workers in various sectors including the semi-skilled labor-intensive sectors of manufacturing and modern services such as organized retail, civil aviation and construction. The skills shortage also manifests itself as a problem of retention and attrition in the fast-growing knowledge-based industries as well as in the social sector services like health and hospitality.

The task of technical workforce development has to address the changing realities of globalization and competitiveness, on the one hand, and the need for inclusive growth, on the other. The low literacy rate and the lack of skills training of the vast majority of the populace pose a major hurdle in a country's journey towards becoming a knowledge economy (Majumdar, 2008). Therefore, policies to ensure higher quality education and the expansion of TVET skills training for the poor and underprivileged are needed in order to produce a new generation of educated and skilled workers who are flexible and analytical, and can serve as the driving forces for innovation and growth.

The region does, however, enjoy the demographic advantage of a growing number of young people, in comparison with the aging societies in most of the more advanced countries. Nearly a million youths join the workforce every year. In order to exploit this demographic advantage in the future, there is a need to develop a model that will impart TVET that is flexible, sustainable, inclusive and creative (ILO, 1999). The challenge, therefore, is how to train and equip this young sector of the population to have access to productive and meaningful employment.

The Second International Congress on TVET organized by UNESCO pointed out the need for more teachers who are well-trained in order to bridge the gap between economic growth and human development. The most important change agent in a 'knowledge society' will be the teachers (Basu, 2000). UNESCO-UNEVOC and CPSC, and various other international organizations have highlighted the need for innovations and quality improvement in the training of TVET teachers in order to meet the challenges in the knowledge society.

This paper begins with an overview of the emerging global trends in terms of economic, social and technological changes and their impact on TVET systems. The major global trends and TVET trends are discussed. The approaches in TVET systems that respond to these emerging trends are likewise enumerated. The specific TVET interventions and cross-cutting themes are identified for the Low Income Countries (LIC), Middle Income Countries (MIC) and High-Income Countries (HIC), respectively. Finally, the role of CPSC within this changed context is also discussed.

BACKGROUND

The twenty-first century presents a radically different framework for a country's economy and its society and are likely to have profound implications on TVET. The globalization of trade and commerce, the rapid technological changes, the emergence of new technologies, the ICT revolution and the emergence of a knowledge economy are bringing about new challenges around the world, in general, and the Asia-Pacific region, in particular (Majumdar, 2005). The goal of meeting the challenges of globalization in most of the developing countries is made more complicated, when coupled with the likewise important goal of reducing poverty and inequality. Many of the Asia-Pacific countries currently stand on development crossroads where the need to balance the processes for achieving poverty reduction, global competitiveness and inclusive development of the workforce have gained immense importance in the drive for sustainable economic growth.

The knowledge economy generates new demands, structures and systems towards the development of the required new skills and knowledge in the labor workforce. It recognizes the fact that the key role of information-based technologies is to provide a basis for the generation, management and utilization of knowledge as never before (Drucker, 1998). The developing countries in the region are also fast moving towards becoming knowledge economies, thereby presenting new challenges to their respective TVET systems.

Within this new context, a paradigm shift has taken place in terms of economic changes, worker changes and output changes. In many cases, a country's economy

has now moved from manufacturing to knowledge, its workforce changed from being a manual to a knowledge worker and its outputs converted from tangible deliverables to intangible deliverables. All of these have a profound impact on the TVET system in the countries of the Asia-Pacific region.

EMERGING TRENDS

To understand the profound impact of these emerging trends on the TVET systems in the region, there is a need to explore the details of these changes in terms of technology, economy and social transformations.

Technology Trends

Sweeping technological trends are happening both globally and regionally. Continuous changes and technological advances are occurring, and their benefits are envisioned to enhance TVET delivery and access in the region's developing countries.

Table 1. Technology trends

<i>Moving from</i>	<i>Moving to</i>
Narrow Band	Broadband
Divergent	Convergent
Wired	Wireless
Local	Global
Electronics	Integrated
Petro-based energy	Agro-based energy

The major shift in technology is dominated by the move away from a focus on the traditional into the new emerging technologies. The trend is that the new technologies are moving from the narrow band to broadband, from divergent to convergent, from wired to wireless, from local to global, from electronic to integrated, and finally from petro-based to agro-based energy.

With these changes, the expansion of technical knowledge creates a stronger demand for the workers to develop a competitive edge in performing their jobs in response to the high-end and emerging technologies.

Furthermore, the excessive pace of technological changes has emphasized the need for a worker to develop the life-long skills of a knowledge-based worker. Keeping this in mind, the concept of an individual's life span and his retention of the knowledge he has gained is reinforced, as presented in [Figure 1](#). It has been observed that the economic pace of technological changes makes 50 percent (50%) of computer knowledge irrelevant within one year, technological knowledge in three years, specialized vocational knowledge in five years and higher education knowledge in ten years. We are now in the era of taking up life-long learning skills in order to become more competitive in life. These learning-to-learn skills become principal components of emerging generic learning skills. Given this trend, it becomes

important for TVET to consistently provide a learning platform where knowledge can be updated and enriched as required by the job market and the workplace. Today's integrated technology, namely, information and communication technology (ICT), biotechnology, nano-technology, energy technology, space technology, entertainment technology and community and rural technology are characterized as being inter-disciplinary, oriented towards Research and Development (R&D), is information-intensive, has a shorter life cycle and is globalized.

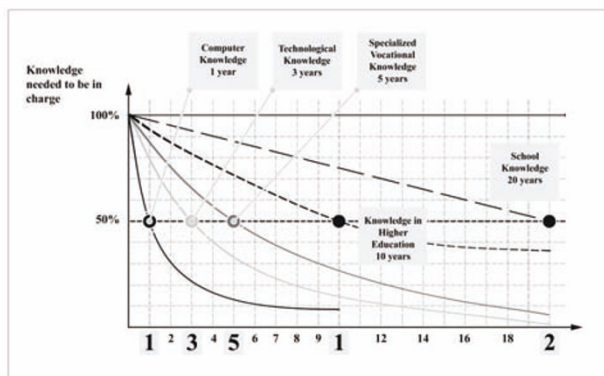


Figure 1. Phenomenon of rapid pace of educational changes.

The focus of business, technology and work structures and the role of a change agent have been changing since 1980 up to the present era.

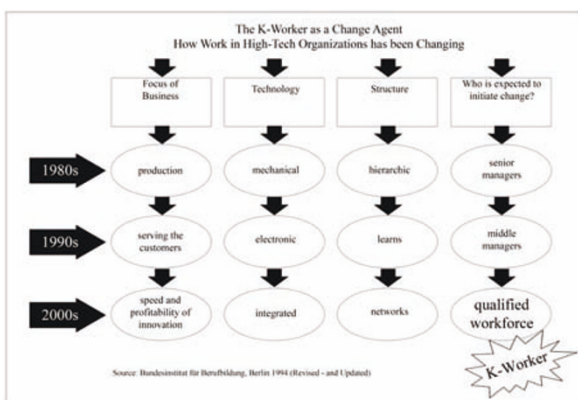


Figure 2. Evolution of work in high-tech organizations.

Figure 2 illustrates the evolution of work and work orientation within the purview of the focus of an organizational technology structure and the main initiator of change in the workplace. It has been observed that in the era of integrated technology and

network structure and innovation, the knowledge worker will be the key change agent in the workplace.

Economic Trends

Many of the countries in the twenty-first century economy tend to show that material value has changed into knowledge value with the advent of the knowledge economy. The role of the manual workers is fast changing into becoming knowledge workers. The knowledge economy places more value on the knowledge that catalyzes technical innovations and achievements and which propel economic gains. This signifies the important role of TVET institutions as training grounds for the transfer of the necessary skills and work qualifications.

It has likewise become commonplace, something that the globalizing world has dictated, in part or on the whole, the mobility and economy of trade and of human resources. The lifting of trade barriers has subsequently opened new doors leading to the borderless movement of technology, products, services and labor manpower, contributing to the overall expansion of economic activities.

Social Trends

Reducing poverty, promoting sustainable development, equity and inclusive growth are the key social directions that have influenced development interventions. In many parts of the world, innovative initiatives are actively undertaken to either directly achieve or contribute towards realizing the Millennium Development Goals (MDGs). Many of these, if shared with other countries, can offer new insights for planning and implementing more effective human resources development programs to help in specifically achieving life-long learning and skills training necessary to keep employment stable and the manpower supply responsive to labor market demands.

Observed trends in the social front are mainly on the shift from mere economic growth to inclusive growth, from conventional development to sustainable development, from gender inequality to gender parity and from conventional academic skills to life-long and functional skills.

While dramatic economic growth has emancipated the new economic players in the globalized world, favorable economic gains and income growth have spread only sporadically in the region. Because of this, inclusive growth has never been more important than now in the Asia-Pacific region. It has essentially become a key development goal for the regional countries due to the growing inequality in income, which leads to a more serious concern of how the benefits of the region's awesome GDP growth are not being equitably distributed. Given this situation, the overall growth process is derailed both at the macro and micro levels.

Similarly, other shifts have rendered any prevailing social development focus to be wider, more significant and longer-term. Consistent with this, social interventions have been characterized by provisions for life-long and functional skills. These have now gained more importance than ever before. Instead of simply being limited to providing the traditional academic skills that may suddenly become inutile especially in cases where rapid changes happen in the work place.

TVET TRENDS IN THE ASIA-PACIFIC REGION

Technological, economic and social trends have clearly posed profound implications on TVET systems in the Asia-Pacific region. The changing nature of the world of work, especially due to the forces of globalization, technological, economic and social changes, requires an understanding of how these changes impact upon the quality of TVET systems.

To illustrate, there are four major emerging trends in TVET based on the broader sectoral trends mentioned in the previous sections. These trends, seen from the global and regional perspectives, are significantly addressed through specific interventions that aid in refining the focus of TVET (Refer to [Table 2](#)).

Table 2. Global and TVET trends

<i>Major global trends</i>	<i>TVET trends</i>
Knowledge-based Economy	The role of the worker has changed from being a manual worker to a knowledge worker. To carry out his new role more effectively, a worker needs to have analytical and critical thinking skills. Therefore, Higher Order Thinking Skills (HOTS) are introduced into the curriculum to stimulate critical thinking, analysis and problem solving skills to further augment and enhance TVET learning outcomes. They have also become common features of standards-based educational transformation.
Rapid Technological Changes	Rapid technological changes make it necessary for workers to adapt to the fast-changing technological environment. The possession of Generic Soft Skills has become a pre-requisite in the new work place. Skills, including cognitive, inter-personal, attitudes, positive work habits and enterprise, innovation and creativity, are deeply embedded in TVET capacity building. Learning-to-learn skills have become key TVET components.
Sustainable Development	Sustainable development as a key agenda of the United Nations and other development organizations' educational provisions, significantly calls upon re-orienting the TVET curriculum towards sustainability while maintaining the principles of the 6Rs: Reduce, Re-use, Re-new, Re-cycle, Repair and Re-think perspectives.
Poverty Alleviation	The best way to fight poverty is to empower the people, particularly the disadvantaged, with the desired development of Modular Employable Skills and entrepreneurship skills. These have been given important roles in the fight against poverty. Entrepreneurship, Modular Employable Skills and community partnership are largely considered to be the tools needed in order to advance poverty reduction mechanisms and to create gainful opportunities particularly in the unorganized sectors in society.

KEY APPROACHES IN TVET IN RESPONSE TO EMERGING TRENDS

There is a need to transform TVET systems for sustainability, global competitiveness and poverty alleviation. To cope up with the global challenges, key approaches in TVET need to be identified to respond to the above global trends effectively.

The Asia-Pacific region, however, has the ability to champion key approaches in TVET. These approaches can be in the form of (i) integrating tech-voc courses into the regular school curriculum, (ii) promoting demand-driven and modular employable skills development, (iii) integrating entrepreneurship skills development, (iv) inclusive TVET and (v) increasing mobility of the workforce within the region and (vi) integrating ICT in TVET (vii) generic skills in TVET, (viii) public-private-community partnership, (ix) ESD for TVET and (x) QMS and accreditation.

Integrating Tech-Voc in the Regular School Curriculum

Recognizing the large number of school drop outs and the growing demand for a more skilled workforce, there is a need to integrate TVET programs into the tech-voc school curriculum, thus addressing issues confronting both the rural and urban youth. This move can provide a sound foundation on which to build upon. Available streams in secondary education should also have a strong vocational education component in the curriculum to ensure that students can be sufficiently equipped with both the knowledge and skills needed to directly join the labor sector or to have the option to pursue higher studies. Flexible pathways can thus become an integral part of this program to bring it into fruition. Secondary education should be comprehensive enough for it to be terminal for those who do not want to or cannot pursue further education. It can also be a means to have a strong academic foundation for higher studies for those who possess the intelligence and aptitude to study for a specific higher education discipline. Keeping this in view, there needs to be four major components in a given secondary education program: academic, technical, entrepreneurship skills and life-long skills. The skills imparted need to be within a country's social context and be area sensitive.

Demand-driven and Modular Employable Skills (MES) Development

The public TVET system in the region is largely supply driven. The supply driven nature of TVET often leads to programs with limited impact on the labor market. To overcome the skills mismatch, there is a need to offer programs based on labor market information. This would indicate that the focus of the program offering will be shifted from supply driven to need-based approach.

The concept of MES is of particular importance for small scale enterprises and the informal sector. This is because it involves providing formal skills training for the poor and disadvantaged sectors of society for whom the length and cost of the usual formal training options are quite impractical and unaffordable due to social and economic constraints.

Many jobs in the current labor market do not require long-term, rigorous training, but rather specific skills that may be imparted through short modular courses.

The concept of MES embodies the idea of imparting various types of “minimum skills” that enable a person to obtain gainful employment. These courses should be demand-driven with the curricula responding to market needs. The same applies to many of the formal courses.

The flexibility of such modular credit-based courses is likely to lead to better opportunities for skills upgrading, multi-skilling, multi-point entry and exit, vertical mobility and the recognition of prior learning through certification of skills acquired informally.

Entrepreneurship Skills Development Schemes

With the expansion of the service sector economy, the development of appropriate entrepreneurship skills becomes an urgent imperative for enhancing participation in the labor market. On completion of the educational program, one has two broad career options, which are, to take up employment or to put up a business enterprise. However, with the emergence of the knowledge economy and trade liberalization, the development of new opportunities has substantially gained ground with a stronger bias towards self-employment.

The importance of developing entrepreneurial skills has also become increasingly apparent as current trends indicate that majority of the workforce are likely to be absorbed into the unorganized and informal sector in the near future. Therefore, there is a need to encourage workers to establish micro or small enterprises, or to become self-employed as these are likely to provide a better option for them to earn a livelihood than to simply be absorbed into the paid labor sector.

Inclusive TVET

TVET in the Asia-Pacific region has so far primarily addressed the skills needed by the organized labor sector, ignoring the large number of workers in the unorganized and informal sectors. With more than 90% of the labor force being absorbed by the informal sector in low productivity jobs, the development of appropriate skills training facilities for this sector has become an urgent imperative to enhance inclusive growth. The employment prospects and the average productivity levels of the unskilled labor sector are low. Even in the rural areas, employment prospects are better for the more qualified workers. The situation can only become tougher for the untrained or uneducated workers in the coming years.

So far, vocational outreach programs for the informal sector have significant weaknesses. They often lack exposure to modern training systems and technologies as well as to the innovative aspect of learning. The range of skills offered tends to be narrow, often limited to a particular traditional occupation. In addition, these skills may easily become outdated in the fast-changing labor markets. Identifying the skills requirements of the informal sector and facilitating skills development in this sector will be necessary not only for enhancing their productivity and developing an enabling environment for these vulnerable sectors of society, but also for overcoming the skills shortage in the growing sectors of the economy.

Increasing Workforce Mobility in the Region

Another approach is to increase workforce mobility in the region through the harmonization of skills standards. Disparities in skills standards and in the recognition of qualifications pose a major challenge in workforce mobility. India, as an example of a country with various TVET providers and institutions with different levels of quality systems and qualifications frameworks, is confronted with serious challenges of achieving harmonized skills standards to ensure greater mobility of the Indian workforce.

Robust skills accreditation and certification schemes are thus required to ensure mobility and complement the efforts of vocational institutions to produce skilled graduates every year. Partnership schemes with the private sector would be an excellent provision to make this happen. In addition, there is a need to support regional efforts and implement a standardized vocational qualifications framework across the Asia-Pacific region to achieve a mutual recognition of skills and qualifications by training institutions, industries, and countries. This has been started by CPSC through the Asia Pacific Accreditation and Certification Commission (APACC) established in 2004.

ICT Integration in TVET

Learning ICT skills is not sufficient, but using ICT to improve the teaching and learning environment is the key for pedagogy-technology integration (Majumdar, 2005). Understanding the changing role of teachers from instructor to facilitators, teacher-led instruction to learner-centered instruction is the key to the successful

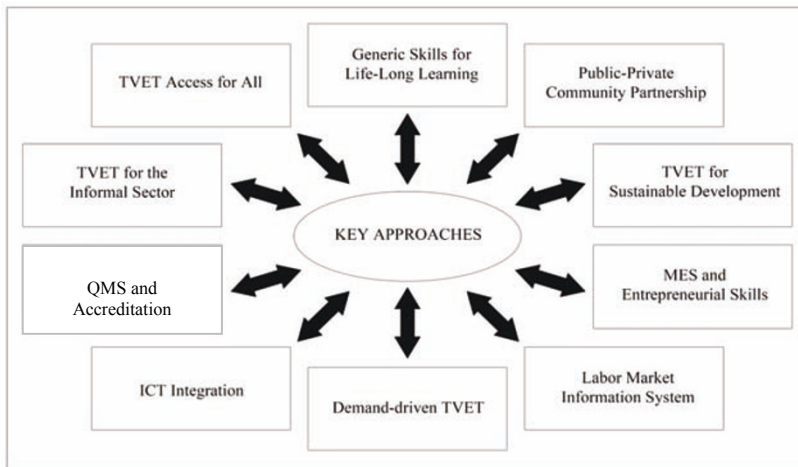


Figure 3. Key approaches in TVET in responding to the emerging trends.

implementation of pedagogy-technology integration for teacher development. Therefore, preparing teachers to face the challenges of an ICT enriched teaching and learning environment is crucial. Teachers need to be equipped with the fundamentals of how to use ICT tools and to have a sufficient understanding of how the integration of these tools in the teaching-learning process can be smoothly facilitated becomes necessary. Efforts must be oriented towards changing the teachers' mind-set and in developing positive attitudes towards ICT applications in teaching and learning.

The said key approaches are illustrated below at the core of various considerations to make TVET more responsive to emerging trends.

Generic Skills and HOT Skills Development in TVET

While there could a variation of generic skills that needed to be included in the TVET curriculum from country to country, in the context of the level of their development, there can be no disagreement about the need to integrate higher order thinking (HOT) skills and generic skills in the TVET curriculum. Emerging work place demands a set of new generic skills to survive in the rapidly changing work environment. In addition to the job specific technical skills, a set of generic skills is needed, including work habits, inter personal communication skills, cognitive skills and adaptability and learning to learn skills.

Moreover, as described earlier, knowledge economy demands a new wave of critical thinking, creative thinking, innovation and problem solving, collectively known as HOT skills. It is considered to augment and enhance learning outcomes in TVET. The integration of essential generic skills in the TVET curriculum will require substantial change, including those that relate to new learning technologies, flexible learning strategies and assessment practices.

Public-Private-Community Partnership

The apparent divorce of the TVET system from the market, which is also marked by the current mismatch between the skills taught and those actually in demand, is attributed to the general disconnect between TVET and industry and the supply-driven nature of government policies regarding VET. Skills formation strategies are long-term processes that help align skills supply, workforce development and business strategy through the collaborative action of industry, government, education and training sectors. As such, situation dictates the need to increase genuine engagements and interaction between industry stakeholders, in particular between industry and education institutions. Developing public-private and community partnerships and maintaining close interactions with industry are necessary to overcome the skill mismatches and make TVET more market oriented.

ESD for TVET

The pursuit of a Low-Carbon world depicts a complex change that needs to be visualized in multiple sector scenarios. Concerted effort in transiting to a low-carbon

and sustainable economy emanates from a critical mass who possess the knowledge, the skills and process to get there. TVET, as the largest producer and consumer of resources, is a springboard for launching a critical mass that possesses the required skills and attributes to lead in the realization of long-term goals of sustainable development for all.

TVET as an integral part of the broad education sector, needs to be immersed in understanding practices oriented to sustainable development. The changing nature of the world of work, especially due to globalization and technological changes, widens the scope of responsibility and impact in which TVET must act upon. The challenge for TVET, then, is to re-orient and re-direct its curricula with respect to the conservation and sustainable use of resources, social equity and appropriate development, and additionally with the competencies to implement sustainable practices in the workplaces. This can operationalize the Seoul Congress goal of producing *“responsible citizens who give due consideration to preserving the integrity of their environment and the welfare of others.”*¹

QMS and Accreditation

Accreditation is a system for recognizing education and training institutions and professional programs affiliated with those institutions for a level of performance, integrity and quality which entitles them to the confidence of the educational community and the public they serve. New approaches to institutional management and learning are rapidly catching up and taking over traditional management approaches. The Quality Management System movement is cutting across fields and is given particular emphasis in the TVET sector.

Accreditation has emerged as one of the important strategies to achieve globally accepted skills standards. In as much as there is a growing regard for strengthening education and training provisions to meet acute skills shortage and mushrooming of skill development providers and platform, quality assurance measures must be in place to allow maximum mobility of the workforce.

CROSS-CUTTING TECHNOLOGY AND SPECIFIC INTERVENTIONS

It is imperative to understand that there is no single solution that can fit all concerns and issues. There are a whole range of diverse and manifold policy initiatives and strategy developments for transforming and repositioning TVET systems for their sustainability and competitiveness. Owing to the uneven development of TVET systems in the region, there cannot be a single solution that can respond to all the perceived needs in the TVET sector. Any TVET policy must take into account the diversity within the region and address it accordingly with regards to the specific challenges faced by the respective member countries.

Attuning the educational system, as a whole, and TVET, in particular, to the new global environment by promoting flexibility, creativity, leadership and life-long learning opportunities and attaining excellence in all levels of institutions are therefore the basic requirements in order to address the shifts in the various sectors.

In an attempt to come close to addressing specific issues, CPSC clusters its member countries into three sub-groups based on income level. Clusters are characterized by the individual country's shared academic, cultural and economic challenges and backgrounds, which make it easier to identify specific thrusts against which the pursuit of specific TVET agenda and thematic focus of programs may be anchored (Majumdar, 2008).

For the High-Income Countries (HIC), TVET interventions are inclined to focus on innovative skills, cross-cultural skills, regional integration and emerging technologies. These are seen to build on the existing strengths of countries belonging to the high-income group and overcome some conventional challenges faced by this cluster, often characterized by high technology-oriented TVET systems, with technologies as the main growth engines.

Middle-Income Countries (MIC), on the other hand, should capitalize on the significant level of their economic and social achievements, which are encouraging them to drive towards more achievements and make provisions to respond to the growing knowledge economy. Consistent with this, program scope should focus on building human capacity in areas related to meeting the demands of the service sector, knowledge economy and informal sector and create more economic opportunities through entrepreneurship skills strengthening.

The Low-Income Countries (LIC), which include small island developing states and land-locked countries, shall build up essential managerial skills and build up capacity in areas with bias to meeting the needs of the informal sector, participate in economic activities through the sound application of entrepreneurship skills, competency and skills standards training and demand-driven TVET. These are intended to be pursued by fostering TVET agenda and policy setting and support for TVET in LICs, and hopefully reflect these TVET focus areas in the national agenda.

In addition to the specific challenges and interventions for each cluster, cross-cutting themes as the main focus of TVET programs are seen to be highly relevant and applicable in all of the given clusters. These include Sustainable Development, Quality Assurance, Public-Private Partnerships, ICT integration, Accreditation and Certification and Life-Long Learning.

THE ROLE OF THE COLOMBO PLAN STAFF COLLEGE (CPSC)

In the changing context and in the light of its implications in TVET for the knowledge society, there is a dynamic link in the way CPSC acts out its role in assisting the member countries address issues and challenges at hand.

First, CPSC is all the more encouraged to act as a CATALYST in introducing changes in the various components of the TVET system. Second, it becomes more PRO-ACTIVE in visualizing and mapping out the changes in industry, technology, economy and society. Third, its role as a FACILITATOR of the change management process in the TVET systems in the region has never been more important than it is now (Majumdar, 2005).

Moreover, there is a greater role for CPSC to take the lead in the following:
(a) assisting member countries in transforming the TVET framework in the emerging

Table 3. Specific thrusts in the respective clusters

<i>L.I.C.</i>	<i>M.I.C.</i>	<i>H.I.C.</i>
– Managerial Skills – Informal Sector – Entrepreneurship – Skills Standards – Demand-driven TVET	– Specific Skills for the Service Sector – Skills for the Knowledge Economy – Informal Sector – Entrepreneurial Skills	– Innovative Learning Skills – Cross-cultural understanding – Regional integration – LMIS
Cross-Cutting Themes Sustainable Development, Quality Assurance, PPP, ICT, Accreditation and Certification, Life-long Learning		

knowledge society; (b) providing guidance and assistance in its restructuring efforts; and (c) modifying the TVET training and development strategies, program offerings and research and development efforts.

CPSC'S SKILLS DEVELOPMENT PROJECTS FOR THE ASIA-PACIFIC REGION

As part of CPSC's response, the College puts forward specific Skills Development Programs/Projects consistent with the priorities of the individual member countries and cluster countries. These programs are:

1. Skills Development for Poverty Alleviation (SDPA);
2. Capacity Building for Developing a Competency-based Curriculum;
3. Capacity Building for Technical Teachers Training in ICT Integration;
4. Accreditation and Certification for Workforce Mobility in the Asia-Pacific Region;
5. Promotion of Internet-based Tele-education Network for the Asia-Pacific Region.
6. Education for Sustainable Development

In promoting the 12-Point Strategy for Action as an outcome of the Skills Development Program for Poverty Alleviation symposium in January 2008 organized by CPSC with development partners that included UNESCO-UNEVOC, ETF, FAO and ADB, six projects have been prepared for funding and eventual implementation to benefit CPSC member countries. The projects seek to organize massive program implementation and interventions to assist national governments in addressing priorities and reflecting them in country-level agenda, namely: skills for poverty alleviation, sustainable development, competency standards, ICT integration in education, accreditation and certification, tele-education network, regional integration, knowledge management, institutional management and technical teachers training.

CONCLUSION

CPSC is uniquely placed as a premier inter-governmental organization in the Asia-Pacific region with a specific focus on TVET development. It can facilitate actions

to link efforts, create opportunities and cultivate the spirit of south-south cooperation in a truly harmonized way.

TVET is seen as an integral component of human resources development efforts. The implications of technological, economic and social trends are intervening factors that refine pedagogical strategies, leading to the molding of TVET as a more effective platform to catalyze pragmatic approaches to prepare the workforce for the new imperatives of the world of work.

Regional integration and harmonization of skills in the region have become key concerns and at the same time the strength of the Asia-Pacific region. They are considered as the over-arching interventions needed in TVET to address major issues and challenges brought about by the emerging economic, social and technological trends.

The Asia-Pacific region, having the ability to champion approaches for sustainable TVET, should focus on implementing key approaches such as integrating TVET curriculum into the school curriculum; promoting demand-driven and Modular Employable Skills Development, entrepreneurship skills development; re-orienting TVET in the informal sector; ICT integration; and increasing the mobility of the workforce in the region.

Re-positioning TVET to achieve the simultaneous tasks of building Centers of Excellence for developing competitive and highly-skilled knowledge workers in CPSC member countries and at the same time facilitating the process of also addressing the needs of the unorganized and informal sector are of greater importance.

CPSC strives to intensify efforts and draw partnerships (bilateral and multilateral) towards building TVET systems for peace, harmony and sustainable growth at this time of the knowledge era.

NOTES

- ¹ Discussion paper, Reorienting TVET for Sustainable Development, pp. 17–18

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Shyamal Majumdar
Director-General
Colombo Plan Staff College for Technician Education
Manila, Philippines

2. TRAINING OF TVET TEACHERS AND TEACHER-TRAINERS IN THE ASIA-PACIFIC REGION

INTRODUCTION

The Colombo Plan Staff College for Technician Education (CPSC), Manila, is a regional organization which aims to improve the quality and relevance of technical and vocational education and training (TVET) in the Asia-Pacific region. CPSC is entirely devoted to the cause of strengthening training, research and development activities in TVET in its nineteen member countries. Established in 1973, it occupies a unique position in the region as it provides leadership and encourages innovations in TVET through:

- a. curriculum development and renewal;
- b. training and upgrading of teachers and teacher-trainers to improve TVET quality;
- c. integrating emerging areas of concern into the TVET curriculum for sustainability and globalization; and
- d. using information technology (IT) for strengthening and upgrading of TVET.

CPSC carries out its programs through partnerships and collaborative programs with its member countries and many other international agencies for maximizing efficiency and cost-effectiveness.

CPSC has contributed significantly in the field of teacher-training and the training-of-trainers in TVET for the Asia-Pacific countries over the last thirty-five years. CPSC's regional research and training activities have enabled the College to identify the issues, problems and strategies which are critical for effective teacher-training in TVET. This paper is devoted to describing the experiences related to emerging directions in the training of TVET teachers and teacher-trainers, identifying some of the elements of effectiveness with a focus on the Asia-Pacific countries.

MILLENNIUM DEVELOPMENT GOALS AND THE PROMOTION OF HUMAN DEVELOPMENT THROUGH TVET

In September 2000, at the largest-ever gathering of heads of state, the UN Millennium Declaration was adopted, made up of eight goals, eighteen targets and forty-eight indicators. It aims to eradicate poverty, promote human development and equality, achieve peace, democracy and environmental sustainability. The eight Millennium Development Goals are:

- Goal 1: Eradicate Extreme Poverty and Hunger;
- Goal 2: Achieve Universal Primary Education;

- Goal 3: Promote Gender Equity and Empower Women;
- Goal 4: Reduce Child Mortality;
- Goal 5: Improve Maternal Health;
- Goal 6: Combat HIV/AIDS, Malaria and Other Diseases;
- Goal 7: Ensure Environmental Sustainability;
- Goal 8: Develop a Global Partnership for Development.

The Millennium Development Goals and the promotion of human development share a common agenda and a road-map to promote human well-being that fosters the dignity, freedom and equality for all peoples. A skills-for-all initiative through the effective and efficient implementation of TVET can go a long way towards achieving the Millennium Development Goals.

Since 1990, every UNDP Human Development Report has argued that the purpose of development is to improve people's lives by expanding their choices, freedom and dignity. The Human Development Index (HDI) has been used as a composite average measure of the three basic dimensions of development namely: (i) health and longevity; (ii) knowledge and skills, and (iii) income generating capacity and standards of living.

Training and skills development initiatives for income-generation are widely acknowledged as tools that can facilitate improvements in health, family planning, gender equality and poverty alleviation in the developing countries in the Asia-Pacific. It recognizes the role of HRD and innovations in education and training for raising labor force productivity as the ultimate engine of socio-economic growth. In order to develop a coherent training strategy for HRD, the following are some of the critical issues:

- population growth and rapid urbanization;
- increasing demand for secondary education, technical education and female education;
- technological changes and labor market shifts;
- changing patterns of international trade, liberalization and globalization of the workforce;
- pollution and environmental degradation;
- new training technologies for TVET education.

Population Growth and Urbanization

The world population today is around six and a half billion. Most of them are in the Asia-Pacific region. The urban population keeps growing as a proportion of the total in the developing Asia – Pacific countries as rural towns and centers grow to become new cities and further migration happens between these cities. Thirteen “Mega Cities” with more than ten million in population each will grow in Asia in the next twenty-five to thirty years. More than one billion people would be living below the poverty line world-wide. The high rate of population growth together with rapid urbanization, the high rate of poverty in many countries, and the general improvement of communication technology and the higher level of aspirations among the people would all require new strategies of education and training for

skills development in the Asia-Pacific and in building capacity for income-generation. Technology education at the secondary and post-secondary levels will play critical roles in this change process.

Increasing Demand for Secondary Education, Technical Education and Female Education

Developing economies in the Asia-Pacific are continuing to prosper, leading to changing life styles, educational aspirations, higher living standards and the use of modern technologies. As poverty remains one of the critical problems in some of the countries in the region, particularly in South Asia, human resources development and skills-development programs towards improving income-generating capacities will be a key factor in the quest for improving the quality of life in the Asia-Pacific countries.

Technical-vocational education and training are areas of major interest in many Asian countries, especially in those experiencing singular economic growth like those in South-East Asia, India and China. Most countries in the region regard TVET as being pivotal to their development as it is intimately linked to job creation, employment provision, income-generation and life skills-training.

The growth in TVET, as a percentage of secondary education, is a salient feature in the countries of the region. The increase in the number of students is most apparent in countries whose economies are in transition or undergoing rapid growth, such as those in South-East Asia, India and China.

Similarly, the percentage of female students enrolled in TVET has witnessed a significant increase in some Asian countries. This trend is likely to continue in other countries of the region, if it is not visible yet at the moment.

Technological Changes and Labor Market Shifts

Many Asian countries are fast adopting the new and emerging technologies in industry and agriculture. The new technologies, in general, need a higher knowledge-based system and would require knowledge-intensive applications. The role of manual skills is going down. This has a profound effect on the employment, education and training of technical manpower as well as in the training of TVET teachers. One analyses undertaken by the World Bank (Knight and Wasty, 1991) recognizes six main elements of technological transformation:

- The increased rate of technological innovation (especially in micro-electronics, bio-technology and new materials);
- the cross-cutting nature of technological change (the application effect);
- shortened technology life cycles and flexibility in meeting people's needs;
- increased automation with a smaller role left for unskilled labor;
- increased energy and material savings;
- substitution of traditional materials with newer ones.

Technological development is transforming the opportunities for, and also methodologies of HRD. This raises the challenge for institutional and non-institutional

capacities to develop and adopt strategies for the continuing training and upgrading of teachers and teacher-trainers in TVET. A new 'technical leadership' will be required of the TVET teachers to suit the needs of twenty-first century technology.

Changing Patterns of International Trade-liberalization Leading to Globalization of the Workforce

International trade and investment have expanded rapidly during the past decade. Trade liberalization and structural reforms have been initiated by most of the countries in the Asia-Pacific region. Most notably, the two most populous countries in the region, India and China, have moved towards a market economy. The GATT agreements, the creation of APEC, WTO and other organizations will further accelerate the process of globalization of trade and commerce, the migration of workers leading to the formation of a global workforce. The global economic interdependence will certainly intensify further. Asia-Pacific countries with the highest rate of economic growth in the world are particularly well-placed to benefit from this process of liberalization. To remain competitive in the global workforce, high productivity and appropriate skills are needed by the Asia-Pacific workers. Continuing TVET along with teacher education will become more and more critical with the onset of global trade liberalization.

Pollution and Environmental Degradation

Pollution and environmental degradation have phenomenally increased in many Asia-Pacific countries along with industrial development and population growth. Agenda 21 of the UNCED made it clear that "education is critical for promoting sustainable development." Proposals in Agenda 21 focus on re-orienting education and training at all levels, particularly of the teachers towards sustainable development. This is an urgent global need.

New Training Technologies for TVET and Teacher-training

New training technologies (NTT) that can go a long way towards facilitating the process of curriculum development and curriculum delivery for the twenty-first century are needed. Satellite communications, electronic media, computer technology, telecommunications and internet facilities are introducing a fundamental shift in the nature of education and training. In the new context, the teachers would interact very differently with their students, becoming more like guides and mentors and less like instructors or lecturers. These new technologies and their appropriate applications are being progressively introduced in many countries in the Asia-Pacific. Countries like Singapore, Malaysia, Thailand, Philippines, India, Pakistan, etc. are already in the path of applying the NTT in educational institutions. Some of the other developing countries like Bhutan, Nepal, Myanmar, etc. have started

building the necessary human and technological resources to deploy NTT in education. However, TVET has not yet made full use of these new technologies of training in upgrading its teachers.

EMERGING TRENDS IN TVET TEACHER-TRAINING FOR THE 21ST CENTURY

The skills and competencies necessary to meet these new challenges will not be achieved while still making use of the traditional forms of TVET teacher-training curriculum and delivery or its institutional systems. A multi-dimensional approach is necessary to meet these new objectives. These will include the 'Blue Ocean Strategy' and private-public partnerships in:

- pre-service and continuing teacher education through formal and open learning systems;
- more broad-based and flexible teacher-training curriculum replacing skills-specific training programs;
- integration of training and education in cooperation with industries and the private sector;
- life-long and flexible learning to enable the teachers to meet the demands of higher and varied demands of their teaching job;
- knowledge and skills in using new technologies of training and education, including the use of computers;
- development of multi-lingual and broad communication skills;
- increased emphasis on the development of work ethics, teamwork, human values and other non-technical competencies like leadership, time management, environmental awareness, etc;
- development of self-employment and entrepreneurial skills;
- institutionalized training of TVET teachers.

Thirty-five years ago, most of the CPSC member countries did not have specific institutional facilities for the training of TVET teachers and teacher-trainers. From its early years, CPSC has consistently advocated the need for establishing infrastructure and HRD facilities for formal and non-formal, pre-service and in-service training of TVET teachers and teacher-trainers. Over the last thirty-five years, many such institutions have been established in the region and been doing excellent work.

In Bangladesh, the Technical Teacher Training Institute (TTTI) is one of the first technical teacher-training institutes in the sub-continent. India, in the 70's, established four technical teachers training institutes (TTTI's) now called the NITTTR, in each of the four regions of the country. In 1978, the Government of Indonesia decided to establish eleven national teacher upgrading centers (PPPG). Six of them were designed to fill the needs of the TVET sector. The rest of the centers were for upgrading teacher skills in science/mathematics and other pedagogical skills. Similar national level technical teacher-training institutions have also been set up in Pakistan, Sri Lanka, Nepal and Malaysia. Many countries have developed facilities for TVET staff development in existing universities and

technical institutions. However, each of these as well as the other centers in the region has to be more innovative and pro-active to meet TVET sectoral needs.

Distance and Open Learning and E-learning for Continuing Education of TVET Teachers

As a result of a careful review of the member countries' needs and priorities, incorporating the findings and recommendations of the Senior Administrators of the CPSC member countries who meet every two years to provide general directions for CPSC programs, distance education and e-learning have been adopted as a necessary supplementary mode to meet some of the critical needs of teacher-training initiatives in the member countries. The objectives of the CPSC distance learning and e-learning programs are as follows:

- a. to update and upgrade a large number of institutions serving technician teachers, teacher educators and key personnel responsible for the management and quality improvement of TVET institutions and skills-development in the member countries in the Asia-Pacific region;
- b. to have convenient and continuing access to advanced training techniques which are of immediate relevance, cost-effective and reflective of the prime concerns of the developing member countries in the region;
- c. to contribute towards developing a cost-effective regional model for establishing distance education and e-learning resource centers for TVET and for skills-development;
- d. to promote innovations, research and development initiatives for the improvement of quality and relevance in TVET in the Asia-Pacific region;
- e. to support technical cooperation among developing member countries for designing appropriate methods and materials for distance education;
- f. to establish a network of international and national organizations for distance education and e-learning for TVET.

Other organizations like the Commonwealth of Learning (COL) UNEVOC, SEAMEO-VOCTECH etc. are also promoting the concept of e-learning and of programs to upgrade the skills for TVET teachers in the region.

Modularized Open Learning for Continuing Education

Considering individual constraints and job requirements of working teachers, most of the continuing education programs may be given as on-the-job programs. To accommodate variable requirements, programs should be flexible in nature. This flexibility can be provided in the selection of the contents, time and duration of study, place of study, strategy (method and media) for study, etc. The learner should also have a certain level of flexibility in the choice of course content according to his job requirements. This flexibility can help motivate the teacher to take part in the program.

Since the teachers and teacher-trainers are often not located at the same place, the teaching/learning (T/L) package and the modules prepared by specialist experts should be such that even if the learners are located at a distance away from the experts, they can still understand the contents of the package through individualized self-study. CPSC has prepared a number of teacher-training modules consisting of self-explanatory concepts/principles and alternative examples of application of these concepts/principles.

The Colombo Plan Staff College has conducted a number of flexible modular training programs for technical teachers of TVET institutions using distance learning print modules prepared by CPSC's experts. It is observed that these programs have been very well-received by technical teachers. These programs for the training of technical teachers in a TVET system have been considerably helpful in upgrading a number of teaching competencies.

NEED FOR INTERNATIONAL AND SOUTH-SOUTH COOPERATION

Considering the rapid changes in technology and the openly competitive global market demands, it is necessary that the TVET teachers also change and become re-equipped with broad-based competencies/capabilities. For this reason, TVET training institutions will have to play a bigger role by preparing their technical teachers to enroll in continuing education programs through the flexible modular distance learning and e-learning modes. To achieve this goal, flexible modular distance learning (FMDL) may be implemented in all the developing CPSC member-countries in the Asia-Pacific region. However, unless a large number of international agencies work together, it will be a difficult task for only a single agency to cover so many countries and so many institutions. The cooperation of international agencies like COL, UN-ESCAP, ILO, UNESCO, UNESCO-UNEVOC, CPSC, along with national agencies and NGO's, will be essential in order to develop and create competent and professional teachers and teacher-trainers in the CPSC member countries of the Asia-Pacific region in an efficient and cost-effective manner. CPSC, being committed to and wholly concerned with the improvement of TVET in the Asia-Pacific region and with its vast network of TVET institutions in the region, is in a unique position to coordinate these efforts in the Asia-Pacific with other national and international agencies. Towards its success, a well-planned partnership program is necessary.

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Chiranjib Kumar Basu

Director Emeritus

Colombo Plan Staff College for Technician Education

3. EMERGING TRENDS AND CHALLENGES OF TVET IN THE ASIA-PACIFIC REGION

INTRODUCTION

Countries in the Asia-Pacific region have restructured, expanded and reformed their educational and training systems. A major objective has been to bring these economies more in line with new global forces that demand greater international competitiveness, flexibility and innovativeness from enterprises, as well as greater skills and flexibility from the labor force (ADB, 2003).

The nature of current and even future reform initiatives in education and training can be clustered into three main categories, namely: i) competitiveness-driven, ii) equity-driven and iii) finance-driven. The first are aimed at improving the economic productivity of the labor force by raising the quality of educational attainment and quality of education at each level of schooling. Equity-driven reforms are aimed at reducing inequalities of access to schooling by socio-economic background, gender or ethnic group. On the other hand, finance-driven reforms are intended to foster private domestic capital formation and in creating conditions of financial stability to attract foreign capital and donor assistance. To think about planning technical and vocational education and training (TVET) initiatives in the new global or regional context requires a continuous assessment driven by the objectives of competitiveness, equity and cost-effectiveness.

The TVET systems in the Asia-Pacific region are meeting serious challenges brought about by the ongoing global financial crisis. In addition, they have the perennial problem of a lack of market relevance resulting in the mismatch between supply and demand besides the deeply-rooted social bias and dwindling financial support from the government, which is the main investor in TVET provision.

The single most important economic requirement for any TVET system is for it to have close linkage with the labor market. The sustainability of TVET, therefore, depends much on its ability to adjust to market demands, both quantitatively and qualitatively. In contrast, many TVET systems are not flexible or responsive enough; they tend to be rigid and isolated (ADB, 2004). [Figure 1](#) can serve as an analytical framework for TVET. Briefly explained, it would be imperative that the supply (or training) side should match up with the demand (economic and social) side of the process model. In order to do this, TVET must be efficient, effective and relevant. In short, TVET should be designed to be internally and externally efficient.

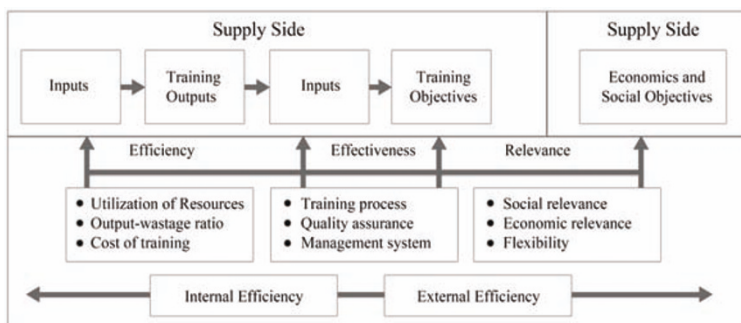


Figure 1. An analytical framework for TVET planning.

BEST PRACTICES OF TVET IN THE REGION

Benchmarking of TVET consists of identifying, understanding and adapting outstanding practices from within the same organization or from others to help improve performance (Cook, 1995). It deals with the best practices or world-class activities in TVET as benchmarks for continuous improvement. Individually, the TVET systems of regional countries have their own niches and sets of “best practices” which make them different from the others. These best practices have been known and replicated within or even outside of the region. Some of the time-tested best practices are randomly documented in this paper.

Competency-based Training (CBT) System

This mode of training has been successful in a number of countries like Singapore, Australia and New Zealand, to mention a few. The replication of the CBT in the Asia-Pacific region is widespread with some technical assistance. However, there are only a few success stories on the outcomes of some projects on CBT due to a lot of constraints.

Financing of TVET

Legislation on TVET promotion through the establishment of a “TVET Fund” or tax levy has been successful in Korea and Singapore. The Skills Development Fund (SDF) of Singapore has practically served as a regional model for the sustainable financing of TVET.

Industry and Private Sector Participation in TVET

The TACs for TVET in New Zealand and Australia can be a paradigm in TVET and industry sector partnership. Public-private partnership in TVET has been legislated with the Chamber of Commerce and Industry as the usual representative of the private sector. This institutional framework of TVET is adapted in most regional countries with varying degree of success.

Quality Assurance of TVET

Korea, New Zealand, Singapore, Philippines, Pakistan, Sri Lanka and Indonesia have their own pioneering and rich experiences to share in the areas of training standards development, skills testing and certification, and accreditation. Some forms of quality assurance include an external examination of polytechnic graduates by a Board of Technical Education; institutional registration and program accreditation by a national coordinating body for TVET; skills testing and certification by a certifying body or accredited professional bodies; a national vocational qualification (NVQ) system which recognizes prior learning (RPL), or an ISO certification. Quality awards in TVET are also gaining region-wide acceptance.

Decentralized and/or Autonomous Structure of TVET

A number of countries in the region like Indonesia, Philippines, Pakistan and Sri Lanka have established separate ministries and/or national bodies for the co-ordination and administration of TVET. TVET is being devolved through legislation. The devolution envisions a more active participation of the private sector in TVET provision and a greater accountability given to the local government.

Technical Education and Staff Development Facilities

Successful Technical Teacher Training Institutes or Upgrading Centers (TTTIs or TTUCs) were established in India, Indonesia and Bangladesh which guarantee the supply of highly trained teachers for polytechnics and other TVET institutions. Staff development centers (SDCs) have been well-developed in these regional countries for teacher and staff training as well as for curriculum and instructional materials development.

Networking of TVET Systems in the Region

The establishment of the Colombo Plan Staff College (CPSC) for Technician Education and subsequently the SEAMEO Regional Centre for Vocational and Technical Education (SEAMEO VOCTECH) demonstrated world-class projects on TVET through regional cooperation. These institutions serve as clearinghouses for TVET, venues for addressing common issues and needs in TVET and as regional resource development centers of excellence for the regional countries.

EMERGING TRENDS IN TVET

The following paragraph does not intend to be exhaustive, but only illustrative of the major reforms and innovations in TVET, which are either initiated by the government or carried out in collaboration with foreign donors, multi-lateral funding agencies and the private sector.

Emerging Structure of TVET Systems in the Region

The development of a flexible, open, and cost-effective system of TVET is fast emerging as a practical response to the rapidly changing economic and social order. [Figure 2](#) attempts to encapsulate the emerging institutional structure of TVET systems in the Asia-Pacific region.

Many TVET systems in Asia are undergoing major structural changes such as decentralization of authority and operational autonomy. This includes the setting up of new or autonomous bodies/authorities for the coordination, planning and administration of TVET either at the national or provincial level.

Most of the TVET systems in the region are a mixture or combination of the illustrated structure. In particular, the non-formal training is provided by various ministries and private providers. Many countries have attempted to transplant the German dual training system, but most have not achieved much success in their projects.

However, what needs to be kept in view is that the various TVET systems in member countries have evolved over decades or even centuries with various external interventions and influences such as American, British, Dutch, German, Russian, French or Australian, including international organizations like UNESCO and ILO. These are reflected on the present institutional and social structures. For this reason, the needs are expected to be unique, varied and complex.

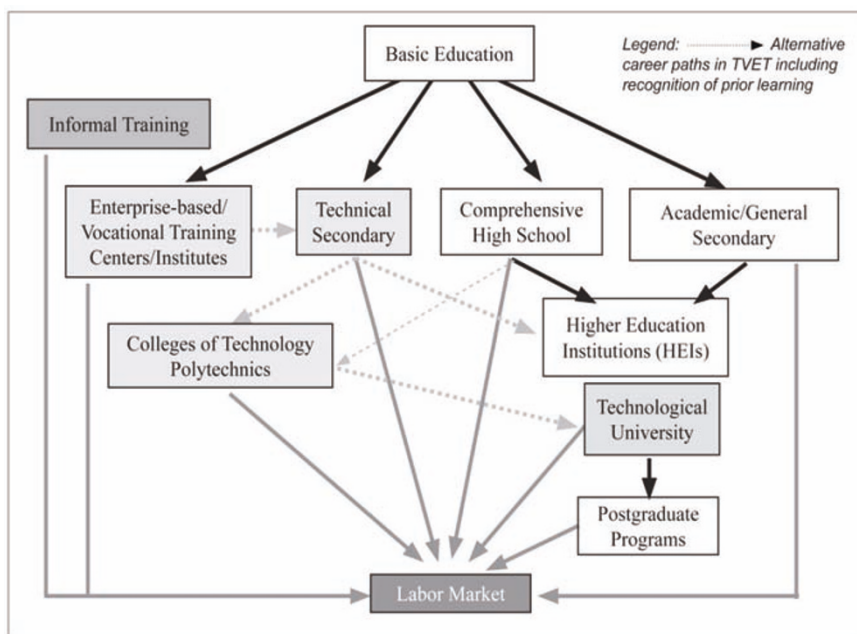


Figure 2. Emerging institutional structure of TVET.

Developing a National Qualification Framework

There are numerous innovations going on in many regional countries, mostly as part of foreign-assisted projects, on the establishment of a national qualification framework modeled after those in UK, Australia, or New Zealand. By their nature, national vocational qualification (NVQ) frameworks are essentially employment-oriented rather than academic-oriented systems, but with an equivalency in academic qualifications for national recognition and accreditation by sectors.

The NVQ Framework is like climbing a frame or stairs with upward and sideways progression. It is a competency-based qualification system which reflects the needs of the workplace and recognizes prior learning or experiences. [Table 1a](#) and [1b](#) show the NVQ Frameworks of the City and Guilds of UK and Australia, respectively.

Table 1a. City and guilds international vocational qualifications, UK

<i>Vocational craft</i>	<i>Technician</i>	<i>Level</i>	<i>Qualifications</i>
Vocational Certificate		1	NVQ1
Vocational Diploma	Technician Certificate	2	NVQ2
Adv Voc Diploma	Technician Diploma	3	NVQ3
C& G Licentiate	Full Technological Diploma	4	NVQ4
	Graduateship	5	NVQ5
	Membership	6	Master's Degree
	Fellowship	7	Highest Level of technological experience

Table 1b. Australian qualification framework by sector of accreditation

<i>School sector accreditation</i>	<i>Vocational education and training sector accreditation</i>	<i>Higher education sector accreditation</i>
		Doctoral degree
		Masters degree
	Vocational graduate diploma	Graduate diploma
	Vocational graduate certificate	Graduate certificate
		Bachelor degree
	Advanced diploma	Associate degree, diploma
	Diploma	
Senior secondary	Certificate IV	
Certificate of education	Certificate III	
	Certificate II	
	Certificate I	

Linking TVET with Higher Education

One of the strategic objectives of policy reform in TVET is to develop alternative career paths and to link with higher education. Such a policy direction requires a neat bundling, articulation, and interfacing of programs. Figure 3 illustrates the current efforts towards the vertical and horizontal integration of programs in TVET which may be a major factor in articulating and linking with higher education as well as an initial step towards developing a national qualification framework.

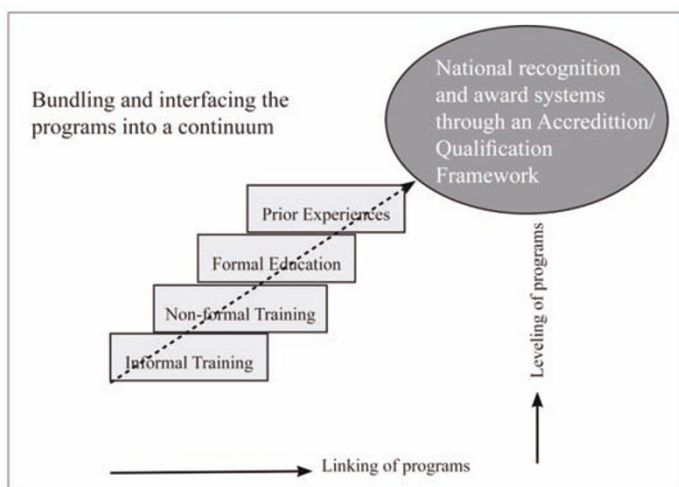


Figure 3. Vertical and horizontal integration of TVET programs.

Curricular Innovations

The restructuring of various TVET systems as a result of major policy reforms has led to practical innovations in curriculum development and delivery. The curriculum design considered linking and interfacing TVET programs with professional degrees offered by higher education institutions (HEIs) and accredited institutions of higher learning. These continuing education programs are labeled differently in regional countries such as “ladderized curriculum/program”, “modularized program”, “open learning systems”, “distance education”, or “open university system.”

Figure 4 shows a sample of a curriculum design of the “ladderized program” at the Technological University of the Philippines. The three-year diploma (technician) program serves as the main platform of the various professional degree programs with a quality control/accreditation mechanism for selective admission and/or credit transfer. Such curricular strategy greatly benefits the working class/students while enhancing the skill-competitiveness and employability of the graduates in a wide spectrum of professional fields, i.e., engineering, techno-managerial and human resource development careers.

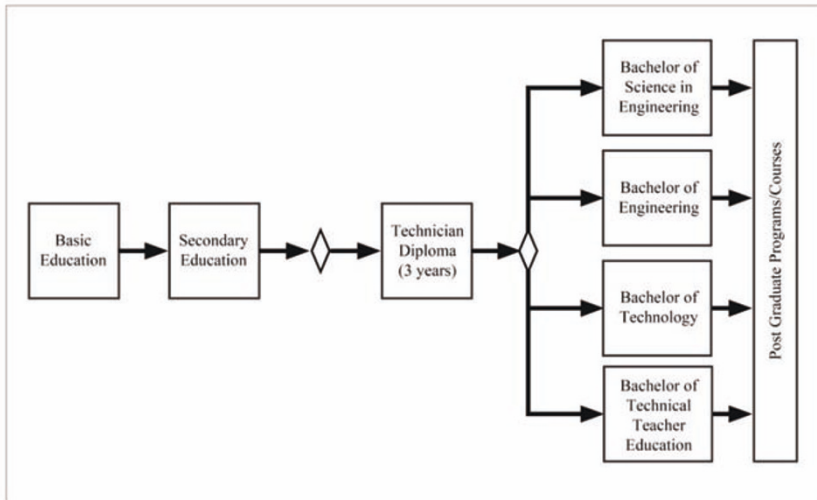


Figure 4. Linking TVET programs with higher education.

Standards Setting and Development

Setting of skills and training standards has been a major component of many foreign-assisted TVET projects in the region. Most of the initiatives are directed towards international benchmarking and/or adoption of best practices and innovations from both regional and non-regional countries like USA, UK, Germany, France, Sweden, Australia, Japan, Korea and New Zealand.

Social Marketing of TVET

One of the prominent policy reform agenda in TVET is to improve the poor social/public image, which is a major constraint in promoting social equity and poverty reduction. Social marketing and career guidance in TVET have been put in place in order to reverse the social bias of parents and the youth.

Planning, Monitoring and Evaluation of TVET

The aspects of planning, monitoring and evaluation are major weaknesses of the TVET systems of member countries which are being addressed through development projects and technical assistance. The need to develop a planning culture amongst the leaders and managers of TVET including capabilities in monitoring and evaluating TVET programs and projects is critical. It is sad to note that labor market information system (LMIS) or tracer studies of graduates are not readily available in most of the regional member countries for planning and policy-decision.

Facilities Modernization and Maintenance

Any reform agenda in TVET will always consider facility development as a crucial component due to poorly designed or insufficient space for various accommodations, such as those for workshops, laboratories, classrooms, hostels, offices and ancillaries. Also, the equipment, tools and books are either outdated or ill-maintained. It is recognized that the training environment should be a replica of the real workplace.

Increasing Access and Gender Development

Increasing access and women in the economy are major considerations in many TVET reform agenda. The focus is not only on meeting the economic demand for trained labor, but also on increasing training access for women, out-of-school youth and other disadvantaged groups.

RECOMMENDATIONS

Improving the Relevance of TVET

TVET programs must be demand-driven in order to be effective and relevant. There are new technologies that will shape the future and may have to be anticipated in the strategy formulation of TVET.

The new and emerging technologies include digital electronics, optical data storage, advanced video displays, advanced computers, lasers, fiber optics, micro-waves, advanced satellites, new polymers, high-tech ceramics, superconductors, micromechanics, among others. The three candidates for the next big technological revolution are biotechnology, energy technology and nanotechnology – and also consider the prospects for robots and artificial intelligence (Standage, 2005).

Institutional Capacity Building for TVET

There will be a need to address the various requirements of the reform initiatives and to support innovations in TVET as well as to anticipate the new technologies that will shape the future. These have to be translated and spelled out in terms of institution-building requirements for equity, competitiveness and cost-effectiveness of TVET systems in the region. Major strategies will include, among others, the crafting of policy alternatives, responsive governance, reinventing organizations, modernization of facilities, strengthening private-public sector partnerships in TVET and strengthening regional cooperation.

Re-energizing CPSC in the New Age

Finally, it cannot be overstated that the role of CPSC as a regional co-operation project is crucial in leading change and charting new directions in TVET. Thus, the leading and facilitative roles of CPSC will be vital for the sustainable development of the TVET systems in Asia and the Pacific region.

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Bernardo Adiviso
Director (1997–2002)
Colombo Plan Staff College for Technician Education

RAJAT M. NAG

4. SKILLS TRAINING AND INCLUSIVE DEVELOPMENT*

INTRODUCTION

As a development partner in the Asia-Pacific region, the Asian Development Bank takes great interest in how education can support economic and social development. Our involvement in the education sector is one of the core operational areas of ADB.

ADB's Long-Term Strategic Framework for 2009–2020 takes into account the dynamic changes in the region and the changing nature of poverty. It stresses the importance of inclusive development and growth to broaden and sustain progress on poverty reduction. With inequalities rising in the region, it is important for a developing Asia to embrace inclusiveness as a key development goal. Accordingly, I would like to mention about inclusion in the Asia-Pacific and the role education and skills development can play in widening the scope of Asia's growing prosperity to encompass more of the region's poor.

FROM INEQUALITY TO INCLUSIVE DEVELOPMENT

The past few decades have been a time of unprecedented economic growth and poverty reduction in the Asia-Pacific region, and of dramatic improvements in the standards of living. For example, per capita income in developing Asia, in real terms, grew from less than \$170 in 1967 to over \$1,000 in 2005. And the proportion of people living in absolute poverty has declined from more than one-third (34.6%) in 1990 to less than one-fifth (18.0%) in 2005.

Despite this progress, however, an enormous poverty challenge still lies ahead. More than 1.7 billion Asian people still live below the \$2-a-day poverty line, including nearly 600 million still struggling at \$1 a day. And while we celebrate the shining face of Asia—its economic success and growing middle-classes—this other face, the face of Asia's poor, is becoming starker as income and opportunity gaps widen. Our challenge is how to get these two faces of Asia to converge—our concern is that they are diverging.

A recent progress report on the Millennium Development Goals, or MDGs, shows that while Asia is on track to meet the goal of reducing income poverty by half by 2015, progress against many of the non-income MDGs has been slow. For instance, the MDGs call for the rate of child malnutrition to be reduced by one-half. In the Asia-Pacific, more than 90 million children still suffer from hunger—that is about two-thirds of the world's total.

Similarly, 1.5 billion rural residents have no access to basic sanitation and 566 million are without clean water. In urban Asia, water problems have become worse as cities swell, leaving 93 million city-dwellers without clean water, compared to 54 million in 1990. Enrollments in primary education are generally high, with a regional average of close to 90%. Even in countries with high enrolments, providing access to education to the poor and other disadvantaged groups continues to be a serious challenge.

As we know, the tremendous diversity of the Asia-Pacific region is one of its greatest strengths. But the dark side of that diversity is disparity - and the growing divide we see in Asia today between the rich and the poor is troubling. It threatens the very sustainability of growth, as well as national and regional stability. A sea of poverty co-exists with islands of extraordinary affluence in many developing Asian countries. Poor women and children and the youth have been disproportionately affected. The youth are a major segment of the population, and the lack of relevant skills and increase in unemployment among them is a serious problem.

The only way to close these development gaps is to make the development process more inclusive in three inter-related dimensions. First is the economic dimension - ensuring that poor and low-income households have the ability and opportunity to participate in and benefit from the growth process. This requires policy makers to create a more conducive environment for private sector growth and job creation, with macroeconomic stability; sound institutional, legal and regulatory frameworks; good governance and rule of law; and well-functioning financial and capital markets. Second is the social dimension - investments in education, health, human resource development and social safety nets are needed to eliminate social inequalities, promote gender equality and women's empowerment, and bring more people, especially the poor, into the process of growth. Third is the political dimension - improving the ability and opportunity for poor and low-income people, including women and ethnic minorities, to effectively participate in political processes.

THE IMPORTANCE OF EDUCATION AND SKILLS DEVELOPMENT FOR INCLUSIVE ECONOMIC AND SOCIAL DEVELOPMENT

While education is generally important to all three dimensions, it is particularly relevant to the social dimension. ADB's comprehensive studies on poverty in the region indicate lack of education as one of the key factors contributing to inequality. Within the education sector, demand for improved skills development, in particular, is increasing.

Despite rapid economic growth in many areas and a large population, the region is beset by a serious and increasing shortage of technical and vocational skills, especially in the fast growing economies. In a survey published in the Economist last year, the CEOs of 600 multinational companies saw a shortage of qualified staff as their biggest concern in China and South-East Asia. It was their second biggest worry in Japan and the fourth-biggest in India. Across almost every industry and sector, the result of the survey was the same.

It seems that the region's rapid economic growth has fished out the pool of available talent, and the problem can only be solved by expanding education and skills development systems. But the situation is more complex than that. The rapid growth in many parts of Asia has transformed the type of skills needed, and this transformation will continue. For example, information technology is a vibrant sector suffering from a shortage of skilled graduates to fill new jobs. A similar situation is increasingly evident in many other skills areas and in certain generic skills, such as managerial skills. This has produced high staff turnover and rising wage costs, undermining sustainable economic growth and development as a whole.

Some have stressed that Asia is experiencing a shift from a technology deficit to a talent deficit. Companies are trading off one productivity loss for another. There are some estimates that wages in Asia will rise within five years to Western levels in certain skills areas. Wages for lower skills level staff are rising quickly, well above inflation in many countries in the region. Pay rates for senior staff in certain Asian countries already exceed those for their counterparts in some parts of Europe.

At the same time, and paradoxically, many of the region's less industrialized countries cannot generate enough traditional wage jobs to accommodate those entering the labor market. The majority of new workers in Central and South Asia and in the Pacific will have no alternative but to work in the informal sector. This is also true for many entering the labor force in Indonesia, in certain areas in China, and in Vietnam, for example.

Skills development can reduce poverty by expanding and increasing access to training that promotes entrepreneurship and self-employment among the poor. Of course, training alone cannot guarantee employment or alleviate poverty, but improved knowledge and skills can help the poor find decent jobs or add value to existing subsistence employment. Skills training are essential for promoting sustainable livelihoods, particularly where environments are fragile and informal economic activities need suitable techniques and practices for resource management.

The skills shortage in the region is also an attitude issue. Too often, the youth pursue white-collar jobs as their only career option, and have negative attitudes toward pursuing skills training that involves manual labor. Understandably, these negative attitudes persist particularly in countries where skills training systems are not responsive to labor market needs, leaving graduates unemployed, or where the wage levels in the skills sectors are much lower than those in the white-collar jobs.

Migrant labor is an important economic force in the region. For example, Bangladesh, Pakistan, and the Philippines actively market workers for temporary assignments abroad. While short-term emigration can relieve unemployment and generate revenues from remittances, it also creates serious challenges for skills development. In the Pacific countries, the exodus of skilled workers to richer countries has created acute skills shortages. In China, the movement of large numbers of unskilled people from rural to urban areas has created a need to provide new and more rapid forms of skills training.

But skills formation is complex. It crosses institutional boundaries, takes place in varied settings (including on-the-job and non-formal ways), engages a highly

diverse clientele, involves multiple delivery methods, and addresses constantly changing occupational requirements. The challenge is to unravel these complexities to meet the growing economic demand for skills.

In 2004, ADB commissioned a study on technical education and vocational skills training strategies in Asia. More recently, in 2007, we implemented a broader strategic study in education, also focusing on skills development. These studies highlight the importance of adjusting skills training strategies to take into account the changes in demands arising from the region's rapid growth and evolving labor market. The relevance of skills training needs to be tackled along with the expansion of training systems. The widening gap between labor market needs and available skills is one particular result of the quality and relevance of skills development.

In recent years, technical and vocational education and skills training has comprised about 10% of ADB's education loan portfolio. We anticipate increasing that proportion in the future. We are eager to work in partnership with relevant skills training institutions in the region, such as the CPSC. We will also support innovative reforms and dynamic public and private partnerships in our developing member countries. Thinking out-of-the box is extremely important, given how rapidly the demand for new and changing skills is evolving.

CONCLUSION

Asia is on the threshold of achieving tremendous prosperity. But there are also many challenges ahead, not the least of which is to ensure that this prosperity is widely shared and can be sustained through a more inclusive development approach. Education and skills development play a crucial role in supporting inclusive development. Policy makers must undertake comprehensive reforms to establish an environment in which innovative training strategies, including dynamic public and private partnerships, can flourish. By doing so, they will improve the relevance of skills of the labor force in the region, promote economic growth and social development, and accomplish all this in an inclusive manner.

There is much to do to close Asia's skills gaps and fulfil its enormous potential, but if all of us take these issues to heart, the future can truly be one of continued growth and opportunity for the people of the Asia-Pacific.

**An Inaugural Speech delivered at the International Symposium on Skills Development for Poverty Alleviation, Manila, Philippines, 25 January 2008.*

*Rajat M. Nag
Managing Director General
Asian Development Bank*

SECTION II:
TVET SYSTEMS, EMERGING CHALLENGES AND
TRENDS IN TVET: COUNTRY PERSPECTIVES

5. AFGHANISTAN

INTRODUCTION

Afghanistan is a landlocked country with an area of 647,500 sq km and a population of 31.88 million people (July 2007 est.) It has been devastated by three decades of conflict which destroyed physical and institutional structures and tore up the social fabric of the nation. The education and training infrastructure in the country has also been greatly decimated in terms of both physical and human capital. The situation was at its lowest point under the Taliban regime.

Since the ousting of the Taliban in 2002, the first four years of reconstruction have been marked by significant developments in the political, economic and social spheres.

The latest elections witnessed the largest turnouts in the history of the country (particularly by the female sector) and brought into power a widely representative Parliament. The country's economic growth has been vigorous between 2002 and 2007 with the real value of GDP (excluding those of the illicit opium production) increasing by about 29% in 2002, 16% in 2003, 8% in 2004 and 14% in 2005, albeit, from a low base in 2002 (World Bank, 2007). Most of this growth was fueled by a significant influx of foreign capital for reconstruction.

On the social front, access to health care (including immunization services and pre- and post-natal care) and school services have improved significantly during this period. School enrollments have increased from about one million to over five million since 2002, with the enrolment of girls increasing to about 1.6 million from a negligible base figure.

Despite these impressive strides, Afghanistan remains at a critical stage in its transition towards development and faces numerous challenges: the institutionalization of the political system; concerns about security and the rule of law; weak institutional capacity; a lack of defined market structures; poorly skilled labor force; and persistent poverty (annual per capita GDP 377 USD).

CURRENT EDUCATIONAL/TVET SYSTEM

The current situation of the TVET sector is, to some extent, marred by some chaos, with a myriad of unregulated, unqualified and inexperienced organizations providing what is often considered an arbitrary range of TVET activities which ignore the needs of the labor market, waste resources and often lead to the disillusionment of the trainees.

The key institutional channels by which TVET is provided include:

1. the Ministry of Labor, Social Affairs, Martyrs and Disabled (MoLSAMD), which manages twenty Vocational Training Centers and the National Skills Development Program (NSDP) which runs VT programs in many other training centers;
2. the Department of Technical Vocational Education Training under the Ministry of Education (MOE) which oversees forty-two Vocational Schools;
3. NGO and private sector provision via dedicated and temporary Vocational Training Centers (VTCs), private training schools and courses in basic skills.
4. An indefinite number of informal apprenticeships offered through small and micro enterprises.

Each given agency and sector, has its respective general scope of functions and provisions. In the case of MoLSAMD, there are twenty new Vocational Training Centers (VTCs), in addition to small provincial VTCs and contracted NGOs. Shorter-term basic skills courses are also offered. Basic literacy and numeracy skills form the entry requirements for these programs.

In the case of the Ministry of Education (MoE), the Department of Technical and Vocational Education looks after TVET. At present, there are forty-two Vocational Schools (mostly mono-tech institutions). Technical and higher technical courses are offered in these institutions. Class 9 and 12 entry requirements are imposed on prospective students.

NGOs and the Private Sector, on the other hand, are by far the largest provider of skills training in Afghanistan. This includes a small number (ten - twenty) of intentional/dedicated VTCs, a relatively small number (approx. 600) of private training schools in the fields of engineering, computing and others, a large number (approximately in the hundreds) of NGOs involved in basic skills development and a large number of private apprenticeships offered by small and medium businesses largely in the informal sector.

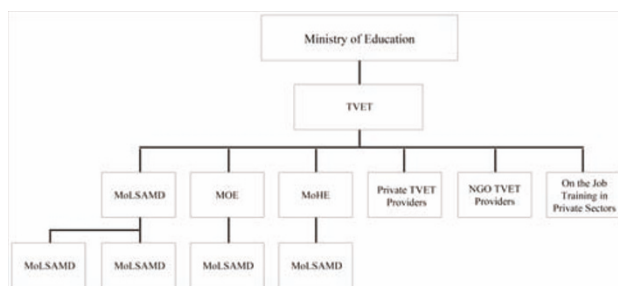


Figure 1. Institutional channels providing TVET in Afghanistan.

BEST PRACTICES OF TVET IN AFGHANISTAN

The Government of Afghanistan (GoA) has started to formulate new policies and rebuild institutions. The social sector has been at the top of the reconstruction agenda with particular emphasis on education, training and skills development.

Besides the existing programs within the different ministries such as MoE and MoLSAMD, the National Skills Development Program (NSDP) was declared in 2004 as a key government priority by President Karzai in Berlin, Germany and is now being actively implemented under supervision of the MoLSAMD.

The overall goal of the NSDP is to contribute to the socio-economic recovery of Afghanistan through the development of a National Vocational Education and Training (VET) system that is responsive to labor market needs. It also endeavors to provide Afghan women and men with the knowledge and skills needed for them to access decent work.

The strategy for skills development has been refined and updated to include the Afghanistan Compact Benchmarks (A human resource study will be completed by end of year 2007 [1385] (20 March 2007) and 150,000 men and women will be trained in marketable skills through public and private means by the end of year 2009 [1389] (20 March 2011).

Most importantly, this study clarified how the NSDP, with its overarching oversight and service support role for skills development for employment, fits into the overall strategic framework for Human Resource Development (HRD) and capacity building, and how, with the broad spectrum of the general education provision, it could be a key component of that strategy.

There have been various TVET development projects over the past five years and a number of new institutions have been created.

An example of this is the JICA-supported VT Centers Project under MoLSAMD. It paved the way for building nine new centers. One of these is shown in the succeeding photograph.

The said centers offer a range of skills training, including computing. It is to be noted that such training includes young women trainees, which would have been inconceivable five years ago.

A recent key development in TVET is the commencement of a World Bank project - "The Afghanistan Skills Development Project". It aims to establish, among other things, (1) an Afghanistan National Qualifications Authority (ANQA); (2) an



Afghan-JICA vocation training center, Jalalabad Afghanistan.



Computer class at Afghan-JICA vocational training center, Mazar-e-sharif Afghanistan.

Afghanistan National Qualifications Framework (ANQF); and (3) Standards and Awarding Bodies (TVET, Islamic Ed., Sec. Ed, HE.)

The successful completion of this project by 2013 would represent a fundamental shift in the way TVET is delivered, managed and regulated. It is also expected to pave the way for Afghanistan to start to adopt international best practices.

Success Stories

Some examples of pro-active initiatives or best practices already under way regarding skills development and vocational training in the country under MoLSAMD and other relevant institutions are as follows:

1. Funding of vocational training through a strictly competitive bidding process;
2. Formative contract negotiations;
3. Inclusion of functional literacy and numeracy requirements for admission into TVET programs;
4. Provision of market driven/demand driven training;
5. Keeping the gender balance in all training courses by including at least 35% female students in each group.
6. Formative monitoring process and capacity building of training providers;
7. Linkage with the formal and informal employers/entrepreneurs resulting in higher employment rates after the completion of training;

8. Provision of Business Development Services (BDS) along with vocational training for those trainees who have the potential for starting a business and for self employment;
9. Hiring of labor market officers in training institutes and establishing linkage with micro credits;
10. Independent tracer studies conducted three months after the completion of training show more than 80% employment either for wage or self employment;
11. Independent re-tracer study after one year shows much improvement in the income of trainees.

EMERGING CHALLENGES AND TRENDS IN TVET

Emerging Trends in TVET

If the abovementioned projects succeed, it is envisaged that new trends will emerge in Afghanistan's TVET sector. The guiding principles of the World Bank's Skills Development project for developing the TVET system are:

- Establish the legal foundations for a National Qualifications Authority (NQA) and a National Qualifications Framework (NQF) with each having regulatory Boards at the Vice Presidential level and linked with outside provider ministries;
- Adopt a competency-based modular approach to curriculum and course development;
- Be demand-driven;
- Have institutional semi-autonomy.

A crucial aspect of the ANQA is that it should be fully comprehensive and include all aspects of education and training.

The framework model being scrutinized for adaptation and adoption is the Irish Republic's model. This is probably one of the most equitable models in that it recognizes credit for learning at the very early level within the framework. This is ideal for Afghanistan where for many years the levels of literacy and basic education of a large proportion of the population will remain low yet individuals would wish to enroll in recognized modules and courses in order to build up their academic credits for higher achievements.

The essential components of the Irish Republic's Framework are shown in [Figure 2](#).

Level of Competency Statements

1. Basic skills; beginning literacy and numeracy;
2. Basic literacy, numeracy; routine work skills;
3. Functional literacy and numeracy; simple work skills;
4. Taking responsibility; skills for entry-level employment;
5. Skills for independent work under direction;
6. Comprehensive skills for autonomous work; some design/supervisory/administrative skills;

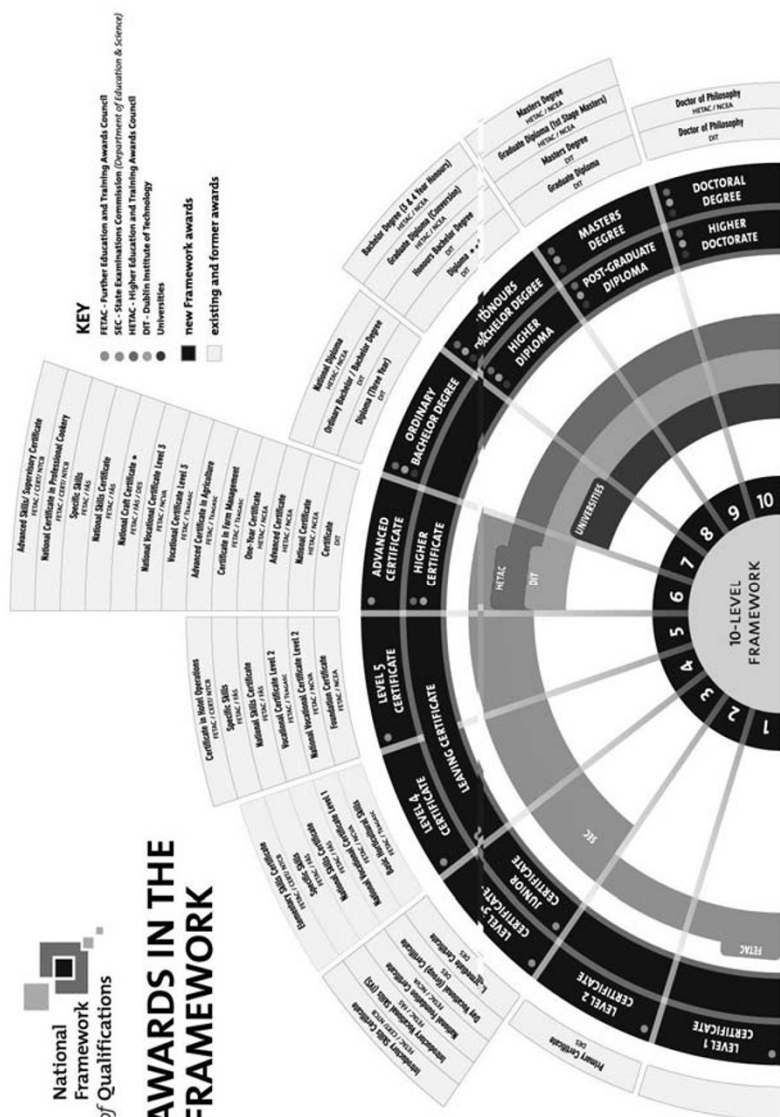


Figure 2. Irish Republic's NFQ model.

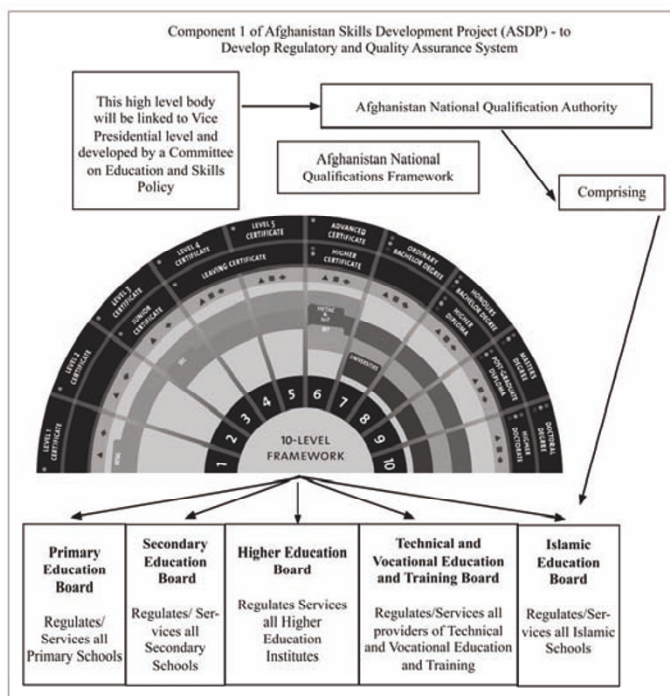


Figure 3. The Irish model of national framework of qualifications as envisaged to work in the Afghan institutional setting, particularly in the implementation of the ASDP.

7. Specialized technical knowledge and skills; some management skills;
8. Take initiative, solve problems; independent professional; management;
9. Advanced professional/ management skills;
10. Discovering/applying new knowledge and skills.

In the context of Afghanistan and its requirements, the Irish model is envisaged to be adapted and adopted as Component 1 of the ASDP. On the basis of this framework, the Afghan National Qualifications Authority is envisaged to be comprised of respective Board for each level in the Afghan education system, as illustrated in Figure 3.

Challenges in TVET

The key constraints in Afghanistan's TVET sector can be summarized as follows:

1. Lack of consistency, quality and coordination within and among the various training providers since most of them are NGOs. There is also a scarcity of information regarding the kind and impact of trainings provided and about the organizations responsible for delivering them. This could be a result of the absence

- of an accreditation body to set and monitor quality standards and register quality providers;
2. Lack of training providers able to deliver high quality and labor market-driven courses using pedagogically trained trainers, appropriate curriculum and training equipment;
 3. An almost total lack of standardized curriculum and qualifications;
 4. Lack of accurate and up-to-date gender disaggregated labor market information that can be translated or can form the basis for formulating more effective skills development policies;
 5. No national policy on TVET. There is also no national framework or skills development system to manage the supply of training in this sector, and to provide labor market information with which to inform and balance supply and demand;
 6. Unacceptable and wide divisions between the TVET departments of the Ministry of Labor and Social Affairs and the Ministry of Education as well as the fragmentation and divisions related to the provision of training;
 7. Lack of staff, within both key ministries, having recent experience and knowledge of up-to-date skills development frameworks and TVET systems;
 8. A VET department within the Ministry of Education, which has many of the elements (albeit outdated), needed to revitalize the sub-sector, but which has almost collapsed and which has only recently received support to revise its provisions to match the current needs of the country.

Major Areas of Possible Intervention

The NSDP under the Ministry of Labor, Social Affairs, Martyrs and Disabled (MoLSAMD) with the help of other stakeholders has already started the interventions to address the problems mentioned above and to improve and modernize the TVET system in Afghanistan.

1. NSDP has been trying to strengthen the coordination within and among training providers, through chairing the quarterly skills development working group meeting and also through funding the delivery of market driven training across sectors (i.e., public/private sectors and NGOs);
2. The organization of training of trainers (ToT) programs for instructors is a top priority. The NSDP has been in contact with donors to seek funding for this purpose towards improving the delivery of training within the TVET institutions across the country;
3. The NSDP has been working in developing standards and competency-based curriculum for different levels in five main sectors. So far, standards for twenty-seven skills areas at Level-I have been completed. Work in developing other skills areas and levels is in progress;
4. The Labor Market Informational and Analysis Unit has been established under MoLSAMD to collect data and analyses on labor market supply and demand and to publish the report for the use of training providers. A comprehensive survey has been completed for this purpose;

5. The Afghanistan Skills Development Project (ASDP) was formally launched on 29 April 2008. Under Component-I of this project, a high-powered committee to be known as “Committee on Education Skills and Policy” was established. The committee will be chaired by the first Vice President of Afghanistan to oversee the development of a regulatory structure for education and skills through the establishment of the Afghanistan National Qualification Authority (ANQA) and the adoption of a comprehensive National Qualifications Framework (NQF) as well as the establishment of different regulatory boards, including the TVET board;
6. The NSDP has already started to eliminate unnecessary divisions under the two public training providers. Now the NSDP funds the MoE technical schools to deliver short-term market-driven vocational training in addition to their long term three to five years training program;
7. Through cross-fertilization workshops and formative contract negotiations, the NSDP is trying to build the institutional capacity of different training providers within the public and private sectors and among the NGOs;
8. The ASDP Component-II seeks to improve the relevance, quality and efficiency of TVET. The activities under this component have already started, such as the establishment of the National Institute of Management and administration (NIMA), reforming the management of TVET and rehabilitating the existing forty-two MOE technical schools;
9. Use of different approaches in making TVET provision, such as center- based, apprenticeship scheme and dual system on the job and off the job training, and ensuring accessibility, employability, etc;
10. A large number of persons, about (134,000), were trained in market driven/ demand driven skills in 2007, 40,000 were trained in 2006 and 10,000 in 2005.

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President Karzai’s press statement (April 2007)

<http://www.nfq.ie/nfq/en/>

Fazel Ahmad Bahrami

Program Coordinator

Ministry of Labor, Social Affairs, Martyrs and Disabled (MoLSAMD)

MD. ABUL BASHAR

6. BANGLADESH

INTRODUCTION

Bangladesh has a population of about 140.6 million on a land area of 147,570 sq. km. with a population density of 953 per sq. km. The per capita GDP is US \$482.00. The literacy rate of the population (7+Yrs) is 52.5% (2006). The civilian labor force is about 40.43 million, out of which, only 13.56% are in the industrial labor sector.

Technical and Vocational Education and Training (TVET) efforts include government and private sector funded projects. TVET programs are governed by the Ministry of Education and are under the direct management of the Directorate of Technical Education. Despite various financial, infrastructure and resource limitations, many projects have been successfully implemented.

CURRENT EDUCATIONAL/TVET SYSTEM

There are three sub-systems of education in Bangladesh at the secondary and higher secondary levels. These are: general education, vocational education and the Madrasha (Religious) education. The first and second sub-systems are for all religious groups, but the third one is exclusively for the Muslims.

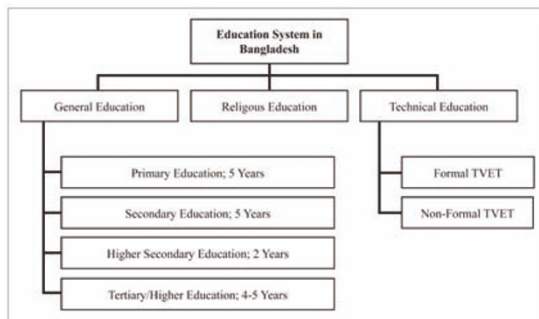


Figure 1. Bangladesh education system.

The Current TVET System

The main objectives of TVET are to produce a mid-level technical supervisory workforce with employable skills in different specialized areas. These technical courses are generally four years in duration.

The Bachelor of Science degree program is offered in the following technological areas by different government institutions under the academic control of Dhaka University, namely: the Technical Teachers Training College, the Textile and Leather Technology College.

In addition there are five government engineering and technology universities in the country offering Bachelor of Science and higher research education in engineering and technology.

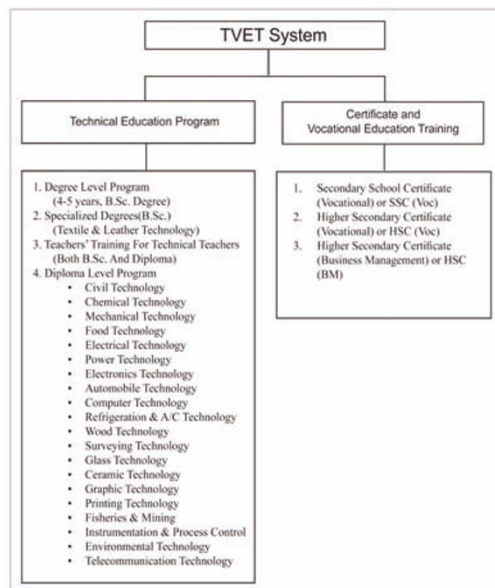


Figure 2. Bangladesh TVET system.

Diploma Level Programs

Mid-level technological education programs are offered in forty-eight government polytechnics and similar technical institutes in twenty different technological areas, of which four Polytechnic Institutes are exclusively for women.

Certificate Level Programs

Vocational Education is designed to provide opportunities for students to acquire employable skills. It can also be a vehicle to orient secondary school graduates as well as skills development trainees about existing formal and non-formal education programs. It integrates general education and vocational skills training content. The general education course puts emphasis on applications.

The articulated vocational education programs are the Secondary School Certificate (Vocational) or SSC (Voc.), the Higher Secondary Certificate (Vocational) or the HSC (Voc.) and the Higher Secondary Certificate (Business Management) or the HSC (BM).

BEST PRACTICES OF TVET IN BANGLADESH

Nine emerging technologies have been introduced at the diploma level. A specialized computer institute offering diploma courses was established in the Feni district utilizing state-of-the-art training in information and communication technology (ICT). Forty-five polytechnic institutes offer a diploma in engineering program in ICT. Thirty-two technical schools and colleges have computer trade courses.

TVET institutes have been modernized and new equipment have been procured. Student activity sheets have been developed for the quality improvement of practical classes. Guidance and counselling services for students have been introduced in all the institutions. A quality manual has been developed to improve academic and administrative management of all educational institutions. To make TVET inclusive, relevant, responsive and at par with global standards, three projects are being undertaken with the help of EC/ILO, ADB and the World Bank.

Since 2003, some changes have been initiated in Bangladesh aimed at improving TVET. These are:

Developing an Overall Quality Manual

The quality manual, covering all aspects of an educational institution, has been developed centrally and is being followed by the institutions which are being monitored every six months to ensure compliance.

Developing a Manual and Student Activity Sheets for Practical Classes

For the improvement of practical classes, manuals for teachers and activity sheets for students have been developed for each subject.

Establishing Guidance and Counseling Services in each Institution

Guidance and counselling services have been established in the TVET institutions. All students are assigned to the respective teachers of a given department and the concerned teachers allocate one hour every week to counsel and talk with the students.

Another council headed by the principal is constituted for career development and job placement of the students. The council liaises with industry and other employers and tries to assist the passed out students in their job placements. The importance of this system is being recognized in the country.

Strengthening the Monitoring and Evaluation System of Academic Activities

A three-tier monitoring system has been established since 2003. The officers from the directorate monitor the forty-eight diploma level institutions once every semester. A group of senior teachers from the forty-eight polytechnic institutions monitors the sixty-four technical schools and colleges every six months. One hundred senior teachers of the technical school and colleges monitor the 500 non-government schools offering similar SSC (Voc.) courses.

The aim of monitoring these institutions is to help achieve a high degree of compliance to the quality manual.

Strengthening Co-curricular Activities

Co-curricular activities are also being encouraged. Institutions observe one evening every month as “social evening” and organize co-curricular activities.

EMERGING CHALLENGES AND TRENDS IN TVET

TVET is given immense importance by the government. The National Council for Skill Development (NCSd) was established recently and is presided over by the head of the government. Measures are undertaken reforming TVET, updating the qualifications framework, enhancing productivity and competitiveness, increasing TVET access by the underprivileged groups, enhancing the relevance of TVET, strengthening private-public partnership in TVET, developing a CBT curriculum and social marketing of TVET.

Two important projects have also been started while another is expected to commence within a year. The briefs of the projects are given in the succeeding paragraphs.

TVET Reform Projects

The project cost is 15 million euros (EC/ILO grant). This project will enable the TVET system to meet the needs of the employers, the population and the government. A time-bound and holistic approach to address the various components of this system simultaneously is required, as singular interventions do not lead to an improved situation. This project consists of five interrelated components. Each will be addressed in two stages, i.e., an initial two-year phase and a three-year follow-up phase. All aspects of the TVET system from legislation to management and organizational issues of TVET institutions, curriculum and course development, capacity building, awareness-raising and direct cooperation with the private sector as well as targeted interventions for the underprivileged and women are covered through the following five project components:

Component 1: TVET policies, system and legislation reviewed and strengthened at the central and decentralized levels (Taka, 1960.48 lac)

- | | |
|------------|---|
| Result 1.1 | Improved TVET policy and implementation mechanism; |
| Result 1.2 | Improved legal and regulatory environment; |
| Result 1.3 | Improved structure and coordination of TVET system (DTE, BTEB and BMET); |
| Result 1.4 | Enhanced management, governance, flexibility, effectiveness and efficiency of TVET institutions (DTE and BMET); |
| Result 1.5 | Improved monitoring of resources and outputs and accountability in TVET (DTE and BMET). |

Component 2: Enhance flexibility, quality and relevance of TVET; (Taka 3933.49 lac)

- Result 2.1 Developed National Qualifications Framework (BTEB);
- Result 2.2 Developed or revised skills standards for occupations in selected economic sectors (BTEB);
- Result 2.3 Developed courses and curricula based on the skills standards (for selected economic sectors) (BTEB);
- Result 2.4 Enhanced quality-assurance mechanism in TVET (DTE, BTEB & BMET).

Component 3: Strengthen TVET institutions through improved knowledge and skills of managers and teachers. (Taka 1499.94 lac)

- Result 3.1 Improved capacity of TVET managers;
- Result 3.2 Improved TVET teachers training;
- Result 3.3 Enhanced training capacity of NGOs and private TVET institutions

Component 4: Improve skills development resulting in enhanced productivity and competitiveness in key growth and export-oriented industries in the formal industrial sector. (Taka 2210.17 lac)

- Result 4.1 Rise in employers' demands for higher skills;
- Result 4.2 Improved linkages between TVET and enterprises;
- Result 4.3 Modern work practices introduced;

Component 5: Increase access to TVET by the underprivileged groups. (Taka 2720.92 lac)

- Result 5.1 Community-based training mainstreamed into TVET (DTE and BMET);
- Result 5.2 Increased access of working children to TVET;
- Result 5.3 Apprenticeships improved and supported (DTE and BMET);
- Result 5.4 A system for the recognition of prior learning developed;
- Result 5.5 TVET extended to people with low educational levels;
- Result 5.6 Enhanced capacity of key agencies (DTE and BMET);
- Result 5.7 Increased access by women to TVET and employment (DTE and BMET);
- Result 5.8 Special programs for disadvantaged people, especially the handicapped.
- Result 5.9 Programs for UN-development areas like those provided among the regions.

Skills Development Project

The Project cost is 50 million US dollars (ADB Soft loan) with the following three components:

Component 1: Enhanced relevance and access of TVET programs

This component aims to improve the relevance of training programs through improved linkages with the labor market and improved access through the development of short CBT programs.

- Industry-led framework of partnership established;
- Development of competency and training standards;
- Development of curricula, teacher guides and assessment tools;
- Capacity development in external competency assessment.

Component 2: Improved capacity for good quality TVET delivery

This component aims to improve the capacity for delivering training programs with improved quality by

- Providing in-service training to government and private/non-government TVET teachers;
- Improving institutional capacity at PIU regional offices;
- Revitalizing two existing TVET teacher training institutions;
- Strengthening the training delivery of short-term training programs in selected public and private training institutions;
- Strengthening DTE research, planning and social marketing capacity;
- Social marketing of TVET.

Component 3: Increased delivery of relevant skills training

This component aims to support the delivery of skill training programs needed by the labor market, particularly in the three focus sectors (RMG, light engineering and construction) and in poor communities.

- Increased delivery of market-responsive skill training;
- Skills training delivered in poor communities.

Technical and Vocational Training Development Project

The Project cost is 200 million US Dollars (Proposed IDA Loan) with the following components:

Component 1: Improvement of the quality and relevance of training

- Improving quality and relevance of diploma level training institutes;
- Increasing the effectiveness of short-term training.

Component 2: Project management and industrial capacity building

- Project Management;
- Capacity Building.

Component 3: Monitoring and evaluation and dissemination of information.

- Monitoring the use of resources;
- Evaluating impact.

Other measures undertaken for further improvement of TVET are listed below:

- Making TVET more inclusive;

- Making courses more job responsive;
- Developing Competency Based Training (CBT) curriculum;
- Improvement of teacher's guides;
- Improvement of assessment tools;
- Expanding teachers training facilities;
- Developing new programs based on CBT;
- Enhancing more flexibility; Quality Assurance;
- Capacity building of institutions.

Challenges in TVET

The following challenges confront the TVET sector:

- Imparting marketable skills and expansion of employment opportunities;
- Keeping pace with the changing technology and the demands of TVET;
- Linking TVET with the job market;
- Reducing poverty by designing pro-poor TVET policies;
- Increasing the enrolment in TVET from 6% (2007) to 20% of the total student enrolment in the country by 2015;
- Building capacity of TVET institutions;
- Continually updating the curriculum as a major challenge;
- Institutional planning and linkages;
- Selection of sites and target group;
- Gender awareness and advocacy;
- Identification of market opportunities and training needs;
- Curriculum development;
- Training preparation and organization;
- Training delivery and evaluation;
- Post-training activities for micro-enterprise development and wage employment;
- Monitoring, evaluation and documentation;
- Policy implications of CBT and sustainability.

To overcome these challenges, several projects are undertaken to address the issues of access, inclusiveness, comprehensiveness, relevance and quality. Some of the major projects are given below:

- Introduction of Dakhil (voc) courses in 100 Madrasah;
- Establishment of Sylhet Engineering College;
- Establishment of Faridpur Engineering College;
- Establishment of Mymensingh Engineering College;
- Establishment of five new Leather Technology Colleges;
- Establishment of five new Textile Technology Colleges;
- Establishment of Engineering Colleges in Comilla, Rangpur and Barisal Districts;
- Establishment of Kisorganj Polytechnic Institute;
- Establishment of Magura Polytechnic Institute;
- Establishment of Chapai Nababganj Polytechnic Institute;
- Establishment of Moulavibazar Polytechnic Institute;

- Modernization and expansion of Technical Teachers Training College and Vocational Teachers Training Institute;
- Establishment of Polytechnic Institutes in 23 remaining Districts;
- Establishment of Computer Institutes in Chuadanga, Perojpur, Srimongal and Naogaon;
- Establishment of a Graphic Arts Institute in Rajshahi Division;
- Introduction of Civil and Computer technology in the Survey Institute;
- Introduction of Diploma Courses in Fashion Design and Clothing Technology in the twenty old Polytechnic Institutes;
- Establishment of Kanaighat Technical School and College;
- Establishment of Tarail Technical School and College;
- Establishment of Technical School and Colleges in 414 Upazila;
- Establishment of Women Technical Schools and Colleges in six divisions;
- Introduction of SSC (Vocational) courses in another 1000 Non-Government secondary schools (3rd Phase);
- Introduction of Dakhil (Vocational) course in another 500 Madrasah (3rd Phase);
- Introduction of non-formal courses in the existing technical schools and colleges;
- Introduction of SME vocational training for rural people;
- Modular skill training for the ultra-poor;
- Ensuring quality assurance of TVET institutions through regional accreditation and certification mechanisms through the Asia Pacific Accreditation and Certification Commission (APACC).

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Md. Abul Bashar
Former Director General
Directorate of Technical Education
Ministry of Education

7. BHUTAN

INTRODUCTION

Bhutan is a small landlocked country with a land area of 38,394 square kilometers, situated in the Great Himalayas bordered by China in the north and India in the south. It has a population of 634,982 with 69.1% of the people still living in rural areas despite a growth in urban migration in recent years. An estimated 33.1% of the populace is under the age of fifteen. Its labor force is estimated at 66.4% of the total population. The private sector, considered as the engine of growth, continues to be weak and underdeveloped. The country is currently faced with a shortage of skilled workers, especially in the booming construction sector which necessitates the import of a substantial number of foreign workers from India.

Bhutan began its modernization process in 1961 with the launching of its first Five-Year Plan. In the field of modern education, huge investments were made to improve access to education. From only eleven schools with 400 students in the early 1960s, the number of schools has grown to 523 with a student population of 157,112 enrolled from the pre-primary to the higher secondary levels. The net enrolment ratio at the primary level stands at 88% as of 2007. In addition, 747 non-formal centers have also been established with an enrolment of 13,829 students. The Royal University of Bhutan was established in 2004 with ten tertiary institutions under a federal system. Five new vocational training institutes were built in different locations in the country to improve access to technical and vocational education and training (TVET) by the secondary school leavers.

Gross National Happiness (GNH) is the main guiding philosophy in Bhutan's approach to a balanced development. Under this philosophy, the economic development of a country has more dimensions than just the GDP. It considers the happiness of the members of society as the objective of development. GNH likewise reminds public policy makers that in development, the end results must always be considered. Therefore, every step in material development and change must be measured and evaluated to ensure that it will lead to happiness, not just to economic development. Since His Majesty, the fourth King Jigme Singye Wangchuck first presented the concept in the 1980s, GNH has received considerable attention abroad as an attractive alternative approach to development.

The conscious decentralization policy of the last four successive monarchs took Bhutan on a planned and gradual transition to a modern democracy. People in the *geogs* and *dzongkhags* were actively engaged in collective decision making. Local leaders were chosen through elections and participated in policy making bodies at the *dzongkhag* and national levels. Several decades of planned developments saw

political transformation from an absolute monarchy to a constitutional monarchy. The biggest transition was finally witnessed in March 2008 when the country's historic transition to a constitutional democratic monarchy was realized. The country has successfully installed its first democratically elected government and became the youngest democracy in the world.

CURRENT EDUCATIONAL SYSTEM

School education in Bhutan starts with eleven years of basic education, from pre-primary to class ten. The eleven years of the basic education are divided into seven years of primary education and four years of secondary education. Beyond class ten, students decide to continue their general education in the higher secondary schools, enroll in TVET courses or enter the labor market. Admission to government higher secondary schools and vocational institutions are based on a student's performance on the national level exit examinations at the end of class ten. The Ministry of Education makes the decision on the cut-off score based mainly on the intake capacity of the public higher secondary schools. Students who meet the cut-off qualifying results can seek admission to a government funded higher secondary education institution. However, those failing to meet the cut-off have the option to continue their education in private higher secondary schools, either within the country or abroad or opt for vocational programs offered within the country. Like many other countries in the region, vocational education continues to be the second choice for majority of the students.

Entry to government-funded tertiary education is very competitive due to the limited intake capacity of the ten tertiary education institutions in the country. The primary deciding factor in order to get a seat in these institutions or to qualify for scholarships abroad is by passing the national level examinations at the end of class twelve (equivalent "A" level). Therefore, majority of the students opt to pursue

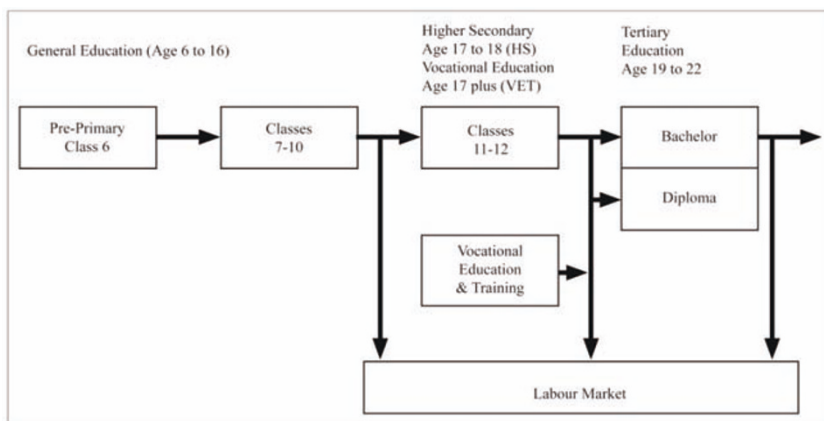


Figure 1. General education structure.

(Source: MOLHR, 2008).

self-funded tertiary education abroad or under other open scholarship schemes. For those who make it through the selection processes, education and training are completely free. However, those students who are unsuccessful in qualifying in any of the tertiary institutions or professional scholarships opt for admission to the Jigme Namgyel Polytechnic, the only polytechnic school in the country.

Admission to the government TVET institutes is centrally coordinated by the Department of Human Resources, Ministry of Labor and Human Resources. To better understand the various factors that influence the decisions of students in their educational pursuit, the scheme (Figure 2) is illustrated below.

The first step towards providing vocational education within the country was initiated in 1965 with the establishment of the Don Bosco Technical School. It had the combined role of a junior technical school and an industrial technical institute. Up until the early 1970s, it turned out matriculates in technical subjects as well as craftsmen in trades such as electricians, carpenters, auto mechanics, general mechanics, etc. The courses were reviewed in the mid 1970s in order to reduce emphasis on general education and instead focus on producing craftsmen for specific occupations which led to renaming Don Bosco as the Royal Technical Institute. The growing need for technically trained human resources led to the establishment of the Royal Bhutan Polytechnic a decade later, which offers post-matriculate diploma courses. In addition, a number of vocational training centers had been established by different government agencies to cater to their own sectoral needs, for instance, the training of primary teachers, paramedicals, veterinary personnel and field workers in forestry. In the 1980s, fields such as agricultural extension, geological drilling, accountancy and secretarial practice were included.

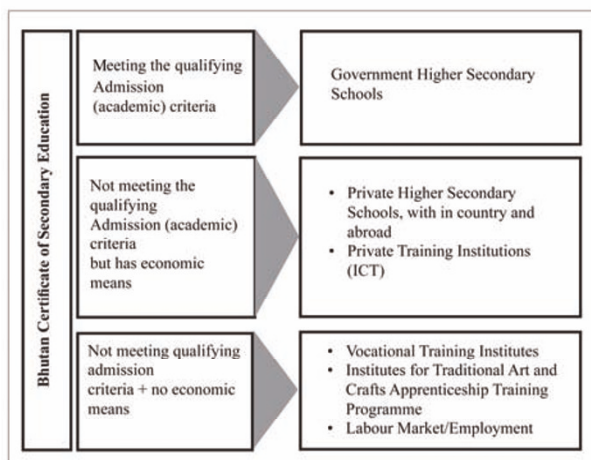


Figure 2. Pathways for students completing basic education ('O' level).

(Source: MOLHR, 2008).

It is evident that the institutions mentioned had produced an adequate number of skilled human resources per the planned requirements of the various government sectors. However, the accelerated speed of economic development during the third five-year plan (1971–1975) presented challenges that resulted in a shortage of skilled manpower. Manpower planning and policies then were focused on meeting the needs of the government rather than the private sector or for self-employment. The need of the hour then was to assess the requirements for skilled manpower for the government services and to arrive at ways to respond to them in the shortest time possible. In keeping with the agrarian economy of the country, initiatives were seriously considered for modernizing the agricultural and animal husbandry practices.

Apart from the need to acquire new knowledge and skills to meet the demands of modernization, there always existed the requirements for traditional skills and knowledge, not only to meet the basic requirements of life but also to sustain the spiritual, artistic and cultural pursuits of a very high order. People possessed the skills and ingenuity to construct the huge and magnificent *dzongs* (fortresses), monasteries, suspension and cantilever bridges and irrigation systems. Craftsmen continue to produce articles of daily life, such as hand-woven cloths, metal-ware, scroll paintings and images, wooden and bamboo works, of the highest degree of excellence. Therefore, the challenge then was to find adequate ways and means to preserve traditional skills while exploring new means to satisfy the rapidly growing socio-economic developmental needs.

Based on this premise, the government initiated two different kinds of TVET programs in order to meet the divergent needs of the country: promoting and preserving the rich traditional arts and crafts on one hand and imparting skills and knowledge to meet the needs of the economy, on the other. Two training institutions dedicated to the thirteen traditional arts and crafts were set up in the country and traditional forms of apprenticeship training were continuously undertaken in the villages. The time-honored training systems continued without much changes and the concept of planned and organized TVET system is still new in Bhutan. Coordinated curriculum development did not happen until about a year ago with only some courses based on a syllabus. Training durations for the thirteen arts and crafts courses vary from two years for the craft to six years for the arts courses. Training programs at the vocational training institutes under the Ministry of Labor and Human Resources were reduced from four years to two years in 2002, due to the enhancement of the intake level from class eight to class ten. However, the duration for the motor vehicle driving courses (light and heavy vehicle driving, respectively) are much shorter, ranging from six months to a year.

Although the need for a national authority for technical education was discussed in the mid 1970s, it was only in May 1999 that the Technical and Vocational Education Section was devolved from the Department of Education to create the National Technical Training Authority (NTTA) through a charter. The NTTA was mandated to develop a TVET system to produce a skilled and productive workforce for the growing economy of the country. This authority

became responsible for the delivery of TVET through the training institutions and different training schemes as well as regulating the quality of TVET. In line with this mandate, technical and vocational institutions under the then Department of Education were transferred to the NTTA. However, a similar initiative to coordinate and regulate institutions under other line ministries and agencies could not materialize due to administrative issues.

In addition, other line ministries and agencies have training institutions for sector-specific needs: the Royal Institute for Health Sciences and the National Institute for Traditional Medicine under the Ministry of Health, the Bhutan Forestry Institute, Rural Development Training Center and others under the Ministry of Agriculture, Woodcraft Center, etc. Apart from the above institutions, there are several private training institutions offering training programs, mainly related to Information Technology and languages that do not require high levels of capital investment. They also offer short-term courses in IT. Currently, only a few certificate courses based on approved standards are certified by the newly established Department of Occupational Standards. Licenses for the establishment of a training institution are issued by the Ministry of Economic Affairs based on the recommendations of the Department of Human Resources of the Ministry of Labor and Human Resources.

Funding for individual government training institutions is allocated under a common centralized budgetary procedure of the Ministry of Finance. Government funding is the only main fund source for the public vocational training institutions. Budget allocations are determined based on the previous year's allocation and on the number of students and staff. Estimates of the budget proposals for each fiscal year are very generic and do not vary from institution to institution, except for slight variations based on course specialization. Training is provided free of cost including hostel accommodations, board, and training materials. Students make a token annual contribution of Nu. 250 (about US\$6). There are no contributions from the private sector or industry for institution-based training except in the case of company-based training or Apprenticeship Training Programs.

The Department of Human Resources is the parent department tasked with the oversight of TVET institutions under the Ministry of Labor and Human Resources (see Annexure 1). Decisions related to the selection of students, recruitment of faculty and other institute personnel; curriculum development, staff development and funding are made by the department. Earnings realized by institutions from formal production activities and services provided to businesses are turned over to the Ministry of Finance, subject to an annual audit. However, the institutions enjoy a certain degree of autonomy in daily administration, student assessment and industry-institute liaison, consultations with employers, student placement services and tracer studies. However, a common understanding and uniformity in observing individual autonomy amongst the government institutions is lacking.

TVET in Bhutan continues to be viewed as the potential instrument to address the large number of school leavers, and as a policy to combat youth unemployment. Moreover, there is a strong desire to improve TVET to develop a knowledge economy, in keeping with the fast growth of the economy and global trends. The government has been consistent, at least in its policy, to rely on foreign workers for unskilled

jobs. There is also the persistent need to improve the prestige and image of vocational education and training in the country, since TVET continues to be viewed only as a second choice to higher secondary education, with very limited opportunities for life-long learning.

Since its creation, the Ministry of Labor and Human Resources is making consistent efforts to bring about better coordination between the different government agencies and improved cohesion in the TVET policies and regulations. The Ministry has ambitious plans to construct at least seven additional institutes (two for traditional arts and crafts) during the next five years to improve access, fund availability as well as time. However, the real challenge will be in matching up the enhanced access with quality training.

BEST PRACTICES IN TVET IN BHUTAN

Efforts to improve access to TVET programs received a big impetus in early 2000 when several new vocational training institutes were constructed across the country. It helped create over a thousand additional training places for the increasing number of school leavers. The new training institutions were built closer to communities to plan and provide immediate training courses relevant to local needs of the local communities as well as to regional needs. However, with the expansion of TVET programs, concerns regarding the quality of training programs offered by the different training institutions in different parts of the country were raised. The physical distance between the institutions also provided only limited opportunities to share limited resources, both human and material.

Establishing Clear Roles between Funding Institutions

TVET reform initiatives began only in 2000 with the launching of the 'Basic Skills Development Project' funded by the Asian Development Bank and the 'Bhutan-German Project' under GTZ. Along with the reforms were arrangements in ensuring the role of the agencies in the project, made through tripartite agreements, to avoid duplication of efforts while fully recognizing the terms and conditions of the respective funding agencies. As a result, it was agreed that the ADB and the Royal Government jointly finance the 'hardware components' or the capital expenditure activities while the GTZ finances the 'software components.' Accordingly, the GTZ assists in the quality assurance systems and capacity development activities of the relevant departments, training institutions and the private sector. A joint national level project steering committee helps monitor the progress of the individual projects as well as facilitate synergy at regular intervals. This arrangement helps overcome past difficulties in the effective implementation of multiple donor-funded projects.

Instituting TVET Policy

Several other reform initiatives were made toward improving the quality of the TVET system. One of the first initiatives was the development of the TVET Policy

in 2005, approved in 2006, which helped spell out the Ministry of Labor and Human Resources' scope of services in the area of TVET, employment and the labor market. The three major stakeholders defined in the document are the citizens of the country, the TVET providers and the business community. The obligations of the Ministry to each stakeholder are as follows:

Services to Bhutanese Citizens: Every Bhutanese will have access to quality TVET, enabling them to embark on and remain in a gainful economic activity;

Services to Bhutan's TVET providers: Every TVET provider in Bhutan can obtain the Ministry's support for designing, organizing and marketing training courses geared to raise the employability of the citizens; and

Services to the Business Community in Bhutan: Every employer in Bhutan shall be able to find and attract competent, confident and competitive Bhutanese workers in order to boost the company's productivity and profitability.

Development of a Vocational Qualifications Framework

The development of the Bhutan Vocational Qualifications Framework (BVQF) in 2004 was another initiative (see Annexure 2). The major features of the framework include the development of occupational profiles as a starting and reference point for the development of standards related test item databases and modular training programs/curricula, through the involvement of expert practitioners from the work place. The test items database is developed by a team of instructors and expert practitioners based on the occupational profiles, which are used for summative assessment carried out by a team of instructors and industry representatives.

Certification is carried out based on the three qualification levels: National Certificates 1, 2 and 3 (NC1, NC2, and NC3), respectively. The major focus of certification under the current framework is at the NC2 level. Despite the slow beginning, industry participation is gradually improving.

Since 2004, fifty-four occupational profiles in priority occupations and economic sectors have been developed. Curriculum for four occupational profiles (masonry, plumbing, carpentry and electrical) is being piloted in the TVET institutions. A summative assessment of the trainees completing the training utilizing the new curricula is being planned in the mid-2009. The final certification will be based on the combination of the continuous assessment carried out by the institutions and the summative assessment data.

The open access summative assessments are also being piloted for non-institution based training programs and target groups like the Apprenticeship Training Program (ATP), annual skills competitions and selected occupational groups. Assessment is conducted only for trades with occupational profiles and a test item database. Likewise, trades are considered for assessment and certification based on discussions with relevant sectors and stakeholders. As a result of the pilot activities, there is a growing demand for certification and recognition of the Bhutan Vocational Qualification Framework certification.

Industry-driven TVET

In order to attract industry experts to participate in an industry-driven TVET system, professional practitioners involved in the framework development activities are compensated by the government. Provisions for travelling allowances, a uniform rate of daily subsistence allowance and professional fees are approved by the government. Private consulting firms were also included in the different capacity development activities conducted in 2004. Critical masses of people were trained as Developing a Curriculum (DACUM) facilitators, Test Item Development facilitators, curriculum and instructional materials development master trainers and assessors. Despite these efforts, the interest and involvement of the private sector could not be sustained due to the unattractive financial incentives. Thus, there is a need to explore other strategies to ensure a sustainable public-private sector partnership in TVET.

Capacity Development of Training Institutions

The Skills Training Resource Division was created within the Department of Human Resources for the capacity development of training institutions. Recently renamed as the Technical and Professional Support Division, it is tasked with improving the quality of existing instructors by providing short-term training in instructional methodology, instructional materials and curriculum development, and communication skills, utilizing the training-of-trainers mode. The division plans to evaluate the impact of the trainings as well as to professionalize its activities by converting itself into a technical teacher training center in the near future.

Apprenticeship Training based on the German Dual-System Model

In 2001, an apprenticeship training program (ATP) was developed based on the dual training system of Germany. It is a workplace-based training program implemented in partnership with private sector enterprises. The government provides the trainees with a monthly stipend, basic hand tools and theoretical inputs. The employer provides an equal amount of the stipend to the trainees. This mode of training, despite shortcomings in the regularity and quality of monitoring, is becoming popular with both the school leavers and the employers. The number of applicants to the program has increased three-fold from about only a hundred five years ago.

Training schemes for the informal sector were also developed, namely, Special Training Program (STP), Village Skills Development Program (VSDP) and Special Skills Development Program (SSDP). Each program has been designed for a specific group. STP is for the school leavers in need of special employment oriented training courses not catered to by the training institutions and the Apprenticeship Training Program. VSDP aims to enhance income generation through skills training of people in the rural areas. It is also currently being complemented by an ADB funded 'Rural Skills Development Project,' targeted toward poverty alleviation. SSDP is for special groups of people - monks, juvenile delinquents and the disabled.

Entrepreneurship Skills Promotion in Training

In order to promote self-employment schemes for the graduates, the integration of entrepreneurship modules in the training programs was implemented. This is under the jurisdiction of the Entrepreneurship Promotion Center (EPC) under the Ministry of Economic Affairs. The EPC is in the process of being transferred to the Ministry of Labor and Human Resources to achieve better coordination and synergy. As part of the EPC, government had initiated the ‘Small Business Resource Center’ to facilitate the granting of collateral-free loans to TVET graduates who complete the ‘Basic Entrepreneurship Course.’ The loan is approved and monitored by an inter-agency committee. If a project fails, the government will bear 60% of the loan and 40% by the financing bank. So far, the scheme has been quite successful and serves as a tool to promote self-employment schemes.

Other recent initiatives to enhance the employability of the vocational education graduates were a proposal to de-link the production services of the Institute of Traditional Arts and Crafts and to convert the Construction Training Center into the Construction Services Center. These proposals were made due to the demand by the employers for their prospective workers to have the skills needed as well as to help build the necessary confidence and capacity required for self-employment. In both the proposals, graduates will be given real projects to work on and generate income. It is hoped that the services and support will be made available for a year. If successful, it will boost self-employment opportunities for the TVET graduates. Both initiatives will serve as incubation centers for self-employment.

EMERGING CHALLENGES AND TRENDS IN TVET

Trends in TVET

TVET standards and certification. The demand for a skilled workforce is increasing due to the country’s socio-economic development and considerable growth in modern sector employment. However, an increasing number of school leavers are entering the labor market without any employable skills or the required experience. The provision of quality skills development programs is therefore imperative in order to solve the existing mismatch between the demand and supply of the workforce. In order to increase the venues for training, aside from the government training institutes, the corporate organizations, NGOs and private entrepreneurs are also offering training programs. Although the increase in the number of training providers may meet the skills needs, the quality of training being provided sometimes leaves much to be desired. The different courses offered by the training providers at various levels and standards require standardization and recognition systems.

Labor market information system. The Department of Employment of the Ministry of Labor and Human Resources has created the Labor Market Information and Research Division to generate labor market information (LMI) and publication of LMI bulletins. The Ministry has begun to use the LMI data for the planning of

standards development and market-oriented training in the TVET institutions. The Department is also planning to improve the quality of information and frequency of information dissemination to its stakeholders.

The Employment Services Division of the Department of Employment is mandated to facilitate job placement of TVET graduates in collaboration with the Royal Civil Service Commission, through a combination of campus interviews, on-line job portals and referral services upon graduation. National job fairs are organized as major annual events for the job seekers and enterprises in the country. The fair provides job seekers with first-hand information on job vacancies from the participating enterprises and industries as well as training opportunities. Aside from promoting their products and services and expansion plans, employers can also interview job seekers. The fairs have greatly helped in facilitating interaction between potential employers and job seekers.

Apprenticeship training program (ATP). As discussed earlier, access to institution-based regular training programs has been greatly enhanced through the introduction of the Apprenticeship Training Program. The program is gaining popularity with both the trainees and employers, with the perception that the graduates possess better work attitudes over institution-based training graduates. Since 2000, 750 trainees have graduated with various occupational trades. The most popular programs are beauty care, auto-mechanic, auto-electrical, industrial electrician and graphic designer trades.

Bhutan vocational qualifications framework. The Departmental of Occupational Standards (DOS) under the Ministry of Labor and Human Resources (MoLHR) has developed the Bhutan Vocational Qualifications Framework (BVQF) in 2004 through the technical assistance from the GTZ. The framework helped to provide a structure for the TVET sector in the Kingdom.

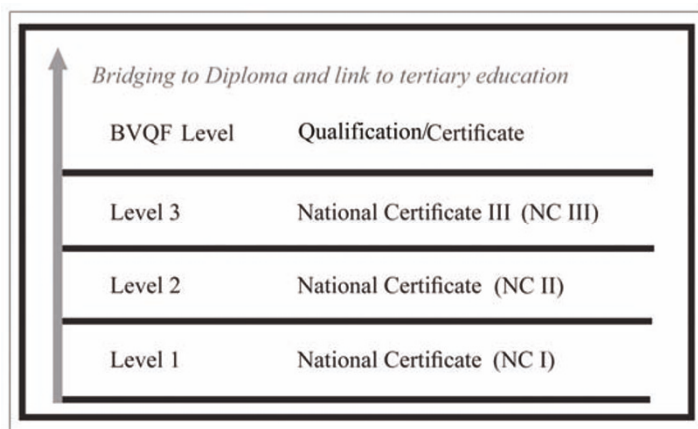


Figure 3. Bhutan vocational qualifications framework (BVQF) levels and corresponding qualifications.

It has also laid the foundations for a system that will facilitate life-long learning for TVET graduates. The framework has three qualification levels: Levels 1, 2 and 3, Level 1 being the lowest and level 3 the highest in terms of competency.

It has been proposed that those assessed with Level 1 competency be considered as semi-skilled; Level 2 as skilled; and Level 3 as highly skilled in the work place. Efforts are being done to improve the generic level descriptors (see Annexure 3).

The National Certificates (NC) issued by the Department of Occupational Standards (DOS) will be recognized by the government as national qualifications awarded to individuals completing the post secondary level (post class 10) vocational certificate courses in the country. Training and assessment of competence will continue to be provided by various TVET institutions or providers with national certificate awards centralized with the Department to ensure consistency of quality outcomes. However, only those courses which comply with the set requirements will be eligible for national certification. There will be no restrictions on the use of the title 'certificate' by any agency, body or institution, for courses whose duration is either less than six months, or is not accredited, or both.

National Certificates are also being issued to working adults possessing skills competency in a given occupation or upon completion of a relevant skills training program. However, certification is done based on a standardized assessment by industry assessors using occupational profiles/standards. Working adults in a few corporate entities, possessing skills competency and work experience but lacking in academic credentials have benefited from this initiative. The Department has plans to build its capacity to implement a proposed 'Recognition of Prior Learning' (RPL) system, which will facilitate partial assessments based on the competence and capacity of each individual.

The Ministry of Labor and Human Resources recommended a Bhutan Qualifications Framework for the Tertiary Education Policy (see Annexure 4). This framework is the first attempt to link the general education system, the TVET system and the tertiary education system. The framework, once approved by the Royal University of Bhutan, will enable the TVET graduates to have formal access to Diploma programs at the Jigme Namgyel Polytechnic aside from the accreditation of diploma programs to be offered by the institutions under the Ministry, in the future. This policy document recommends at least three different options for establishing an effective link between the National Certificates 2 and 3 and diploma programs. Hence, policy coordination is being developed to facilitate career progression and life-long learning for people who opt for TVET.

TVET teacher training. The establishment of six training institutions during the last five years increased access to TVET by school leavers. However, the Ministry is faced with a serious shortage of experienced and qualified instructors. The Training and Professional Services Division was established under the Department of Human Resources to help improve the professional competence of the existing instructors. The Division is mandated to plan and organize short term trainings in pedagogy and instructional materials development for the instructors. The training of trainers mode was utilized to train master trainers to enable the training institutions to

produce their own master trainers who can design, deliver and evaluate individual training sessions as well as creatively design and coordinate trainings and provide coaching and mentoring services to their fellow instructors.

Public-private sector partnership. In order to foster effective public-private sector partnership in TVET and to assist the target groups, the Ministry of Labor and Human Resources drafted a strategy paper in 2006. The strategy paper emphasizes “Public-Private Partnership” (PPP) in the various economic sectors with growth potentials and attractive employment opportunities such as the service sector, construction sector, manufacturing sector (new energy-based industries) and the agro-processing industry. The main objectives of the partnership are to establish a functional system for quality assurance in the TVET system as well as to strengthen the TVET programs in terms of quality and quantity in response to labor market demands. Figure 4 on the next page shows a model for Public-Private Sector Partnership in TVET.

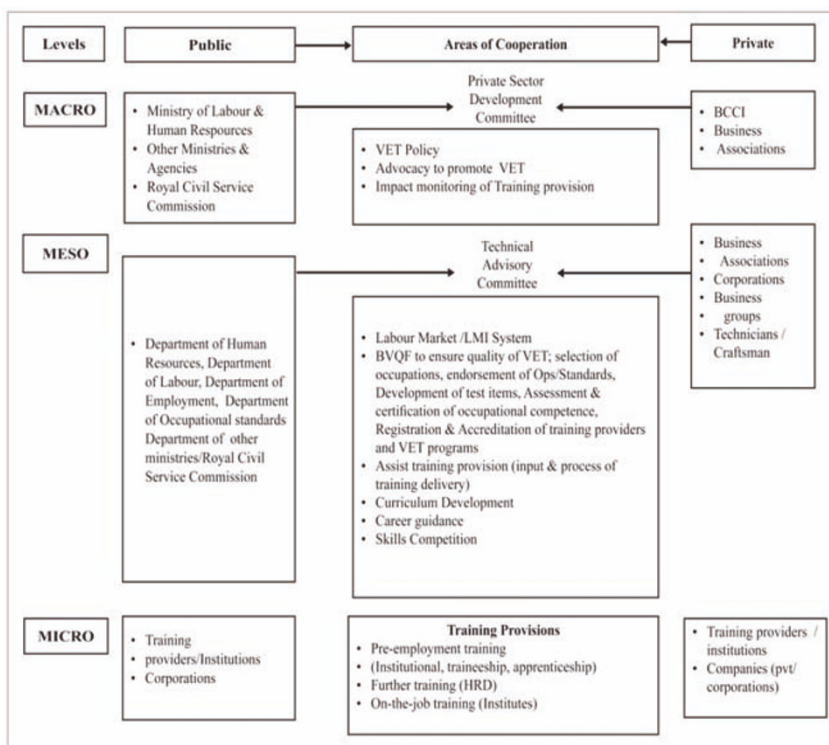


Figure 4. A model for public-private sector partnership in TVET.

Source: PPP Strategy Paper, Ministry of Labor and Human Resources (2006).

Curricula development. In keeping with the changes in the economy, training curricula reform has been initiated. The Technical and Professional Support Division of the Department of Human Resources has developed six curricula based on the occupational profiles, with another two in progress. The new curricula have been developed with the participation of subject matter experts from industry and academic instructors. The Division also advocates the offering of its services to the private training institutions, free of cost. Four formal training programs based on the new curricula are being piloted in the TVET institutes. A curriculum for the popular Apprenticeship Training Programs has also been developed and adopted for training.

Challenges in TVET

The accreditation system is not yet in place. The technical and vocational institutes, both in the public and private sectors, which offer training programs and issue certificates, are not accredited by the regulating bodies like the Department of Occupational Standards (DOS). Thus, no indication of any qualification standards is present and gives no guarantee of trainee competence. However, the situation is likely to change in the next five years (10th Five Year Plan period) during which the DOS would have established the national certification and assessment system for the TVET sector.

The training institutions do not have an established relationship with industry due to several factors, namely, distance of the institutes from the industries, under-developed private sector, labor intensive technology and availability of low-salaried foreign workers. To address this matter, on-the-job training programs (OJT) are organized for students for three months during their second year. However, the linkage is still not fully realized due to the lack of: training and supervision expertise in the industry, monitoring by the instructors, organized industry attachment of instructors and recruitment of part-time instructors and guest speakers from the industry.

Curricula reform. Despite the best efforts of the Technical and Professional Support Division (TPSD) of the Department of Human Resources, there remains a serious lack of expertise and experience in coping with curricula development. There are several mitigating factors for this: curricula development is time consuming and tedious and hence could not effectively respond to the job market needs; limited initiative and participation of the industry and lack of capacity of the training institutions to undertake training needs analysis and curriculum development. Therefore, there is an urgent need for capacity development of the TPSD, industry and training institutions to undertake curricula reform, either independently or collaboratively, in order to cope with the needs of the country and the regional trends.

TVET instructors and trainers. Further expansion of existing training institutes and the establishment of new ones are planned over the next few years to further improve access to TVET for the increasing number of school leavers. However, one of the most crucial factors is the recruitment of an adequate number of qualified

and experienced instructors. As mentioned above, no nationally recognized institutional set-up exists for the training of TVET teachers. Also, industry experts and other professionals are reluctant to take up the teaching profession due to the low salary and status of this profession in the civil service. Existing instructors are civil servants and they rank low in the recently introduced Position Classification System of the civil service. In addition, social status and career prospects have also been poor for TVET instructors causing low morale and poor motivation among them. In the absence of an integrated system to upgrade their qualification and knowledge, there is a situation wherein there is a pool of trainers who are either fresh graduates just out of the training institutes with little or no industry experience or others who have long years of teaching experience but no industry exposure. Majority of the instructors in TVET institutions are young with 70% of them below the age of thirty and only about 13% are female. Most of the Instructors are new in the teaching profession: that is, 55% of the instructors have only 0–4 years teaching experience and 49% with a certificate level of education. It was also found that 87.5% of the instructors are hampered by the lack of skills in the transfer of knowledge. The position classification system places more emphasis on academic qualifications than on occupational skills and work experience. Such a system has not motivated suitable people to become instructors. Therefore, there is an urgent need to upgrade the qualifications of the present instructors and also to train potential instructors, to be able to cater to the growing demands for TVET.

Quality of students entering TVET. As discussed already, TVET continues to be considered as the last option for school leavers and parents. Admission to TVET institutions is based purely on academic results and not related to aptitude for vocational training. Therefore, in general, students undergoing TVET courses are those who lack genuine interest or aptitude toward TVET and most of them come from low income groups. Further, there is lack of a coordinated and systematic guidance and counselling service in the schools. As a consequence, managing trainees from these groups demand additional commitment and dedication from the managers and trainers of TVET institutes to develop them into becoming a skilled and productive workforce for the job market. This is echoed in the feedback from the employers.

Quality of TVET programs. The TVET sector until recently had no defined policies or strategies. Training institutions conduct training courses without any proper training needs analysis or an approved curriculum. Training was at best *ad hoc* and uncoordinated. It is only recently that institutional frameworks have been proposed to register, regulate and accredit training programs and institutions. Therefore, the debate on the mismatch between the demand and supply of skilled workers is very much relevant.

Implementation of the labor and employment act, 2007. The Department of Labor within the Ministry of Labor and Human Resources is recruiting staff and building

its capacity to implement the Labor and Employment Act. Advocacy and awareness creation workshops have been conducted for the industry and employers. The use of the prevailing basic minimum wage rate by the private and corporate sector employers coupled with existing working conditions have not motivated TVET graduates. This situation is compounded by the import of low-salaried foreign workers, particularly in the construction, manufacturing and service sectors. The labor intensive sectors with very slow progress on mechanization will continue to be a disincentive for TVET graduates.

Poor interface between general education and TVET. There has been a clear lack of interface between the general education system and TVET. One initiative intended to achieve this interface was the introduction of vocational clubs in some schools, on a pilot basis. Impact studies have been conducted on this initiative. Collaboration between the Ministry of Education and the Ministry of Labor has been weak and uncoordinated in the functioning of the vocational clubs. There is also a lack of continuity of course contents between school subjects and TVET courses. In the same manner, the interface between the TVET system and tertiary education is unclear, affecting career progression and life-long learning opportunities among TVET graduates. However, the development of the proposed National Qualifications Framework will hopefully bring about better coordination and synergy between the various education and training systems in the country.

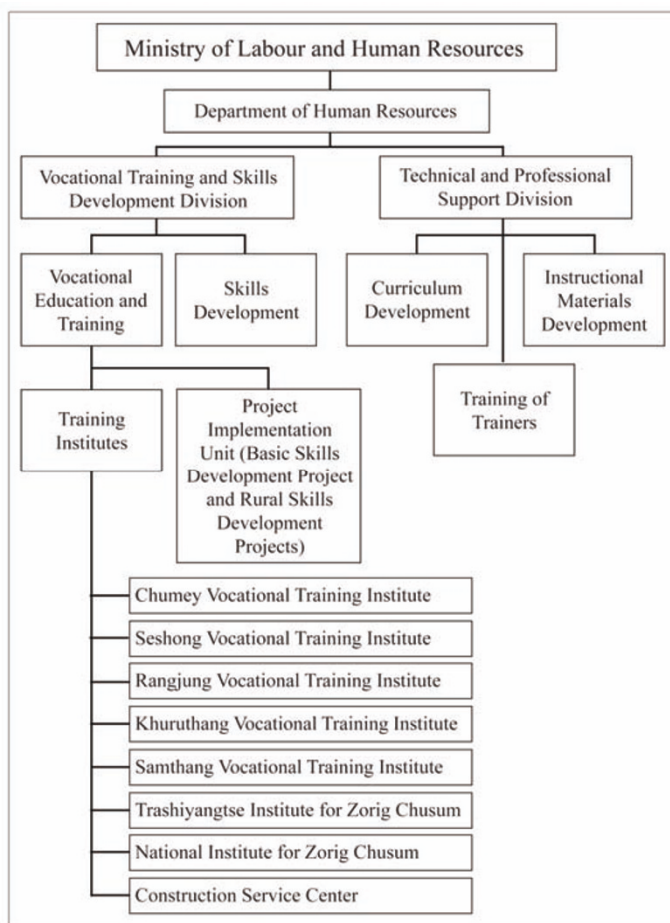
Assessment system in the TVET institutions. Assessments conducted in TVET institutions continue to be purely institution-based. Institutions organize and conduct their own assessments, mainly on a term and annual basis. This is true for the same courses conducted by different institutions. Scores derived from the semestral tests, on-the-job assessments and terminal examinations are aggregated to determine the achievements of an individual trainee. Although the ratio of theory to practical training and assessment is 20:80, much of the practical assessment is based on workshop simulations. Raw marks and grades are used to derive normative scores to rank the trainees. This process will most likely continue since it enables the employers to make their recruitment decisions easier. As a result, the reliability and validity of the assessment results will continue to be an issue. However, the Department of Occupational Standards has already begun its initiatives to harmonize the assessment practices of the training institutions. The issue of modes of continuous assessments, grading systems, internal versus external assessments, theory versus practical assessments, weightage and a single certification system are expected to be resolved in the next few years.

Accreditation. With the growing number of private training institutions, there has been a common concern about the quality of TVET programs offered. Due to a lack of national regulations, some private institutions have introduced courses at different levels, through direct affiliations with institutions in India. Some private institutions

have also secured ISO certification from one of the many ISO certification firms in India. As such, the private training institutions have been much more innovative than the public institutions. Therefore there is an urgent need for a coordinated effort from the different government agencies to address the problems related to quality of the training institutions.

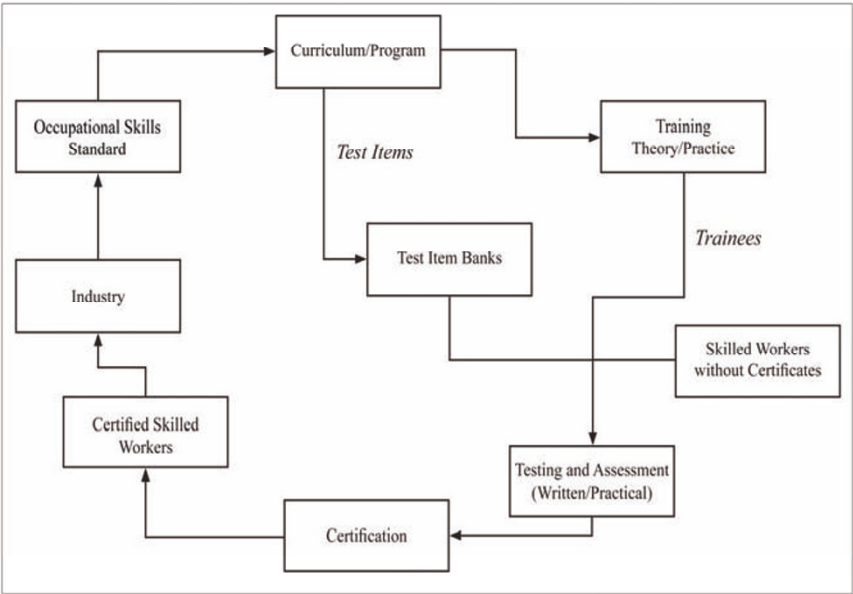
The concept of accreditation is relatively new in the country which was a major obstacle for the Asia Pacific Accreditation and Certification Commission (APACC). The training institutions are not familiar with the concept and thus are unprepared. The Memorandum of Agreement between the Department of Occupational Standards and the APACC was signed in March 2006; however, no single institution has been accredited, so far. As such, there is an urgent need to build the necessary capacity and motivation of the training institutions to make a successful beginning with both the national accreditation system and APACC. The technical expertise of the Department of Occupational Standards will be strengthened to facilitate the development of a suitable accreditation model and to take charge of its implementation in the TVET sector. The establishment of the proposed autonomous national accreditation agency may help improve coordination and understanding between the different quality assurance agencies as well as among the different countries. Moreover, the proposed national accreditation system needs to be reviewed vis-à-vis the services provided by the APACC.

ANNEXURE 1



Structure and provisions of TVET under the Ministry of Labour and Human Resources.

ANNEXURE 2



Bhutan vocational qualifications framework.

ANNEXURE 3

National Certificate I (NC I)

Carry out process that are:	Learning demand:	Accountability:
- limited in range - routine responses, repetitive and familiar - single processes - employed within closely defined contexts	- recall - a narrow range of knowledge and cognitive skills - No generation of new ideas	- in directed activity - under close supervision and quality control - with no responsibility for work or learning of others

National Certificate II (NC II)

Carry out process that are:	Learning demand:	Accountability:
- are moderate in range - are established and familiar - offer a clear choice of routine responses. - involve some prioritisation of tasks from known solutions	- some relevant theoretical knowledge - interpretation of available information - known solutions to familiar problems - little generation of new ideas	- in directed activity - under general supervision and quality control - with some responsibility for the quantity and quality of output - with possible responsibility for guiding others

National Certificate III (NC III)

Carry out process that are:	Learning demand:	Accountability:
- require a range of well developed skills - offer a significant choice of procedures requiring prioritization - are employed within a range of familiar contexts	- relevant theoretical knowledge - interpretation of available information - informed judgement - a range of known responses to familiar problems	- in directed activity with some autonomy - under general supervision and quality checking - with significant responsibility for the quantity and quality of output - with possible responsibility for the output of others

Adapted from the NZQF and AQF

ANNEXURE 4

Level	Vocational Education and Training (VET)	Tertiary Education (University & College)		School
10			Research	
9			MA/MSc/MPhil	
8			PGC/PGD	
7			TE yr 4 (Honours)	
6			TE yr 3 (general degree)	
5	ND2	Diploma TE yr 2	→ TE yr 2	
4	ND1	Diploma TE yr 1	TE yr 1	
3	NC3			Class XII
2	NC2			Class XI
1	NC1			Class X

Adapted version of the Bhutan Qualifications Framework proposed in the Tertiary Education Policy.

Source: Department of Occupational Standards, Ministry of Labour and Human Resources.

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Sangay Dorjee

Director

Department of Occupational Standards

Ministry of Labor and Human Resources

8. FIJI

INTRODUCTION

Fiji is a relatively prosperous state and forms an important center of industry and education in the South Pacific (EU, 2002a). Formerly reliant mainly on sugar production, Fiji has developed a garments manufacturing industry sector (Storey, 2004) and has become an international tourist destination. The tourist industry is growing very rapidly (Waqusa, 2004; Narayan, 2003), creating not only a new labor market (direct and subsidiary sectors), but also new education and training imperatives (Yarrow, Strachan and Krishnamurty, 2000). However, the sugar and garment industries are under threat as the world moves towards full economic integration. The future will see some radical, potential destabilizing shifts in the economic base of Fiji, in the composition of the labor force and in education and training alignments (Chand, 2001). Fiji has already undergone some “de-agrarianization” (Potter and Cooke, 2004). The rate of urban migration is higher than the creation of jobs and thus unemployment is high in the urban areas.

Fiji has a population skewed towards the youth, so the entry of large numbers of workers with inappropriate qualifications into the urban labor market in a climate of low growth of traditional employment opportunities and diminishing wage rigidity, will lead to a growing pool of under and unemployed people (Chand, 2003) and to social unrest. Thus, a careful development of human capital potential is essential not only to attain a future stable economy but also to maintain political stability.

For more than half a century, the search for an appropriate school curriculum, particularly at the secondary level, has preoccupied educational thinking in many nations including Fiji. The role of Technical and Vocational Educational and Training (TVET), especially in relation to delivering quality education in the school sector, has been the subject of considerable discussions, researches and policy reforms throughout the world.

TVET received considerable attention during the deliberations of the Fiji Islands Education Commission, 2000. Many submissions referred to TVET as a possible route for students who are not academically inclined. This view is consistent with Delor’s UNESCO Report that defines education as contributing to the all-round development of a child’s personality and which identifies the range of learning that students need to experience in order to be adequately prepared for active participation in all aspects of life in the twenty-first century. The Delor’s Report suggests that, to achieve this, education should be rebuilt around “four pillars”: ‘learning to know,’ ‘learning to do,’ ‘learning to live together’ and ‘learning to be.’ All students must be able ‘to do’ as well as ‘to know,’ if their total development needs are to be addressed. This is the central thought behind the creation of TVET schools in Fiji.

CURRENT EDUCATIONAL/TVET SYSTEM

TVET is a concept that encompasses a diverse array of programs and activities. It emphasizes both education and training and extends beyond schools, post-school institutions and work place enterprises to community-based, non-formal systems. (Sharma, 1999). There is, therefore, considerable variety in the locations in which TVET is pursued in Fiji.

The theoretical underpinnings of TVET in Fiji emphasize that:

- learning should be directly relevant to the active interest and concerns which pupils have – or will develop in the future – in their out-of-school life;
- theory (academic) studies and “practice” (vocational training) can be integrated;
- there is a need for equality of educational opportunities and so opposes any form of elitism.

Other motives, economic and political (both at the micro and the macro levels) have also influenced the establishment of TVET programs in many developing countries, including Fiji. The structure of Fiji's TVET system is provided in [Figure 1](#).

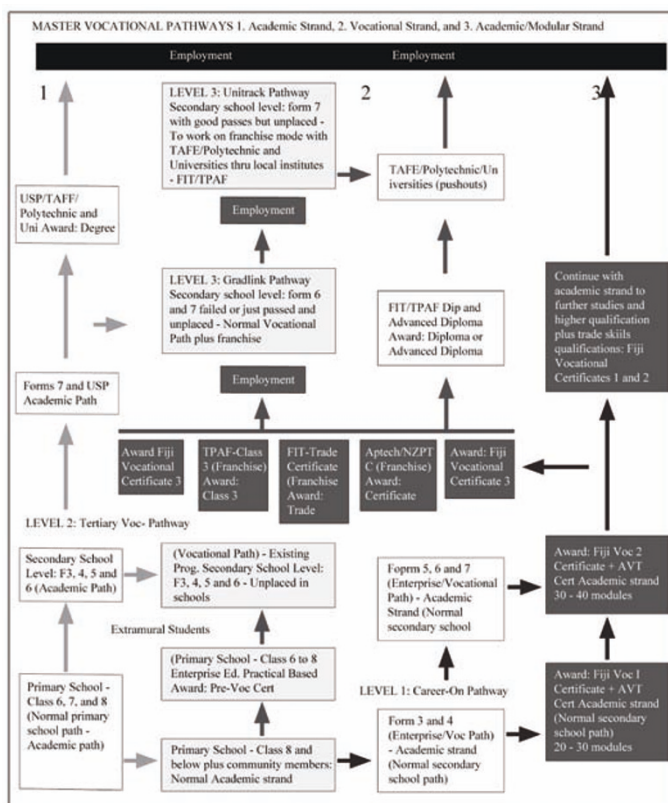


Figure 1. Master vocational pathways in Fiji.

Orientations

The three emerging orientations are:

- Training for identified jobs which are connected with the man-power planning paradigm. The emphasis here is on preparing human resources for projected employment opportunities;
- Focusing on job creation. This is largely concerned with an attempt to prepare human resources for self-developed and self-managed enterprises;
- Upgrading the level of available skills by means of pre-service and in-service training programs.

More recently and in response to the rapidly changing nature of the workforce and the skills required to perform them effectively within this changing context, schools have been called upon to provide programs for all students which support a greater understanding of the world of work and the development of those skills and abilities which they will need to demonstrate in their working lives.

The UNESCO Second International Congress on Technical and Vocational Education, held in Korea in 1999, called for “A new holistic approachso that education for the twenty-first century will include all domains of learning, incorporating general and vocational education, to enable the learner to launch into a life-long continuum of knowledge, values, attitudes, competencies and skills.”

Institutional Locations

TVET programs are conducted in a variety of institutional locations. The choice of location depends mainly on the goals that the programs are intended to achieve. There are two distinct institutional locations.

1. School-based TVET programs. These include initiatives such as the diversification of the whole secondary school system, the vocationalization of the school curriculum and the introduction of TVET streams;
2. Post-school TVET institutional programs. These provide pre-vocational market oriented training courses to secondary school graduates.

Another route that TVET has taken to open pathways to the formal education system is through the vocationalization of the existing school curriculum. This involves introducing practical vocational and technical subjects into the existing school curriculum.

Separate streams of TVET programs also operate within the ambit of the school systems. Such programs generally cater to early school-leavers who are unable to cope with the demands of an academic education. There is also a tradition of quite separate TVET schools operating alongside the general secondary schools.

TVET in the Ministry of Education

A total of \$ 296,494,300 of the Government’s annual budget goes to the Ministry of Education, and about \$ 1,559,300 is allocated to the TVET sector.

The TVET Section of the Ministry of Education covers the following areas.

Table 1. TVET academic subjects in 168 secondary schools

<i>Discipline</i>	<i>Total number of schools</i>
Home Economics	145
Industrial Arts	154
Agriculture Science	145
Business Technology	43
Computer Technology	102

Table 2. Academic subjects in 168 secondary schools

<i>Discipline</i>	<i>Total number of schools</i>
Catering and Tailoring	34
Automotive Engineering	28
Carpentry and Joinery	35
Boat Building	1
Welding Fabrication	2

Of the 128 vocational programs, 56% are franchised to either the Fiji Institute of Technology or to the Training and Productivity Authority of Fiji.

EMERGING CHALLENGES AND TRENDS IN TVET

Challenges in TVET

Based on submissions made to the Education Commission and on available research, a number of recommendations for policy and practice have been submitted to the policy makers of the Ministry of Education.

Policy directions. A ‘bottom-up’ approach wherein teachers, administrators and members of the school committee are accorded greater opportunities for participation in the decision-making and learning processes. Such an approach has a number of benefits.

- It generates a more relevant teaching and learning program and addresses the developmental needs of the school community;
- Community involvement in school facilitates an improved learning environment for students;
- Community participation in school affairs provides an opportunity for the members of the school community to be involved in the process;
- Given the multi-cultural context of Fiji, the involvement of the community in schooling makes it possible for policy makers, administrators and teachers to accommodate the interests of various social and economic groups of the population in education policy programs and projects.

Capacity building of TVET teachers. There should be a provision of on-going context-based and center-based development programs for TVET administrators and teachers. Such staff development programs can prepare teachers and all those involved to manage major transformations in an educational setting. Well-informed teachers and administrators can inspire initiative, vision and the ability to plan.

To establish these in Fiji's school-based TVET, it is necessary for those leading it to be convinced that they need to invest more efforts in bringing over to their way of thinking their colleagues, students and the members of the school community. There is a need for policy makers to be convinced of the value of TVET at a personal level. There are also grounds to suggest that the success of any planned educational change rests not so much on an abundance of material and financial resources but more on well-informed and talented human resource base. Practical proposals arising from this recommendation include the need for the organization of the following:

- Staff development programs;
- Management courses in areas such as records keeping, management of resources and financial management;
- School-based TVET promotional programs;
- Short courses for TVET graduates;
- Courses in action research and reflective practice for teachers and principals in order to promote on-going personal and professional development.

There is a less promising future for Fiji's school-based TVET programs should they continue to operate alongside mainstream schooling. There are plans to establish an Institute of Technical and Vocational Education and Training in one of the four divisions of Fiji so that no comparisons are in place.

Curriculum development. With the National Curriculum Framework currently in place, technology is now part of the primary curriculum and it goes under the topic Enterprise. This is a Major Learning Outcome (MLO) for all students in Fiji. Enterprise Technology will cut across all subject areas so that they will have an element of Enterprise at the end of their learning program.

The syllabus is going to be tested at the beginning of 2009 for all Class 3 and Form 3.

Trends in TVET

The status of TVET amongst students, parents, teachers and the wider community is low in comparison to that of academic studies and this impact on its uptake and acceptability. Academic education is perceived to pave the way to further education for increased career opportunities and better financial rewards.

The low status of TVET as compared with academic education is further aggravated by such situations as in Fiji, where TVET graduates neither earn more nor are more likely to go into technical areas of the labor market than those from the general education courses. Therefore, vocational education is perceived by the majority of its stakeholders as a 'second class' option and by some only as

a temporary diversion from the main route to higher education and modern sector employment. Any innovation seen in this light can have only a remote chance of successful implementation.

TVET reforms have rarely been accompanied by any corresponding changes in the labor laws, improved salary structures, appropriate recruitment or selection criteria, human resources development strategies or the general social and political framework. This is exacerbated by the view held by many, including policy makers, that it is less important than other innovations in the educational system.

A second perceived limitation is concerned with the relevance of TVET. Relevance here refers to what TVET really has to offer to its clientele. The idea that TVET is important for its labor market relevance can be discounted, given the contemporary industrial and socio-economic environment which is rapidly changing and is dynamically complex. In this environment, labor market predictability is difficult. Therefore undertaking any forward human resource planning may not coincide with the changing employment market, leaving many TVET graduates and their employers disappointed.

The third factor that operates against the successful management of TVET programs concerns resourcing. The international literature argues that TVET is more expensive than academic education, the cost of equipping vocational classrooms and training technical teachers is higher than those for general education. The lack of resources, underqualified teachers and poor management of TVET innovations contribute significantly to their failure or only partial acceptance.

The challenge for the successful implementation of TVET in this context is to develop appropriate societal values and attitudes and new policy and financial commitments, congruent with and cognizant of local, regional and global opportunities and concerns.

Fiji's secondary school-based TVET program is trapped in a framework of social and economic inequality, as are the majority of TVET initiatives in developing countries. Consistent with international literature, it is argued that as long as academic education credentials dominate as the most important pre-requisite for the job market, TVET only has a little chance of making any significant contributions to the educational and labor market development in Fiji. Given the present socio-economic and political benefits and privileges accrued through academic qualifications, TVET programs can continue to exist only as a "second class" option in Fiji. Therefore, government is urged to pay particular attention to TVET and give it due attention in the process of effecting educational policy reforms. An integrated approach to education and a modular approach to pedagogy will result in education that can help promote the overall development of the child. Such an approach can also help develop capacities in our citizens to learn together throughout their life span.

Matelita Lewadua Rauca
Education Officer
Ministry of Education

HIDETOSHI MIYAKAWA

9. JAPAN

INTRODUCTION

Japan has made rapid economic growth after World War II and its current Gross Domestic Product (GDP) now stands at about US\$4.3 Trillion, ranked only second after the United States of America whose GDP is approximately US\$13.2 trillion.

The basis upon which Japan's technology has been built is the establishment and implementation of an education system during the post-war period, a major development which Japan can boast of to the world.

This paper seeks to describe Japan's current technical and vocational education and training (TVET) system from various perspectives so that it can serve as a reference for other countries.

CURRENT EDUCATION/TVET SYSTEM

In Japan, TVET is handled by the Ministry of Education, Culture, Sports, Science and Technology and the Ministry of Health, Labor and Welfare. The Ministry of Education, Culture, Sports, Science and Technology looks after vocational education (VE) while the Ministry of Labor and Welfare takes care of vocational training.

The role of each ministry is defined below. In reality however, drawing a clear line between their roles is difficult in some cases.

This section presents how TVET programs are implemented under each of the respective ministries mentioned. A general overview of the education system of Japan is provided in [Figure 1](#).

1. Vocational Education by the Ministry of Education, Culture, Sports, Science and Technology

The Ministry of Education, Culture, Sports, Science and Technology, which has jurisdiction over school education, carries out technology education as part of the general education curriculum under the Technology portion of the Technology and Home Economics subject in the first, second and third years in junior high school. Although technology education is included in the handicrafts portion of the drawing and handicraft subject in elementary schools, virtually no practical technology education is given at the moment. In junior high schools, one period per week for the first and second levels and one period every two weeks are usually allocated. In high schools, Information Technology courses in the general education course

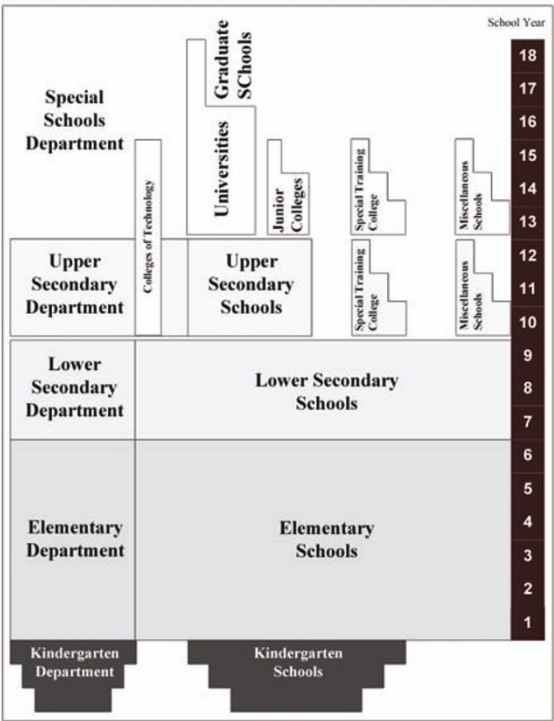


Figure 1. Overview of the education system in Japan.

curriculum are provided as part of technology education. It indicates that specialized courses in high school as part of vocational education are placed above compulsory education, namely elementary and junior high school.

As shown in Table 1, about 680,000 students are learning from the 2,303 specialized courses in the senior high schools, which represent 20% of the total number of senior high schools in Japan. Forty-one per cent of this number (280,000 students) are enrolled in industrial high schools where technicians for the industrial world, especially for the “Making Things Industry,” are trained and developed.

Other than specialized courses in the high schools, vocational education in school education is carried out by means of both Special Institutes and Miscellaneous Specialized Institutes as shown in Table 2. These types of schools provide mainly vocational education to people in a wide age range.

The Miscellaneous Specialized Institutes started as educational institutions in the Meiji era and in conjunction with the amendment of the School Education Act in 1975. Special Institutes were established as an advanced form of the Miscellaneous Specialized Institutes. Thirty years since their establishment, Special Institutes have been playing an important role as a core educational institution that provides practical and specialized vocational education.

Table 1. Number of students, courses and senior high schools

Category		No. of students	Rate (%)	No. of courses by specialization	No. of schools
General Course		2,455,150	72.30	4,072	4,072
Specialized Course (Vocational)	Agriculture	90,139	2.70	343	
	Industry	278,859	8.20	613	
	Commerce	234,859	6.90	761	
	Fishery	9,821	0.30	45	
	Home Economics	47,908	1.40	334	
	Nursing	13,020	0.40	95	
	Information	2,374	0.070	23	
	Welfare	10,687	0.300	98	
	Sub-total	687,667	20	2,312	2,303
Specialized Course (Others)		101,357	3.00	583	-
Integrated Course		153,583	4.50	312	312
Total		3,397,75	99.80	7,279	6,687

Table 2. Category of special institutes and miscellaneous specialized institutes

Specialized institutes			Miscellaneous Specialized Institutes
Specialized Course (Specialized College)	Advanced Course	General Course	

Specialized Colleges, better known as “Senmon Gakko,” offer specialized courses in the Special Institutes. Special Colleges for high school graduates have been attracting increased attention these days as the next academic step for high school graduates along with universities and colleges and also as a place for life-long learning where one can acquire practical skills after graduating from university or college.

In order for vocational education to further permeate into the society, an overarching approach by the entire school education, from elementary and junior high school to high school and universities is essential. Special Institutes are expected to play a more advanced, core role in vocational education in the light of the history and track record of Special Institutes.

2. Vocational Education by the Ministry of Health, Labor and Welfare

In the Ministry of Health, Labor and Welfare, various sorts of institutions for vocational education exist under the jurisdiction of the Human Resources Development Bureau. Specialized education for specific fields is provided by educational institutions involved in vocational education.

This section will describe some of the typical institutions that implement public vocational education in school education, namely technical high school for students who have finished the six-year elementary school and the three-year junior high school, the five-year college of industrial technology for junior high school graduates and the academy for high school graduates. The unique features of each institution will be described under common categories below.

OKAZAKI technical high school (Aichi Prefectural Okazaki technical high school, a public industrial high school). The Aichi Prefectural Okazaki Technical High School is located at the southern part of Okazaki City (population 360,000). This industrial high school was established in 1912. There are six three-year departments that introduced the boarding school system. They include chemical engineering, textile design, machine, civil engineering, electrical and information technology departments. The machine department also introduced the evening high school system. In consideration of the local industrial structure, the chemical engineering and civil engineering departments include machining courses.

The high school system in Japan aims to make students stand out for a prospective employer; to allow students to go to the next educational stage as well as to become skilled engineers. To enable students to be more creative and dedicated in their activities, a classification is made which is not based on grade deviation alone. Furthermore, instruction is given in accordance with the students' interests/concerns, individual preferences and career options. About 85% of the students work for a local good-standing company and 15% continue on to higher education.

The school offers two programs (standard and professional). In the standard program, they receive general education where they learn to live as members of society. In the professional program, they receive practical work experiences and perform tests to acquire the basics of creative activities.

Aichi prefectural agricultural academy. The academy was established to develop the skills of engineers in agriculture-related areas. Its goals are: to nurture confidence and pride as an agricultural worker; to acquire knowledge/skills/techniques in the field; to develop insights/applied skills/creative ability and cooperativeness; and to develop planning/organizing and leadership abilities.

The academy's features include: practical work education under the Boarding School System (Agricultural Department of Education Faculty); develop practical leadership abilities (under the Research Department of the Education faculty) and educational training as life-long education for agricultural workers (under the Training Department).

The vocational institutions, such as the ones described above and below, were founded by the local communities, organizations or companies, according to the local community's needs and situations.

Aichi art and design academy (private vocational school). Aichi Art and Design Academy, established in April 1983, i.e., specializes in the design of posters, illustrations, computer graphics, *Manga* (Japanese cartoons) and formative arts. Its philosophy is that creating starts with designing. It is based on the concept that a design should be rationalized and infused with the creator's empathy.

Among its departments and courses are: the graphic design department (two-year course for high school graduates); graphics/advertising course, digital art course; the illustration department (two-year course for high school graduates); the *manga* department (two-year course for high school graduates); the formative art department (two-year course for high school graduates); the graduate department (one-year course for university, college and vocational school graduates).

Aichi construction center (Nagoya construction skills academy). The Aichi Construction Workers' Union was originally established as an organization of self-employed master construction workers. However the number of union members operating their own businesses was on the increase thus there was a strong need to develop and train apprentices. In response, the Nagoya Construction Vocational School was established in April 1962. It initially had two departments: construction carpenters and plasterers. The school subsequently set up additional departments such as those for joiners, thatched roofers, tilers and platers. Since 1968, it had only the construction carpenter department. In 1971, the Nagoya Construction Vocational School received facility subsidies based on the Vocational Training Law from the Ministry of Health and Welfare (at that time) and the Aichi Prefecture. As a result, the school was reborn as the Aichi Construction Center. The public-interest vocational training organization engages in educational activities by providing on-the-job-training. The Aichi Construction Center responded to the changes in engineering techniques by establishing new departments to train workers in those new techniques.

BEST PRACTICES OF TVET IN JAPAN

Some of the sample best practices in vocational training in Japan are described below. The vocational institutions in this section were founded by the local communities, organizations or companies, according to the society's needs and situations.

Tokyo metropolitan college of industrial technology. The Tokyo Metropolitan College of Technology and the Tokyo Metropolitan College of Aeronautical Engineering were both established in 1962. Through practical engineering education programs (five years), both schools have prepared many creative people for jobs in the industry. This has contributed significantly to the industrial development

of Tokyo. With the intense global competition and overseas transfer of production bases in recent years, Japanese industry is becoming hollowed out. Technologies are being advanced and integrated. Under these circumstances, there is a strong need to produce engineers with practical skills to plan and develop high value-added products. To meet the new needs of the industry, the Tokyo Metropolitan Government is now pursuing a plan to implement a “creator-training system.” This innovative system will be introduced for the first time in Japan. In line with the establishment of the creator-training system, the Tokyo Metropolitan College of Technology and the Tokyo Metropolitan College of Aeronautical Engineering were merged in April 11, 2006 to bring about the Tokyo Metropolitan College of Industrial Technology with new education courses and programs. The school has set up a two-year specialized department, which is more advanced than the regular five-year department. The specialized department is intended to conduct more sophisticated practical engineering training. In April 11, 2006, the Advanced Institute of Industrial Technology was opened for students who are continuing their education onto the post-graduate level. The Tokyo Metropolitan College of Industrial Technology will introduce a nine-year consistent creator-training system (from the higher professional school through graduate school levels).

Hamamatsu techno college. The official name of the institution is the “Shizuoka Prefectural Hamamatsu Technology Academy.” Located in the western part of Shizuoka Prefecture, the school is the main campus of the vocational schools organized by the prefectural government. Aside from this school, there are three other Techno Colleges in the prefecture.

Hamamatsu Techno College was borne out of the “Shizuoka Prefectural Hamamatsu Mechanic Vocational School.” In 1938, the mechanic vocational school was established in Hamamatsu City, one of Japan’s prime heavy industry areas. In April 11, 1938, the school opened the first four departments composed of lathe, finishing work, milling, and welding (total number of students: twenty-five; training period: one year). Currently, the College trains students to become leaders in the production line after having acquired familiarity with machine operations and manual finishing work. It also nurtures students to become young engineers who exploit their own skills in the construction of wooden buildings. The school also offers job training in various fields for people who want to leave their present work or to change jobs. They include machining, welding, piping, CAD/CAM, electrical work, electrical maintenance, landscaping, advertising design and IT businesses. For those people who are already working, the Techno College offers many different courses to further enhance their skills.

Toyota technical skills academy. (an intra-corporate vocational school that provides job training courses certified by the Human Resources Development Promotion Law).

The Toyota Technical Skills Academy originally started as the Toyota Technical Youth School. It opened in 1938, the year following the establishment of the Toyota Motor Co., Ltd. Kiichiro Toyoda, the founder of Toyota Motor Corporation,

started automotive manufacturing with the vision that Japanese people can manufacture cars using their own brains and brawn. Businesses engaged in automotive manufacturing require various high-level manufacturing techniques such as cylinder block casting, gear machining, car body plating/welding and coating. Based on the concept “manufacturing starts with developing human resources,” Toyota undertook the development of skilled workers to manufacture vehicles. About 15,000 students have graduated from the Toyota Technical Skills Academy to date. Some 8,000 graduates are currently working in different departments of Toyota.

EMERGING CHALLENGES AND TRENDS IN TVET

Emerging Trends in TVET

In line with the education and training policies implemented by the government agencies responsible for TVET in Japan, one exemplary practice that this author wishes to share is the case of the Aichi University of Education which has a long history of contributing to the education and training in Japan.

Founded as the Aichi Prefectural Training Institution in 1873, the Aichi University of Education (AUE) has experienced some organizational transitions to become the Aichi University of Arts and Science in 1949, the Aichi University of Education in 1966 and finally to the National University Corporation of the Aichi University of Education in 2004. In the course of time, the university has produced a number of capable teachers for the local educational communities and thus has made significant contributions. Given this background, one of the university missions is to provide not only human resources but also material resources such as libraries, facilities and equipment to Aichi prefecture and other places in Japan, as well as overseas. One of the ways to make such contribution is through the “Education and Human Resources Development for Making Things” program led by the Technology Education Course of AUE.

Making things workshop. First and foremost, motivating children who will bear the country’s future is vital in laying the foundation of TVET. This section will first introduce how AUE implements the “Making Things Education” to elementary and junior high school students towards that end.

As one of its annual extension classes, the university hosts a “Making Things Workshop” for children in the local communities. The undergraduates also join the classes and work together with the children. The themes of these workshops include “Manufacturing a key chain from low-temperature fusion metal,” “Manufacturing a wooden product from thinned wood,” “Let’s make your original magnet!” “Let’s make a robot that can run in a maze” and “Let’s grow a radish sprout.”

Making things workshop delivery (FY 2007). Upon the request of companies and organizations of making things from schools, the faculty and students visit and hold the workshop on-site. The following are the list of workshops that were held in FY 2007. Themes of this workshop delivery include “Summer Family Workshop,”

“Enjoy Making Things Experience,” “Toyota Making Things Festival 2007,” “Science/Making Things Festival @ AUE,” etc. Also, the Technology Education Research Lab introduces its Making Things projects on the website so that many people can experience “making things.” The site shows the materials required to make each project, the making procedures and the images of the finished product.

The concept of the “Industrial Technology Education” Course at AUE has been jointly provided to overseas participants for a decade.

Providing JICA group training on “industrial technology education”. Over the past ten years, the Aichi University of Education provided the JICA Group Training “Industrial Technology Education” by inviting people from developing countries who are involved in industrial technology education in their homeland. AUE also provides country-tailored “Industrial Education” training for the last three years. The group training course entitled “Industrial Technology Education” was started in 1999 with only ten trainees from ten different countries each year.

The course became successful because of the close cooperation among the faculty, keen personal interest and responsive cooperation between JICA and AUE. The location and experience of the university also contributed to its success. The course program includes: an overview of education and industrial technology, teacher training, industrial technology in society, company visits and technology, in general (training).

The evaluation of the training is based on the following objectives; to evaluate the target, program and effectiveness of the training course and to leverage the evaluation results for the improvement of future courses. Overall evaluation of the administration, operation and others are done at the end of all the programs. Daily evaluation of the contents and methods of each course subject is done at the end of each day.

The requirements for application are the following: recommendations from the governments of the state of origin of the trainees; an officer of either the central or the local government and those involved in the industrial technology field. More than five years of experience in the field; aged 25 – 45; proficient in English; healthy in body and spirit; and is a civilian.

In the past, there were a total of ninety-six trainees (one from Central Asia and Oceania, two from Europe, ten from Latin America, twenty-four from the Middle East and Africa, and thirty-six from Asia)

The training materials used are: Industrial Technology Education for All, Technology Education in Pacific Rim Countries, Japanese Government Policies in Education and the Japan Almanac.

Some of the related events are: (1) The First International Symposium on Educational Cooperation for Industrial Technology Education (July 2003), (2) the Aichi Expo Citizens’ Project “Making Things and Education” International Symposium (July 2005), and (3) the Second International Symposium on Educational Cooperation for Industrial Technology Education (July 2008).

Implementation of international cooperation initiative project. The International Cooperation Initiative project as part of the overseas educational cooperation projects

led by the International Division of the Ministry of Education, Culture, Sports, Science and Technology is explained below.

The Aichi University of Education was awarded the International Cooperation Initiative Project consecutively in 2007 and 2008 by the International Policy Group of the International Division in the Secretariat Office of the Ministry of Education. The succeeding paragraphs will provide an idea of the scope of the project and some sources that can be further examined to obtain additional information. The theme of the project is to “Develop a Core Curriculum Sharing System to Assist Industrial Technology Education in Developing Countries.”

The project objectives are as follows: to assist the enhancement and development of industrial technology education in developing countries; to collect and archive the texts and materials that AUE has accumulated so that they can be useful as contents; to formulate core curriculum that can be used flexibly in different countries, and to build a system for the distribution of the said contents.

There are thirty-nine target countries that have sent trainees to the courses in the past and others countries who have identified a need for the given course contents. Some of the activities are to collect and archive the contents, and to build sharing systems.

A total of 115 content materials have been documented as outputs of the project’s workshops and activities conducted.

The following are the projects track records: Group Training “Industrial Technology Education” Course (1999), Country-tailored “Industrial Education” Training Course (2000–2002), Country-tailored “Educational Curriculum Development” (2003–2005), Country-tailored “School Education Improvement” Training Course (2004–2006), The 1st International Symposium on Educational Cooperation for Industrial Technology Education (2003) and Aichi World Expo International Forum “Making Things and Education” (2005).

The courseware program includes: teacher training for technology education, teacher training for technical education and teacher training for technician education.

Positioning technology education as part of general education program in an appropriate place in the school system is vital in enhancing and developing the nation’s TVET.

It is important for the students to experience, get used to and become familiar with making things while they are still in the senior grades in the elementary schools, and to learn basics/principles of technology education in junior high school, and then to further advance their technology education as part of general education in high school. Also, it is equally important that all pupils and students including both boys and girls are enrolled in the subject. In particular, appropriate selection of study themes and teaching materials according to the development of pupils and students is also of significant importance.

Challenges in TVET

The challenge for TVET in Japan does not lie on the nature of the TVET training programs or of their course contents. It is not even a dearth of training materials

or equipment or infrastructure or even of adequately trained technical teachers. Because the schools as well as the training institutions in Japan work hand in hand not only with industry but also with the local community as evidenced by the above descriptions, there is almost no mismatch on the kind of skills training provided by the schools and the training institutions and the demands of industry or of the labor market. While all these constitute major challenges in the TVET systems of many of the countries in the Asia-Pacific region, none of them impact on the Japanese TVET system. The government of Japan, through the Ministry of Education, Culture, Sports, Science and Technology, provides technical education and the Ministry of Health, Labor and Welfare takes care of vocational education. Financing TVET is not a problem. Defining the role of each ministry may be difficult in some cases. However, through them the Government of Japan is able to address almost all TVET issues that are common to other countries in the region.

A major challenge confronting TVET in Japan is of a more basic nature. It is apparent that it not even concerned with either vocational education or vocational training. Japan's demographic profile which used to be pyramid-shaped in the 1950s, is now starting to look like an inverted pyramid, showing a decline in the young population sector. The total population of Japan is expected to contract slowly, from its peaks recorded in 2005, to become a predominantly aged society where 33% of the total population would be sixty-five years old or older by the year 2035. A further decline in the birth rate is causing a problem of there being less young laborers on top of a decrease in the number of the total population. This is a situation that TVET planners in Japan will have to address both in the long-term and in the medium-term.

Meanwhile, other countries may do well to take a good look at Japan's TVET system and adapt or adopt the approaches herein described as may be appropriate to their own respective systems.

CASE STUDIES

Aichi Prefectural Kariya Technical High School

The school aims to develop technicians/skilled workers to support the making of traditional things. The school also nurtures industry professionals who are creative and exemplify the spirit of the school's motto "Be human before being a technician".

The important role of industry is to produce and develop industrial products and to inspect and maintain social infrastructures so that people can lead a safe and enriched life. This school is intended to help students learn not only the knowledge, technology and skills of the industry, but also have high moral/ethical standards and have the appropriate mindset in utilizing technology and skills.

Features of the school:

- On-target career guidance that helps each student's dreams come true;
- A number of graduates are actively working in local companies. The school strives to earn the local community's dedication and trust;

- Thorough academic guidance that helps students acquire and enhance their academic proficiency;
- Value social code of conduct;
- Safe and orderly learning environment;
- Encourage students to join activities that enhance their physical, mental, academic and technical capabilities, for instance, club activities and acquiring certificates.

Machine course: Let's become a mechanical engineer who can "make things"! Mechanical technology is a fundamental field in any industry. It emphasizes the learning of skills that are necessary for making things from design to technical drawing and manufacturing. The students learn basic machining skills such as grinding (cutting), connecting (welding) and measuring (measurement), as well as how to handle machines, materials, tools, computer, controlling equipment, etc.

Automobile course: Let's become an automobile engineer who can achieve one's dreams! Over the past 100 years, automobiles have been produced and utilized en masse, and continuously make use of more and more advanced technologies. Using automobiles with consideration for safety, comfort and the environment is likely to become more and more important in the future. In this course, students will learn each aspect of an automobile from basics to the applied level, as well as practical knowledge and maintenance techniques.

Electricity course: Let's become an electrician who can support life-line infrastructure! We are leading safe and comfortable lives using electrical facilities and products. State-of-the-art robots, computers and high-speed-large-volume telecommunications are all applied electrical technologies. In the Electricity Course, students will study a wide range of electricity knowledge and technology that are essential for daily life and industry, starting from the basics of electricity and then learning about power generation/transmission, electrical appliances, electronics circuits, telecommunications technology and controlling programs. Students will earn a certificate in electrical engineering.

DENSO ETS Training Center Corporation

The training center aims to develop people who will lead in *mono-zukuri* (making things) with high ambitions through the "Hands-on Learning" approach (union of theory and practice). The following are the features of the center:

- the Denso Technical College aims to develop engineers and skilled workers capable of adapting flexibly to environmental and era changes;
- the Technical High School Course (three-year education for junior high school graduates) aims to develop human resources who are high level skilled worker through 'knowledge education, hands-on training, mental and physical training;'
- the Advanced Vocational Training Course (1-year education for high school graduates) aims to develop human resources who possess specialized technique

- and multi skills through ‘knowledge education, hands-on training, mental and physical training’. Electronic equipment assembly (electronics Course) and machining (mechanical and electronics course) are offered;
- the technical college course (two-year education for high school graduates) focuses on basic theories, develops practical engineers who think creatively. Electronics engineering (electronics course, mechanical and electronics course) and information engineering (information course) are also offered;
 - the Technical skills development course aims to develop high level skilled workers who possess strong mentality and creativity and through training will win at the World Skills Competition. The following trades are offered: Metal Processing Trades (seven trades), Instrument Making, Press Tool Making, MTC etc., Electronics, Control, Information Trades (five trades) and Industrial Electronics, Mechanical and Electronics, ITPC etc;
 - the technical skill training aims to develop skilled workers capable of succeeding at the forefront of ‘*mono-zukuri*’;
 - the engineering education aims to develop engineers capable of contributing to business strategies;
 - the consulting services seeks to contribute to the business development of groups of companies through educational know-how;
 - the engineering and technical skills evaluation provides support for certification and qualification acquisition which provides trainees with a skill-up target for further development.

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Hidetoshi Miyakawa
Professor
Department of Technology Education
Aichi University of Education

JANG CHANG-WON

10. SOUTH KOREA

INTRODUCTION

Korea started in the early 1960s as a typical labor-surplus economy with scarce natural resources. By taking advantage of the abundant supply of labor, especially in the labor-intensive manufacturing-export industries, Korea has achieved a tremendously rapid economic expansion.

After 1945, a system of compulsory public primary school education was gradually introduced in both the city and the countryside. Secondary and higher education also grew rapidly. Thus, the literacy rate reached 90% by the early 1960s, from a level of only 22% in 1945. In the twenty years following 1945, the number of college students increased almost twenty-fold, and middle and high school students about fifteen-fold. The primary driving force for the so called “education explosion” in Korea was the belief of Korean parents that education is a necessary condition for the social advancement of their children. As a result, by 1965, Korea’s human resource development had exceeded the norm for a country with three times its median per capita GNP (Harbison and Myers, (1964).

The educational explosion continued after the early 1960s up to the 1990s, and is now, in some respect, well above OECD standards. Middle school education was universalized around the mid-1980s. As a result, more than 90% of the appropriate age group attend high school now, with about a 95% graduation rate. More impressive achievements may be found in the tertiary education sector. More than 80% of the high school graduates advance to tertiary educational institutes within a couple of years after graduation. About 60% of high school graduates enter college immediately after their graduation and the remaining 20% within the next two years. Not only is the quantitative aspect of Korean education impressive but also the quality of students, especially in the primary and secondary schools, is also exceptionally good.

This scenario reflecting both the quantity and quality aspects of a developing country’s human resources had been especially conducive for the rapid growth of the export-led labor-intensive manufacturing sector, such as textiles and electronics, during the 1960s and 1970s. The same favorable conditions also continued to be in effect in the 1990s especially in the rapid expansion of the heavy exports and chemical industries, such as automobile, shipbuilding and machinery. The Korean economy, however, is now undergoing a tremendously rapid industrial structural change toward an OECD-type mature economy. Thus, the Korean economy becomes increasingly dependent on technology-intensive and knowledge-intensive growth.

The coming age of globalization and the advances in information technology have also accelerated trends in this direction.

Even though this educational expansion is expected to continue in the future, it does not necessarily follow that educational institutions will produce the “right human resources,” with the “right skills and right personalities,” to meet the rapidly changing demands for labor in the coming twenty-first century.

CURRENT EDUCATIONAL/TVET SYSTEM

The Ministry of Education, Science and Technology is responsible for establishing and administering overall policies on vocational education (VE). Vocational education providers operate government-supported educational institutes for senior high school students (460,000), a 26% share of the total student population and for vocational college students (900,000), a 33% share of the total including four-year colleges in 2004.

The following figures illustrate the trends in TVET in South Korea.

Figure 1 shows the trends in the number of vocational high school (VHS) students and the number of general high school students from 1965 to 2004. The share of vocational high school students is 17% in 1965 and 46% in 2004.

Figure 2 shows the trends in employment and colleges entrance rates among VHS graduates. The employment rate of vocational high school graduates decreased from 65.3% in 1960's to 32.9% in 2004. However the college entrance rate of vocational high school graduates sharply increased from 16.7% to 62.3% in 2004.

Figure 3 shows the trends in the number of vocational college students and four-year college students from 1965 to 2004. The number of vocational college students was recorded at 20,000 in 1965 and 900,000 in 2004. The number of vocational four-year college students was at 11,000 in 1965 and 1,183,000 in 2004. The rate of increase in the number of vocational college students was faster than that of the four-year colleges during the same period.

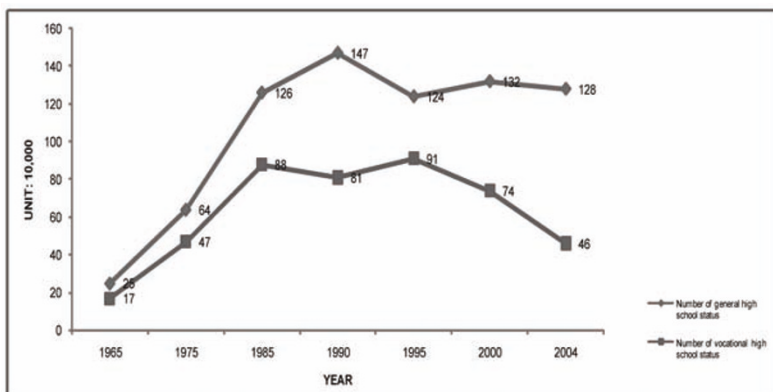


Figure 1. Trends in number of VHS students (1965–2004).

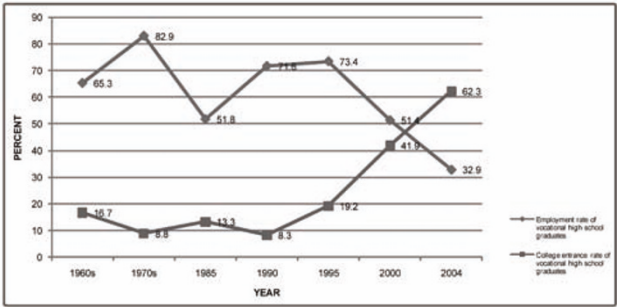


Figure 2. Trends in employment and college entrance rates among VHS graduates.

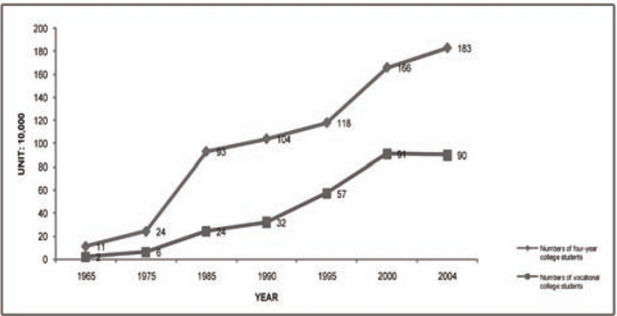


Figure 3. Trends in number of vocational college/college students (1965–2004).

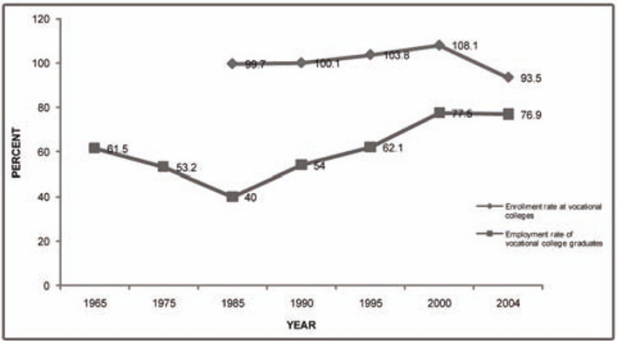


Figure 4. Trends in enrollment rates in vocational colleges.

Figure 4 shows the trends in the enrollment rate in vocational colleges and the employment rate of vocational college graduates from 1965 to 2004. The enrollment

rate in vocational colleges was consistently increasing for the period 1985–2004. The employment rate of vocational college graduates was 61.5% in 1965. By 1985, it had decreased by 40.5% and increased progressively again until 2004.

Policy Directions on TVET

The basic policy directions in TVET are the following:

Providing vocational education for all kinds of people:

- Establish life-long vocational training that covers all sectors of society;
- Identify and nurture talented lower-income people as a way toward their integration into society;
- Nurture talented people in national strategic areas to promote sustainable growth;
- Nurture talented women and promote the participation of women from a strategic perspective;
- Promote cultural awareness to promote harmony within society.

Strengthening Work-Based TVET:

- Ensure quality education at the elementary, middle and high school levels;
- Build an infrastructure that enhances efficient TVET;
- Facilitate smooth transition from school to work (STW), work to school (WTS) and school to school (STS);
- Improve higher education to realize the goal of “Knowledge Power;”
- Promote exchange programs and cooperation as a means to achieve globalization.

The Vision and Strategy for TVET

Vision. At the personal level, TVET envisions workers to be self-directed learners. At the societal level, TVET envisions having a competency-oriented society instead of focusing on individual characteristics. At the national level, TVET seeks to construct a knowledge-based economy. The new government of South Korea pursues the goal to become a developed country by promoting training initiatives to upgrade the labor skills of the workforce.

Strategy. The government’s strategy is to establish a new TVET system. In order to fulfill its goals the Government has four policy directions as reflected in the following key policy areas:

- Provision of various opportunities for learning. The opportunity for life-long education should be provided to everyone, since this is an individual’s right as a citizen. In addition, it increases one’s chances to obtain the necessary labor skills for future employment;
- Construction of a flexible learning path. This means fostering the conditions that will enable employees to access continuing education programs. Thus, in order to achieve such goal, a formal education institution should be specialized, if needed, and the institutes for educational training should be restructured;

- Strengthening the connection between work and learning. This means that the TVET curriculum should be transformed in accordance with the results of an analysis of prospective jobs in the labor market. The prevailing conditions in the teaching environment should also be taken into account;
- Construction of an efficient system via the distribution of roles. The delineation of roles in developing labor skills between the local and national levels will result in a more efficient system and provide a driving force for the country based on emerging knowledge and information technology. In this process, the function of the private sector in the labor skills training market should also be taken into account;

To further ensure the adaptation of the new strategy in the labor market under a new TVET system, a lot of new roles can be assumed by each of the concerned parties:

- Students and workers are the ones who can meet the supply and demands of the TVET market. Under this new system, students are provided with the opportunities to nurture their capabilities to adapt to new technological changes in the labor structure and to construct a future plan for their own employment;
- TVET institutes are the main suppliers in the labor market. All students in the primary and secondary schools are provided with vocational education through on-site training and a variety of educational experiences. Tertiary educational institutions have a strong commitment to establish a connection with the community; thus, they function as an open university within the community. TVET institutes produce innovative and creative training programs to meet the societal demands for a new driving force behind labor skills formation;
- Industry and employee unions are the most demanding entities in the TVET market. Industry makes an effort to establish a connection between schools and the workplace thereby introducing new practices in employment. It also creates an environment where employees are able to acquire the knowledge and skills needed in the workplace. The leaders of industry can take the lead role in the advancement of labor skills. This is because industry is the real beneficiary of a well-organized labor skills formation system. Employee unions also take part in the development of labor skills in the workforce by participating in the government-funded TVET programs as an equal partner;
- Government has a key role to play in meeting the labor supply and demand in the TVET market. The local government takes part in the management of labor skills formation by establishing a connection with each party concerned. The central government encourages the decentralization and privatization of vocational education and training, and at the same time, it creates an international connection with regards to labor skills training.

Transformation into a knowledge economy (KE). In the twenty-first century, a high technology, information and communication industry and a sophisticated service industry are expected to constitute the core section of the economy. This means that society will become more knowledge and information centered. In the case of OECD countries, industries based on knowledge and technology showed rapid growth

during the period 1985–1994. In addition, the proportion of value added industries already stood above 50% in 1997.

A recent development, in the APEC definition of a knowledge economy (KE) by Mann and Rosen suggests that: KE is that strategic combination of organizational changes, policy settings and capacity building based on the innovation and creativity promoted by expanded international trade and globalization, and networked information technologies that are necessary in order for a country to achieve sustainable economic growth and social well-being.

In Korea, it is expected that an industry based on knowledge and a service sector related to information technology will play an important role in creating job opportunities in the next five years. Meanwhile, it is also expected that the size of the industry relying mainly on the manual labor force and monetary investments will decrease. (Korea Development Institute, 1998).

Role of information and communication technology. Knowledge-based ICT industries have been growing by 0.5% annually in the OECD since the mid-1980s. Data on investment shifts towards ICT are quite substantial, growing from an average of 1.1% of the GDP in 1985 to 1.6% in 1995. The data from the US has presented striking growth in ICT from 4.2% of the GDP in 1972 to 6.1% in 1990, and 8.2% in 1998. ICT's share of nominal GDP growth has been running at almost double the rate of the economy (15%). A key factor in the growth of the ICT sector has been the rapid fall in ICT costs. The cost of microprocessor computing power has decreased from US\$230 to US\$3.42 per MIPS in 1998. Such has been the fall in ICT cost that in 1996 and 1997, declining prices in ICT reduced US inflation by one whole percentage point (in 1997 2%, rather than 3.1%).

The knowledge economy is substantially the outcome of innovations in the ICT sector, taking place in a globalized market. In terms of ICT, globalization cannot occur without efficient vehicles to send and receive information and cross great distances. The knowledge economy is more than just the sum of the technological and economic processes associated with ICT. The challenge of KE lies particularly in its impact on productivity, growth and competitiveness. An active participation in the global KE is essential to bring about high standards of income, comparable with those of other successful KEs. These conclusions set the scene for more discussions of issues in TVET issues associated with the KE.

BEST PRACTICES OF TVET IN SOUTH KOREA

Strengthening the Connection between Schools and Companies

- The theory-oriented TVET curriculum will be changed into a practical-oriented one. The needs of teachers, students and those working in this sector will be regularly analyzed. The connection between a vocational high school and a general high school will be reinforced for students of the vocational high school to improve their problem-solving abilities as well as their technical skills. Financial support is also needed to improve the conditions of the school facilities to have a more practical curriculum in the junior colleges and polytechnic universities.

- On-the-job training should be expanded. Programs in a simulation experiment in on-the-job training and in internships will be developed with a methodology that will be utilized for an efficient implementation of the programs.
- The connection between universities and companies for the training of more efficient skilled laborers should be strengthened. The establishment of a special contracted department in a vocational high school, junior college, or university that receives support from related industries should be encouraged. The expansion of a customized educational program is needed to become a channel for collecting various opinions with regards to TVET institutes.

Supporting the Establishment of Venture Businesses

- Provisions for basic educational training on how to set up a venture business should be made available. A course on the establishment of a venture business should be included in the TVET curriculum.
- The establishment of a center for the support of a venture business should be encouraged in universities and research institutions. A special institute for the screening of proposals for the establishment of a venture business should also be established.

Enhancing the Practical Vocational Ability of the Teaching Staff

- Teacher training should be re-organized to allow trainees to gain practical experiences for working in research organizations or as potential teachers. It is recommended that when they are recruited to teach, their experiences should be considered as an additional asset. It is further recommended that those who are currently employed in vocational high schools, be hired as teachers and those who are currently employed in universities be hired as professors.
- It is recommended that a sabbatical system be introduced for teachers to enable them to have hands-on experiences and training. A special training will be provided so that they can be equipped with business skills oriented towards information technology.

Sharing Knowledge and Skills between Schools and Industry

- A research organization sponsored by a junior college and a polytechnic university in a local area will be established in order to meet the steady demand of the local companies. A consulting group composed of professionals will actively support the development of technology and the management of a small or medium-sized company.
- The Industrial Education Promotion Act needs to be amended for the activation of TVET institutes with companies. Financial support will be given to promote the relationship between polytechnic universities and local companies. The exchange of human resources and information among educational institutions and research organizations will be activated.

EMERGING TRENDS IN TVET

Expanding the Number of Specialized High Schools

The central government plans to transform 300 vocational high schools into specialized high schools by 2010. The following are considered as best practices in TVET in Korea:

Starting in 2008, specialized schools under contract with local governments have been established. First, these schools are linked with the key local core, specialized and traditional industries. Secondly, specialized schools under contract with industries are increasing the manpower pool based on industry demands and the occupational organizations for the relevant vocations. In 2007, forty-seven schools have been converted. Thirdly, eighty schools will be converted into specialized schools under contract with government agencies that are closely-linked to cutting-edge and national key industries.

Consistent with the above policies, the government has further made the following policies and efforts: drawing school directors for specialized schools from industry; expanding the employment of teachers with field experience as adjunct-teachers; granting greater autonomy in organizing educational courses and the contents of textbooks; and enabling access to these programs by excellent students nationwide and not just limiting them to the region.

Other efforts made in this direction were: revising and improving educational courses. Time formerly devoted to imparting obsolete skills is now used for basic vocational competencies such as problem solving and communication skills. Examples along these lines are: SCANS in the USA, GNVQ in the U.K. and AQF in Australia. These efforts show that developing educational courses and innovating overall school operations are needed to meet the demands of industry.

Reforming Vocational Colleges

The following initiatives to reform vocational colleges have also been started: A partnership Program systematically links educational courses, facilities and teaching staff in vocational high schools and vocational colleges. There were forty-one vocational colleges operating forty-four partnership programs in 2007.

- Industrial Technical Education Complex - this program links vocational colleges and local industries. Some examples are the LG Technical Education Complex and the Doowon Technical College; LG Philips, and Paju Technical High School. The latter was established by a large local government in Gyeonggi-province.
- Strengthening the role of vocational colleges as local life-long learning centers. Re-training and continuous education of workers are provided through part-time enrollment courses in vocational colleges. Funding from the Employment Insurance Funds (EIF) for TVET courses offered at the vocational colleges is provided.
- Establishing an incentive system for vocational education. Vocational school students are provided with scholarships. Empirical data show that the rate of scholarships is proportional to the tuition fees of vocational high schools,

42% in 2004. Preference for vocational high school graduates is given in the selection of university entrants.

- Providing support in finding a job and starting a business for graduates from TVET institutions was facilitated through the establishment of enterprises inside vocational high schools and vocational colleges. One hundred eighty-four enterprises existed in 2007.

Expanding Opportunities for Continuing TVET

The connection between secondary level schools and tertiary level institutions with regard to TVET must be established and expanded. Support is needed for a university or a junior college to actively participate in the development of programs in TVET. It is recommended that a junior college be utilized as a center for continuing education within a community and that a polytechnic university should serve as a center for educating the employees.

It is recommended that those who have experienced on-the-job training be given priority when they are admitted into a tertiary institution. A curriculum and class timetable of a tertiary level institution should be modified for employees, so that they may be able to enroll in these classes.

Constructing Service Centers to Support Life-long Education and Establishing a Network for TVET

The construction of a one-stop system for information on employment and learning has been started. Through the one-stop system, students and employees are easily provided with information on employment and course offerings in tertiary level institutions. The information on vocational educational and training institutes and the labor market are collected and processed for the use of students and employees. However, statistical information, D/B, work-net, an HRD-net, a career-net system etc., need to be systematized and processed further. The categorization of occupations and the standardization of an electronic system for better communication will be implemented.

The establishment of a center for the collection of information on life-long education is needed. The use of existing facilities, such as a library and a community office should be encouraged.

Diversifying and Specialization of the Educational System

Diversity and specialization of the primary and secondary educational systems is very important. A financial subsidy is considered necessary in supporting specific areas of specialization, such as audio-visual technology high schools, software technology high schools as well as the introduction of an integrated high school system and the implementation of vocational classes in a general high school. The reason for this is that the curriculum in a vocational high school will be specialized in accordance with the changes in the industrial structure of the environment. It will also be diversified to enable the students to receive an education suitable to their needs.

- The flexibility and specialization of a tertiary educational system for the reinforcement of TVET is also a core issue. This condition is necessary to supply the required workforce to the labor market, one that is responsive to the changes in the industrial structure. A flexible management of the curriculum in each university department, one that allows for a double major and a recognition of transfer credits are very core empirical issues of the labor market in the twenty-first century.
- The establishment and management of a specialized graduate school is another main issue. A specialized graduate school with or without a diploma is needed to provide human resources with the skills suitable for an area in a highly specialized technology and for valuable productivity.

Construction of the Foundations for Life-long TVET

Strengthening basic TVET and its directions. In these days, the primary and secondary educational levels emphasize basic TVET. Each school is encouraged to develop and manage vocational programs in an on-site training venue. The theory-oriented vocational education methods utilized in the primary and secondary schools should be changed to an experience-oriented one. At the same time, students are provided with more opportunities to receive a skills-oriented education. Basic TVET, in general, and vocational high schools are available. The development of a curriculum in basic TVET, such as computer skills, communication skills and calculation abilities will be reinforced. The importance of TVET in general high schools will also be highlighted.

The programs on cultivating basic vocational skills especially for the under-educated and the out-of-school youth will be taken into consideration in the process of developing TVET.

The direction of occupational education in the primary and secondary schools is towards increasing the efficiency of occupational education in these schools. It is recommended that guidance counselors should be hired. It is also recommended that students of primary and secondary schools be provided with the opportunities to meet face-to-face with those who work in the various occupations.

The activation of a cyber university and a distance education system are sharply to be increased and facilitated. Employees should be provided with more opportunities to have access to TVET by activating distance education. A cyber university will be established for adults who may wish to obtain vocational education. This is because its methodology can save time and space for those who are unable to study in a conventional classroom.

The best way to successfully consolidate TVET policy issues that need urgent attention is to set up a “policy issue body” that can function even if there may be some changes in the government and in the TVET structure. Thus a more consistent issue management system could become politically possible and institutionally guaranteed, and in the process a more successful consolidation of policy issues could be generated.

Reinforcing ICT, Tourism and Culture Industry

The expansion of TVET in information and communication technology will continue. Thus, scholarships for outstanding students to study abroad will be provided in order to supply human resources for the cutting edge sector of technological industries. Financial support will also be provided to improve the conditions of educational institutes that train students for the ICT sector.

Strengthening human resources development in the culture and tourism industries will continue. A high school specializing in culture and tourism will be established to raise expertise in this area, since this sector is expected to grow. Life-long education institutes will also be supported financially to provide people interested in the culture and tourism industry, with the desired educational opportunities.

*Reinforcing Labor Skills Based on a Target Population**Efficient vocational training for the unemployed*

- The construction of infrastructure for vocational training for the unemployed has been established in the last few years. One of the examples to help build this up is the collection of information to create a systematic profiling of the unemployed and by strengthening funding for vocational training institutes for the unemployed.
- The improvement of programs and types of vocational training will be continued including the categorization of types of vocational training for the unemployed, the selection of prospective jobs, the development of a vocational training curriculum and the expansion of customized training as well as the involvement of employers in the training program itself.
- The development of the female labor force in the area of technology.
- The development of vocational training programs for women is an important issue. The introduction of a vocational training curriculum that can be offered for women with children would also be a good component.
- The promotion of women in the fields of science and engineering and the granting of scholarship grants to female students taking science technology or engineering as well as those taking post-doctoral degrees in science or engineering areas are needed.
- The expansion of training opportunities for employees of small and medium sized companies to access TVET.
- Nurturing a technical professional program in a polytechnic university or in a junior college carries with it a big potential in contributing towards the development of small and medium sized companies. This can be put on stream with the support of potential employers.
- Inducing continuing education of employees of small and medium sized companies can be facilitated by joint support from the construction of vocational training institutes and the support coming from a network connecting universities, companies and vocational training institutes.

- Vocational training for the under-privileged.
- Support for the vocational training of the handicapped can be worked out to develop a vocational training curriculum based on the degree of the individual handicap and to construct a university for those who need special education and also to support the educational facilities, software and network for vocational training for the handicapped.
- Develop a vocational training program for those who are about to retire and for the elderly.
- Vocational training for inmates and North Korean defectors.

Nurturing a Competitive Market for TVET

Reforming public vocational training institutes

- Restructuring tasks and functions of public vocational training institutes and transforming them from educating novices to continuing education, support for the development of the training curriculum by companies and by strengthening the connection among the company, the union, and the training center etc. are areas needing intervention.
- Improving the efficiency in the evaluation of vocational training institutes based on their accomplishments and providing financial support for such institutes and public employment of the chairperson of an institute for more efficient management are also necessary.

Supporting vocational training institutes sponsored by the private sector

- Supporting a private institute may be facilitated through more relaxed regulations governing private learning centers which will be given a certain extent of autonomy.
- Supporting businesses related to educational materials development.
- Activating an evaluation system is absolutely necessary. This can be done by reinforcing the evaluation system for vocational training to be more customer-centered and competition oriented, finding the best curriculum for vocational training, implementing an open evaluation for competition and connecting the results of an evaluation and financial support system.

Encouraging the participation of employee unions and companies in TVET

- Encouraging the participation of employee unions and companies can be stimulated by upgrading productivity based on an increasing representation of union and company representatives in the policy making process relevant to vocational training improvement and management of a qualification system.
- Encouraging the participation of the employee union and the company in curriculum development in vocational education and training through improved policy-making.
- Encouraging the participation of union and company representatives in improving TVET through cooperation in infrastructure building and management of institutions related to vocational training.

Reinforcing Decentralization and International Cooperation

Localization of TVET

- Reinforcement of vocational training by the local organizations and companies is necessary. This can be done by the expansion of the discretion of the local government in regards to vocational education training and financial support of the vocational training businesses sponsored by a local organization via matching funds.
- Establishment of a local council for TVET within a community can be done through the Vocational Training Promotion Act. (VTPA) The VTPA involves encouraging cooperation among local administrative organizations, an educational training center, a company, and a union and the establishment of a sub-committee or a special committee in the association for vocational education training.
- Operation of a common learning center. A common learning center can be established within a community through the utilization of existing facilities such as a polytechnic university and a training center in a company.

Activation of international cooperation

- Expansion of an international cooperation business. International cooperation with relevant international organizations also concerned with vocational education needs to be expanded through the establishment of networks, support of vocational training programs in under-developed countries and strengthening relationships with developed countries.
- Promotion of exchange of human resources with other countries. Human resources development programs should be promoted with other countries through the establishment of a linkage and network for information sharing and exchange for academic and non-academic professionals.

Expanding a qualification system

- A qualification system sponsored by the government needs to be improved according to labor market needs. This involves the integration and modification of diverse subjects for technical qualification tests, the improvement of compatibility of the national standard and the participation of an employees' union in an organization for a national qualification system.
- A qualification system sponsored by a private organization should also be improved according to a given plan and in gradual stages. Specifically, the activation of the recognition of a qualification system by a non-governmental organization and by an individual company will be supported to encourage and introduce a human resource development qualification system.
- Strengthening the connection between labor skills training and the qualification system through a technical qualification test and the development of national skills standards are needed as well as strengthening the compatibility of a qualification test and a university diploma. Those who obtain a certificate will be granted credits based on the credit bank system and those who attend non-formal education classes shall likewise be granted credits.
- Those who have certificates of employment should given preference in employment and promotion opportunities.

Recognizing the evaluation of vocational abilities

- The activation of a credit bank system will be carried out. It is recommended that developing a standard educational curriculum and the goals of teaching extensively use a credit bank system. An educational information network should be established to efficiently manage credits.
- Apprenticeship as an academic career shall be recognized. This system shall be introduced in the area of traditional arts and culture. An educational curriculum and a standard of evaluation in the area of traditional arts and culture are needed for an efficient connection with the credit bank system.
- The recognition of an occupational ability should be introduced in order for employees to receive life-long education to fulfill their potential. The recognition of a vocational ability and communication skills ability will be implemented first and mathematical ability and problem-solving will follow.
- The introduction of an educational account is recommended to register credits earned in areas other than formal education. This should also be recognized in the labor market.

Establishing employment practice of valuing vocational abilities

- The establishment of a learning organization and the creation of a learning environment in a company are significantly executed and disseminated through promotions based on occupational ability. This can also be done by hiring training experts who will transfer the desired skills and technologies in a small and medium sized company.
- The establishment of a sound employment practice is shown around a good example of the employment practice and by holding an exhibition, and also by developing a TVET program that will raise TVET awareness.

THE CHALLENGES OF THE NEW TVET SYSTEM

Changes in the Employment Structure

In the twenty-first century, uncertainties in the labor market can only be expected to increase with the rapid changes in the economic and industrial structure. The changes in the labor force will occur with globalization, a rapid change in the industrial structure and the advent of a knowledge and information-oriented industry. In Korea, prior to the International Monetary Fund bailout, the pattern of employment was static which meant that once employed, employees generally worked in the same workplace until their retirement came. However, this phenomenon has changed as more and more employees are now moving to other workplaces to suit their capabilities and preferences. Along this vein, the variety of types and patterns of employment, such as part-time employment and working at home, will become more prevalent.

OECD data also show that the changes in the occupational employment structure where highly skilled white-collar jobs grew by 2.9% during the period 1985–1995; low skilled white-collar jobs grew by 1.6%; the comparable figures for blue-collar employment were an average of 0.8% to 0.3% during the same period.

The Aging Society

With the decreasing national birth rate, it is also expected that the growth rate of the potential labor force above fifteen years old will decrease to less than 1% in the decade of the 2000. The number of the population aged 18–21 has slightly increased from 310 million in 1998 to 323 million in 2000. However, it is expected that the figure will sharply decrease to 261 million in 2005 (Korean National Statistical Office, 1996). As life expectancy increases, Korean society will soon become an aging society.

Negative Attitudes Toward TVET

The growing aversion for vocational education is prevalent among young people with the notion that “vocational education is of a secondary nature” of education. Majority of people consider graduation from prestigious universities as the most important key to a successful career.

Structural Issues in TVET

First is the mismatch between the demand and supply for particular jobs. There is a rapidly growing number of college graduates aged twenty-five years or more. This growth had been accounted for as that 5.8% growth in 1975, 14.1% in 1990 and 24.3% in 2000. In the low skilled jobs available in Korea in 2004, 420,000 foreign workers have replaced Korean workers. The second issue, is the supply-driven educational system, which is a critical issue because it is quite insufficient to meet the needs of society. This is because educational courses operate apart from the demands of the students, industry and local communities. The lack of school autonomy is seen as another reason why vocational programs are considered insufficient by the local government, industry and government agencies.

The third issue is that TVET is not ready to adjust to the life-long VE system. It would seem that the vertical and horizontal linkages are also insufficient between the VHSs and vocational colleges, between the educational and the training institutions. The pathways of transition from school to work, back to school, career education and career guidance systems are not flexible or appropriate.

CASE STUDIES

Case 1. Ajou Motor College (www.motor.ac.kr)

Introduction. Korea’s only automobile specialized college, Ajou Motor College (Ajou Institute of Automotive Technology, AIAT), covers all automobile related fields in compliance with the demands of a comprehensive automobile industry. AIAT trains professional automobile technicians to have the expertise and creativity that they need by teaching them the principles through practice and by enhancing their application ability by focusing on practical education involving actual site training. As the automobile has changed and evolved without interruption for almost a century, bringing people to their destinations, the ‘Ajou Institute of

Automotive Technology' hopes to contribute to the further development of society by evolving and keeping in step with the progress of the automobile industry.

History

- 1977 Foundation of Daewoo Academy
- 1991 Foundation of Daechon Professional College
- 1995 First entrance ceremony
- 1997 Selected as an excellent engineering college by the Ministry of Education
- 2001 Designation as a venture incubation center by the Korea Small and Medium Corporation Administration
- 2002 Awarded National Vocational Qualification (NVQ) status from the United Kingdom
- 2004 Renamed Ajou Motor College (Ajou Institute of Automotive Technology)
- 2005 Opened Australian educational training center

Courses & programs

Joint practice and research center of automobile production technology.

Ajou Institute of Automotive Technology has established 'joint practice and research center of automobile production technology' to teach the technology about automobile-related industries located in the western coastal region and supports researches for automobile production development.

Certified institution of British automobile national technology certificate (NVQ)

In 2002, Ajou Institute of Automotive Technology became the certified authorization institute for automobile maintenance certificates of the British NVQ (National Vocational Qualification) by the British automobile industry institute, which is recognized overseas. Therefore, because its students can obtain a certificate of NVQ 3 (High level technician, management position) after finishing a course on automobile control with a major in diagnosis technology, we now have a globally recognized system of courses.

Multiple diploma programs with overseas colleges

Ajou Institute of Automotive Technology has many exchange programs such as joint diploma programs with other universities in the world, exchange student systems and overseas internship semestral system in order to nurture the global manpower of the Korean automobile industry.

Practice-oriented education course

The practice-oriented education courses of Ajou Institute of Automotive Technology are represented by 'project classes.' After being admitted into the college, students learn overall educational courses during the first and second semester. From the second semester and during the first semester of the second year, students receive 'lectures on projects' by deciding on their main subject based on their field of

interest and then they are given the educational programs to be connected with their 'graduation works' upon completion of their programs.

Flexible education course

Another competitive edge of the education courses at Ajou Institute of Automotive Technology is 'the made-to-order education course through the cooperation between industries and the school.' Training for the jobs required by actual industries on site are offered through the cooperation with industry and flexible education courses.

Department

AIAT has ten courses majoring in automobile design, automobile development, automobile mold technology, automobile control and diagnosis technology, automobile tune-up control, automobile digital tuning, car electronics, automobile navigation, hybrid automobile and motor sports. All these ten majors have systematic relationships with each other to arrive at the best educational activities.

Case 2. Yeungjin College (www.yjc.ac.kr)

Introduction

Yeungjin College provides first-class training and education in various industrial fields for highly talented and motivated young people who wish to become professional technicians in tomorrow's world. Yeungjin College leads Korean colleges in preparing young people to become the skilled professional technicians that are essential in every industrial society.

Yeungjin College is particularly well known as a pioneer in, and provider of, "customized education" conducting general technical training while emphasizing the particular skills needed by industry. This is achieved through cooperation between the college and industry, which results in field-centered activities and training to complement and reinforce classroom learning.

History

- 1977 Opening of Yeungjin Technical School
- 1985 Changing the school name to Yeungjin College
- 1994 Ranked No.1 in a nationwide evaluation of colleges by the Ministry of Education
- 2002 Establishment of sister relationship with the Swiss School of Hotel and Tourism Management
- 2002 Philippine IT Training Course
- 2003 Opening the e-Business Total Information Center
- 2004 Agreement on Industrial-Educational Cooperation and Customized Education with Hynix Semiconductor Corp
- 2005 Agreements on Industrial-Educational Cooperation and Customized Education with a Total of seventy Companies
- 2006 Establishment of sister relationship with a Total of nine Countries, eighty-four Institutes

Commitment and objectives

Yeungjin College strives to cultivate highly-talented professional technicians who will be able to contribute to the community and nation, and further the development of mankind through educational research, technical skills and the building of sound character, based on the educational principles of the Republic of Korea.

The objectives of education are as follows:

- To cultivate professional technicians who can lead in the age of advanced information in the 21st century;
- To establish clear vocational goals as a professional technician;
- To implement an on-the-spot customized education;
- To foster global citizenship by studying information technology and foreign languages;
- To reinforce the learning of the humanities through the theory and practice of social service activities.

Course programs (customized education)

From each industrial company, the college's main clients, Yeung Jin College (YJC) first received a description of the desired educational curriculum and the number of technicians required. Then YJC subdivides major courses on the basis of those needs. Students then select their own specialized major course according to their vocational interests and aptitude. Customized education thus encourages students to focus on their desired field. This program allows them to concentrate on acquiring the required skills resulting in technicians who have "real" work experience without OJT (on the job training).

The advantage for industrial companies is that they do not need to pay additional OJT expenses and they can reduce training time for new employees. The advantage for the students is that they are guaranteed employment by the participating companies thus giving them a sense of security regarding their future employment.

A final goal of customized education is to insure that all students receive skills achievement scholarships from each industrial company so that they can major in their selected courses. The skills achievement scholarships free parents from much of the burden of having to pay for tuition fees and we believe that this in turn increases educational productivity.

In other words, the customized education simultaneously provides a rewarding outcome for the college's two main customers, industrial companies and students. It is a fully developed and competitive educational system ready for the twenty-first century.

Schools and departments

- 8,213 students, 483 Lectures (including 191 Professors), ninety-two staff members.
- Eight Schools: School of Computer Information, School of Mechanical Engineering, School of Internet & Electronic Info-communication, School of Electricity & Medical System, School of Business, School of Architecture & Interior, School

of Design, School of Tourism. Five Departments: Department of Social Affairs, Department of Early Childhood Education Department of Nursing, Department of Military Electronic Communication, Department of Early Childhood Psychology Education.

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Chang-Won, Jang

Senior Research Fellow

Office of the International Cooperation

Korea Research Institute for Vocational Education and Training (KRIVET)

IMRAN BIN IDRIS

11. MALAYSIA

INTRODUCTION

Policy makers, administrators and educators in the field of technical vocational education and training (TVET) all agree that TVET plays an important role in the economic and social development of a nation. In this paper TVET refers to vocational oriented education and training aimed at equipping graduates with the necessary occupational skills and standards for the economy, industry and the community at large. The main reference of this paper is the TVET system at the level of the polytechnics and community colleges. Although TVET programs are also offered by the school system and other government agencies, the scope of the discussions is confined to the two institutions under the Ministry of Higher Education.

The only constant in TVET is change. This, among others, is due to the volatile economic scenario, globalization, rapid technological advancement, competition and consciousness for quality. As such, it necessitates a holistic and systematic approach to be adopted to effectively implement the desired changes. This paper attempts to look at the current TVET system and structure in Malaysia, the on-going best practices and also some of the emerging trends which would lead to a more sustainable TVET system that can serve the needs of the stake holders. Highlights on some TVET institutions are also included.

Malaysia comprises Peninsular Malaysia and the two states of Sabah and Sarawak on the island of Borneo. Together they cover a total area of 239,758 square kms. Malaysia is one of the fastest growing modern countries in the world that has successfully achieved a balance between industrial growth and traditional values and is poised to become a fully developed nation by the year 2020. It is a multi-racial country with a population of approximately 27 million people. This consists of main ethnic groups of Malays, Chinese, Indians and a diverse group of indigenous people in Sabah and Sarawak. Bahasa Melayu is the national language but English is widely spoken.

Today, manufacturing is Malaysia's prime economic activity. It used to be the world's biggest producer of rubber and tin. Along with these main products are palm oil, timber, pepper and petroleum, which are important economic products in the country. In recent years, tourism has been vigorously developed and now counts among the major foreign exchange earners.

CURRENT EDUCATIONAL/TVET SYSTEM

In Malaysia, children start formal education at the age of seven. They typically spend six years in the primary school followed by three years in the lower secondary

and another two years in upper secondary education. At the end of their lower secondary education they sit for the Penilaian Menengah Rendah (PMR). After receiving their PMR, students have three different streams to choose from, i.e., academic, technical and vocational streams.

The formal technical and vocational education in Malaysia is under the Ministry of Education and starts at the upper secondary level in the technical schools after the merger of technical schools and vocational schools in 1996. The technical schools offer two types of programs. The vocational programs have a course structure that covers the same core subjects as in the upper secondary academic schools. In addition to these core subjects, students in the vocational stream can select a set of vocational subjects in accordance with their field of studies. Vocational studies constitute about 50% of the total course content in the vocational stream.

In the secondary technical stream, the subjects offered are more concentrated on science and mathematics while the technical subjects are less practical in nature. At the end of the two-year upper secondary education, students sit for their Sijil Pelajaran Malaysia (SPM), which is equivalent to the Ordinary Level Examination in the British context.

At the post secondary level, TVET is offered by the polytechnics and community colleges. As of March 2004 and with the establishment of the Ministry of Higher Education (MoHE), these two institutions fall under the purview of the Department of Polytechnic and Community College Education (DPCCE), MOHE. The public and private universities and colleges are separate institutions under the same ministry. Polytechnics were established to produce trained manpower at the semi-professional level in various areas of engineering, commerce and the service industry. At the certificate level, 75% of the students follow engineering courses while at the diploma level 50% of the students are enrolled in engineering courses. Female students make up 45% of the total student population.

Beginning in 2001, community colleges were established to provide post-secondary learning and training opportunities for about 40% of the school leaving age cohort. The other responsibility of the community college is to provide life-long learning opportunities for the community at large. This includes basic training, upgrading training, job transfer training and re-training in the form of short-term courses. The technical education pathway in Malaysia is described in [Figure 1](#).

At the school level, the Technical and Vocational Education Division (TAVED) of the Ministry of Education, established in 1964, is responsible for promoting TVET in the country. The division is headed by a director and assisted by four deputy directors, each responsible for different portfolios, i.e., school management, curriculum supervision, staff upgrade, and policy and research. Currently there are ninety technical schools in operation. Under the recent restructuring exercise, this Division reports directly to the Deputy Director General of Education (Operation).

Before the split of the Ministry of Education, the polytechnics and community colleges were under the Technical Education Department. When the Ministry of Higher Education was set up in March 2004, the polytechnics and community colleges came under supervision of the new ministry headed by the Director General

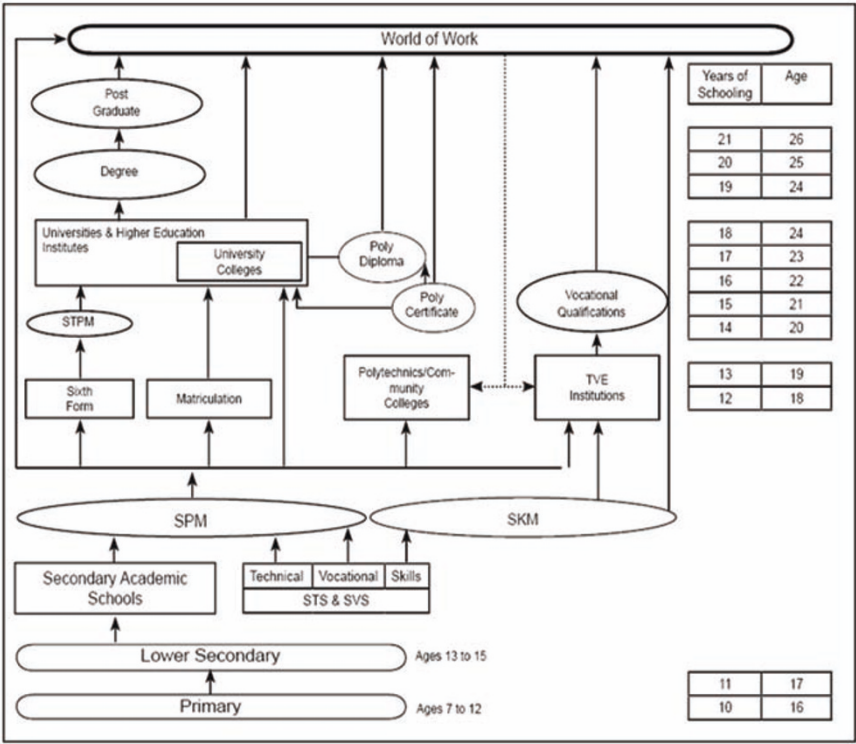


Figure 1. Technical education pathways in Malaysia.

of Polytechnic and Community College Education (DPCCE). The other director general is responsible for the universities and private colleges. Under the Director General of DPCCE are eight divisions, namely: a) Polytechnic Management Sector; b) Community College Management Sector; c) Curriculum Development and Evaluation Division; d) Staff Development and Training Division; e) Policy Development Division; f) Industrial Relation Division; g) Tracer Study and Alumni Division and; h) Management Service Division. Broadly, the main function of the department is to formulate policies and set the directions for the development of technical and vocational education at the polytechnics and community colleges while ensuring that the education and training system complies with the industrialization and modernization programs of the nation.

Although TVET at the polytechnics and community colleges is directly administered by the DPCCE of the Ministry of Higher Education, training activities at both technician and craft levels are also undertaken by other ministries and government agencies for specific purposes such as fulfilling their departmental requirements. In addition, other private institutions and state-run institutions also conduct some sort of training to meet local needs.

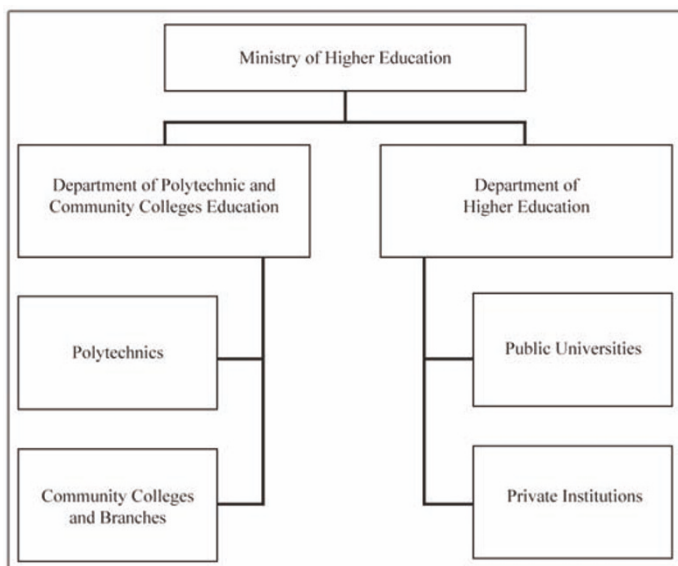


Figure 2. General organizational structure of the ministry of higher education of Malaysia.

The Polytechnics

The polytechnic system in Malaysia was established in 1969 with the assistance of experts from UNESCO and with the setting up of the Ungku Omar Polytechnic. It is a post-secondary institution of tertiary education offering semi-professional and technician level courses in engineering, commerce and the service industries. Currently, there are twenty-four polytechnics in operation with a total enrolment of 85,000 full-time students. There is an average of two polytechnics located in almost every state in Malaysia. Box 1 provides details on the polytechnics.

Box 1. Polytechnics

Objectives

- To produce semi professional manpower in the field of engineering, commerce, ICT, hospitality and services sector.
- To provide opportunities for working adult to upgrade their skills and qualification through part-time programmes.

Program, Course Structure, and Curriculum Design

- The polytechnic offers full-time programs in the field of:
- engineering
- visual information and communication technology

Box 1. (Continued)

- commerce
- hospitality

The levels of courses offered are diploma and certificate. In addition bridging programs are also conducted.

The diploma program is of three years duration or six semesters while the certificate program is for two years or four semesters. The curriculum is designed to give emphasis on hands-on approach; as such the ratio of practical to theory in the diploma is 40:60 practical and theory, while for certificate program, the ratio of practical to theory is 50:50. To reflect the importance of the hands-on training, a six-month industrial attachment (one semester) is embedded in the curriculum structure. For the diploma program the industrial training is in the fourth semester and as for the certificate program, it is conducted in the third semester.

The bridging program is a preparatory one for community college graduates to further their studies to gain a polytechnic diploma. The duration of the program is one semester or six months. During that period emphasis will be given to strengthen their academic modules such as mathematics, sciences and communication skills besides their specialize modules.

Polytechnics also cater for the needs of special children. The special skills certificates provide skills training for children with hearing deficiencies. Currently only five programs are offered:

- building
- mechanical
- hotel catering
- graphic design

Part-time courses are offered to polytechnic certificate holders who intend to further their studies at a higher level. Continuing education programs offered are under the concept of 'Learn As You Earn.'

Community Colleges

The establishment of community colleges was inspired by the success of such similar colleges set up in Canada and the United States. In fact, the proposal to set up this kind of institution had been discussed for many years at various levels. However, it was only in July 2000 when the government decided to introduce the community college concept into the Malaysian educational landscape, thus ushering a new era in post-secondary technical vocational education. Initially, the government approved the setting up of one college in every parliamentary constituency. Later on, the government decided that the establishment of the colleges should be done in stages depending on factors such as community demand and demographic considerations. The community colleges have features similar to

their foreign counterparts and cater to school leavers who are, at that point in time, unable to continue their studies due to a lack of capacity of the post-secondary institutions, as well as stringent academic entry requirements. Currently, it is estimated that post-secondary institutions have the capacity to provide places for only about 40% of the annual school leaving cohort. In addition, the community colleges have been mandated to be the hub of life-long learning providing educational and training opportunities for all individuals to achieve their maximum potential. Box 2 provides details about the community colleges.

The curriculum structure of polytechnics and community colleges is differentiated and paced so that students can better cope with their studies depending on their learning styles. By and large, polytechnic students have better academic qualifications. Essentially, the difference between the two curricula is in the extent of the practical component. In terms of jobs, community college students would be recruited at the technician level based on their competencies in producing, installing or maintaining operating equipment and systems. Polytechnic graduates, on the other hand, will be given higher responsibilities and supervisory roles.

Box 2. Community Colleges

Objectives

- To prepare alternative pathways by providing skill training and education in the technical and vocational fields for secondary school leavers as well as those who have left the formal education system;
- To provide lifelong learning education to individuals and local community at large in order to improve their quality of life;
- To enable industries and private sector firms to utilize the community college to train their workers in various technical and vocational fields;
- To foster smart partnerships among the local government, community, and industry to collaboratively promote growth and development of the area;
- To provide training and skills, as required, by the market as well as for the local community.

Program, Course and Services

Both formal and non-formal courses involving ‘hard’ and ‘soft’ skills will be offered at the community colleges. In determining the courses, local considerations such as economic activity and existing infrastructure will be taken into account. Information Technology and computers with ‘K’-Content will be given priority.

Courses will be identified and developed according to occupational clusters. To date 12 clusters have been identified. These are: agriculture; building; business; electrical engineering; health science; hospitality & tourism; human development; vehicles; industry programs; performing arts/visual; information technology and communication technology.

Box 2. (Continued)

Under these broad occupational clusters, a course will be developed according to needs. Initially courses will lead to a certificate but there will be provisions for high achievers to continue their education up to the diploma level.

Course Structure and Curriculum Design

- the minimum period of study for certificate courses will be four semesters (1 semester = 15 weeks) without any specified maximum duration;
- emphasis will be on ‘hands-on’ training with the ratio of practical to theory being 75:25 practical to theory;
- flexibility in all aspects of teaching and learning, course structure and assessment.

BEST PRACTICES OF TVET IN MALAYSIA

Industrial Relations Division of DPCCE

In view of the need to be updated and continue to be relevant to the needs of the industry and the economic requirements of the country, a mechanism has to be put in place so that feedback from the stakeholders can be sought at appropriate times and intervals. To this end, a dedicated division under DPCCE has been established in 2007 to handle industrial relations and collaboration. Its establishment aims to serve as a one-stop center where any collaboration that needs to be established can be channelled. This would reduce the duplication of correspondence when there is a need to solicit feedback and generate up-to-date information on current practices from the industries. Once the contact has been established, there would be various follow-up activities to be initiated. The respective divisions in DPCCE will pick up areas pertaining to their responsibilities to enhance further activities of mutual interest.

Work-based Learning

To strengthen the links among institutions and industries, especially in areas of technical education and training, a new approach in the delivery of a program called ‘work-based learning’ was introduced in 2007. This was implemented in four diploma programs, namely, Diploma in Automotive, Electrical, Hotel Catering, and Fashion and Design in eleven designated community colleges. It is a three-semester topping up program to a two-year certificate course in various fields. The structure comprises a one year hands-on practical immersion in companies followed by another semester of vocational education in the institutions. Recently, eleven more ‘work-based learning’ diploma programs have been introduced in addition to the four already up and running.

Streamlining of Programs and Curriculum/Seamless Curriculum

Invariably the cost of technical education has always been a cause of concern for funding agencies. To reverse this challenge, the duplication in training is prescribed to be reduced, if not avoided entirely. Some technical and vocational programs offered at the upper secondary vocational stream could be articulated to the relevant programs at the polytechnic and community colleges. The curriculum designed at the school level should allow for a smooth transfer to the programs in these two institutions. In other words, a seamless curriculum connecting the secondary school and the tertiary level studies will avoid duplications in some ways. This approach has been implemented in the Malaysian polytechnic and community college educational system where students with good grades at the school level examination can get transfer credits.

Guest lecturer from industry. The polytechnics and community colleges have allocated about 10% of the teaching time, especially in the practical areas, to be conducted by personnel from industry. This will ensure that there is no time lag in the technology transfer and, as such, the TVET students can stay current and relevant. The subject matter can be made more exciting and interesting with direct inputs from the professionals from industry. Likewise, the knowledge gap between industry and institution can be bridged if the lecturers selected are very experienced and knowledgeable.

Industrial attachment for polytechnic and community college lecturers. Aware of the technological changes in industry, the polytechnics had started the above program in 1999. The uniqueness of this program is that the lecturers are given full pay study leave and allowance for the twelve-week long attachment. The program aims to enhance the industry-institution relationships and to provide the opportunity for lecturers to obtain their professional qualifications from bodies such as the Institute of Engineers and the Institute of Surveyors.

Malaysia Qualification Framework

The need to ensure quality in education and training has led to the establishment of the Malaysian Qualification Framework (MQF) to benchmark the quality of higher education in Malaysia. The MQF gives emphasis on educational outcomes. To implement the MQF, the government has set up the Malaysian Qualification Agency (MQA). The MQA will be the reference point for criteria and standards of higher education courses and will also play a role in raising the overall quality of higher education in the country.

TVET Subjects Taught in English

Realizing the growing importance of English as the language of technology and commerce, the Government has formulated a policy whereby mathematics and science subjects are taught in English at the secondary school level and in

post-secondary institutions. The first cohort to be taught in English started their secondary education in 2003. After five years of secondary education this cohort entered the post-secondary institutions in 2008. The follow through policy necessitates that subjects in the post-secondary education institutions including TVET institutions are to be taught in English. While this policy is seen to be addressing the issue of competitiveness of the workforce in Malaysia, it is posing challenges to the implementers at the institutions. The teachers also need to be equipped with the language skills required for the language conversion and they have to be fast tracked.

Professional Certification

The quality of programs offered by the TVET institutions can be further enhanced by collaborating with some world-renown companies. One of the collaborations is in the form of joint certification training programs with companies such as Cisco Systems and Autodesk. The certification provides added value to the existing qualifications of the candidates and further enhances their employability. This model can be explored further with other sectors and companies.

Student industrial attachment program. To effectively link classroom learning with the real work environment, all polytechnics and community college students undergo industrial training for one semester or one six-month period. Annually, about 20,000 students undergo industrial training in more than 12,000 companies nationwide. Under the program, students are expected to learn the tricks of the trade at the work place as well as receive training on how to be independent individuals. The work culture and experiences acquired will benefit them when they continue their studies at the higher education institutions as the exposure will enable them to associate theory with practice. The continued support by industry for the institutions would go a long way to realize a win-win situation for both parties.

Industrial attachment program for lecturers. By and large, the lecturers recruited to teach in the polytechnics and community colleges lack industrial experience. The industrial attachment program provides them with new experiences as well as exposure to the state-of-the-art technology and best practices in industrial organizations and operations management. The program is conducted in collaboration with the industries and that, as a good approach, staff are given full pay leave and training allowances during the attachment period.

Finishing schools. This is a new concept whereby the curriculum is developed to prepare students to meet the requirements of the industries. The finishing schools are targeted for final semester students and unemployed graduates including those from other institutions. Through the 'finishing schools,' students get the opportunity to acquire and reinforce industry-specific knowledge, skills and competencies and

thus enhance their employability. Currently, TVET institutions are working in collaboration with companies dealing with call centers. More of such collaborations are already in the pipeline.

As new polytechnics are planned and built, and the existing ones expanded, there is a need to supply these institutions with trained technical staff. To meet this requirement, the Polytechnic Staff Training Centre known as Tun Hussein Onn Institute of Technology (ITTHO) located in Batu Pahat was established in 1994. To date, ITTHO has trained hundreds of staff with bachelor's degrees in engineering and master's degrees in technical education. In 2001, ITTHO was accorded university status and is now known as Tun Hussein Onn University, specializing in the technical field. The transformation has expanded its role in providing the manpower needed not only for the polytechnics but also for the industry and other institutions.

EMERGING CHALLENGES AND TRENDS IN TVET

Emerging Trends of TVET

TVET as an integral component of life-long learning. TVET is seen as a means to uplift the economic status of the community. There is a growing interest in ensuring that TVET is readily accessible to the masses at large. In fact, for TVET to be used as a vehicle for economic prosperity, it should cater to the varied needs of all members of the community. For life-long learning to be inculcated in the society, ample opportunities should be made available, or to put it simply, should be made available at their doorstep. The establishment of the community colleges has made access to life-long learning opportunities within easy reach. Currently, only three universities are given permission to admit mature students based on the recognition of prior learning (RPL). There is a growing trend for others including TVET institutions to be given the permission to apply RPL as criteria for admission to their programs. The government has set a target that with the increased adult learners by 2020, 33% of the workforce will have tertiary education. The hallmark of a developed nation is when a high percentage of the work force has received tertiary education.

Agricultural education. The recent food shortages experienced by many developing countries has highlighted the importance of revitalizing the food production industries. In recent years, Malaysia has to bear the high cost of agricultural produce imported from overseas. The need to grow our own food and be self-sufficient has become even more important now because of recent debacles such as the excessive use of pesticides, not to mention the high dose of melamine detected in certain imported agricultural produce. A well educated farmer would have a better knowledge of the hazards of using excessive chemicals and pesticides. Cognizant of this, the government is now placing greater emphasis on agricultural education in an effort to encourage more people to be involved in the agricultural sector. More places have been offered in programs pertaining to agricultural studies. In the polytechnics and community colleges, new programs have been planned and, when

approved, these studies will be introduced in January 2009. Among the programs are agro-technology, food technology, aquaculture, biotechnology and landscape and horticulture. To fast-track this scheme, collaboration is underway in putting together some of the programs with the Ministry of Agriculture.

Soft skills. Industrial dialogues and advisory committees are among the main methods used to ensure curriculum relevancy and avoid a mismatch in courses offered. While the industries are quite satisfied with the level of technical skills that the graduates possess, issues like communication skills, interpersonal skills, English Language competency and team work skills have cropped up every now and again. The Ministry, in an attempt to address these issues, has offered soft skills modules to all the students in every semester either as an independent study or across the curriculum. TVET education in the polytechnics and community colleges has introduced the human development modules to their students in addition to the soft skills modules before the students embark on their industrial training. Studies have shown that the existence of motivation, collaboration and synergy is higher if the students also possess soft skills.

Entrepreneurial skills. The government is placing greater emphasis on entrepreneurial education in the universities and TVET institutions. Graduates are not only expected to be employees but they should also be an employer to others. The challenge is to introduce a new approach in entrepreneurial education. For entrepreneurial education to be effective it should focus on practical applications in business and entrepreneurial thinking at an academic level. This means that there is a need to link subject competency to entrepreneurial skills and for students to develop comprehensive economic understanding, leadership skills, competitive spirit and awareness of social responsibilities.

Internationalization of TVET. The need for TVET systems to be competitive, efficient and to meet the requirements of industry has been emphasized time and again. In the midst of change and competition, many TVET institutions are engaging in strategic repositioning to harness their unique strength to achieve greater success in the market place. It is no longer adequate for local graduates to only serve and be successful in local companies. They should also be competitive and versatile enough to be employed by foreign, multi-national companies. There is a growing trend that local companies send their employees on overseas assignments. As such, Malaysia should prepare TVET graduates so that they are able to compete with the world's best. One of the approaches used is to benchmark programs with professional certification accepted worldwide. The polytechnics have started to align their programs to comply with professional certification such as those offered by Cisco, Microsoft, Siemens and Comptia. In addition to the certificates awarded by the polytechnics, they are able to sit for the professional certificate examinations. As a matter of fact, the professional certifications mentioned earlier are widely accepted all over the world.

Another approach adopted by the polytechnics is to offer programs that are regulated by international bodies. An example is the aircraft maintenance repair and overhauling which complies with the EASA regulating body that ensures the quality of the programs worldwide. Many more such programs will be offered in the near future to ensure acceptability worldwide.

Challenges in TVET

Curriculum. The major task in the development of TVET programs would be to ensure that the curriculum is relevant to the local industry and to the community needs. Various initiatives have been implemented by DPCCE which includes the regular conduct of tracer and employer studies, curriculum reviews and the setting up of the Industrial Advisory Committee.

An Industrial Advisory Committee set up early this year comprises representatives from fourteen major industrial sectors, professional associations and key government agencies. The President of the Malaysian Employer Federation and the Director General of DPCCE co-chair this committee. The committee acts as a structured feedback system to strategize, gather input, advice and further strengthen the establishment and implementation of all DPCCE's future and existing programs. The committee will map out strategic plans to strengthen DPCCE's involvement in academic matters.

Mindset change. TVET has long been regarded as inferior to general academic education. The perception by the public and by parents especially, is that TVET programs are terminal and are not providing enough vertical mobility for the graduates to progress. Malaysia has set a vision that by 2020 it will attain the status of a fully developed nation, and among others, to establish a scientific and progressive society — one that is innovative and forward-looking, one that is not only a consumer of technology but also a contributor of scientific and technological progress for the future. In order that this can be realized the TVET system as well as its policy makers must play a very crucial role.

Shortage of technical teaching staff. In the TVET system, there is a shortage of qualified technical and vocational teachers and lecturers. Most of the staff who are recruited directly after university and college studies are assessed based on their academic qualifications without any importance given to their industrial work experience. On the other hand, qualified personnel with work experiences are not willing to become teachers due to the unattractive salary scheme.

TVET lecturers' scheme of service. One of the strategies followed in order to retain and attract experienced professionals is to provide an attractive scheme of service. The government has approved a new scheme of service known as the Higher Education Officer Service Scheme began in January 2008. This scheme allows lecturers to enjoy column rise promotions without having to leave his or her teaching duties. By this scheme, the lecturers would be able to retain their expertise

and knowledge and can contribute more towards academic excellence. This is unlike the previous scheme whereby promotion was based on available vacancies and would normally come with administrative responsibilities. The new scheme also allows flexibility in terms of prerequisites for acceptance into the service, as experienced professionals from the industry can be attracted into the teaching profession with their previous work experience taken into consideration when locating them at the point of entry.

High cost of technical education. The escalating high cost of technical education has prompted the polytechnics to consider various measures to increase the efficiency of the technical education system. Among them is the introduction of a program called the Time Sector Privatization (TSP). It is a cost recovery program that permits the private and public sectors to make use of the training facilities available at the polytechnics for an agreed upon fee. Through the TSP program, the polytechnics help in the skills training and upgrading of human capital of private and public sectors. The program is carried out after normal teaching hours and during semester breaks. Through TSP, the polytechnics have not only optimized their usage of facilities but have also earned substantial amounts of money, thus helping to offset some of the expenses such as training materials and maintenance of equipment in workshops. TSP has also helped polytechnics to strengthen their linkages with industries.

Employability of graduates. The Ministry of Higher Education has set a target that at least 75% of the graduates will be employed in relevant fields within six months after graduation. Various initiatives have been implemented with a view to increasing the employability amongst graduates. On-line tracer studies were introduced wherein all public universities, polytechnics and community colleges participated. Increasingly, more and more private universities and colleges are coming on board. Through this feedback, a more informed decision can be made so that any mismatch in terms of programs, skills or numbers can be realigned.

Flexible access to TVET throughout life. Due to the high cost of TVET, majority of those who could benefit from it do not usually have the access. There is a need to find alternative methods of delivery of instruction for TVET. Teaching institutions should be reoriented to use flexible teaching and learning materials. Some of these should include the development of modularized curricula and assessment methods; the development and use of appropriate technologies for instruction – on-line services and training materials, computerized learning packages, the use of CD-ROMs, the intranet and internet, etc. In order to ascertain the quality of programs and the award of appropriate credentials, it is necessary to: a) develop widely recognized qualification standards and use them for certification; b) develop appropriate tools for assessing practical skills; and c) have flexible and transferable qualifications.

Enculturation of life-long learning. In an era characterized by the challenges of globalization, rapid technological changes and economic uncertainties, it is imperative that all the stake holders work together to develop the needed legislation and policies, establish institutional structures and re-design curricula to ensure that TVET caters to the varied needs of all members of society to enter and re-enter the world of work. For this purpose, continuous TVET opportunities should be provided for achieving both personal and social development. The government has recognized that the need to act is even more critical for a developing country like Malaysia and has put several measures in place. The opportunity for continuing education is available through a myriad of institutions. Under the ambit of MOHE alone, adult learners can enroll in any of the following: public and private institutions: open universities, polytechnics, community colleges and private colleges. However, having these channels alone is not sufficient for Malaysia's human capital needs, a mindset change is still of paramount importance for a more pervasive life-long learning culture to be realized. There is still a big challenge to inculcate a life-long learning culture and to encourage its citizens to take charge of their own learning.

Although the issues relating to TVET are not new in the country, they are nevertheless complex and may require more than just an incremental approach. A holistic and systems-wide approach in the analysis of the problem as well as in the planning process needs to be put together before any strategic solution can be considered. The impact of globalization and the uncertainties of the world economy will greatly affect the long-term strategy to initiate any necessary changes that will be made. However, with the constraints identified and addressed adequately, it is hoped that the issues discussed will throw some light on the efforts to make TVET more relevant in our own environment.

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Imran Bin Idris

Director General

Department of Polytechnic and Community College Education

Ministry of Higher Education

MARIYAM NOORDEEN

12. MALDIVES

INTRODUCTION

The very mention of the country Maldives conjures images of remote, palm-fringed islands with white beaches, turquoise lagoons, submarine coral gardens and a breathtaking diversity of sea life. The Maldivian atolls and islands are located in the south-west of Sri Lanka and India covering an Exclusive Economic Zone (EEZ) of about 859,000 square kilometers of the Indian Ocean. Of the 1,190 islands that make up the country, only 194 are inhabited by 298,968 people (2006 census). More than 103,693 people live in Male, the capital city of 2 square kilometers, making it among the most densely populated places in the world. The rest of the population is scattered among several of the smaller islands.

Its remoteness and unique geography has kept the Maldives relatively insulated from external influences that have fundamentally affected its other South Asian neighbors. In fact, the Maldives was never colonized. The country retains a unique cultural identity, a unique script called *Thaana*, and its national language, *Dhivehi*, incorporates into its vocabulary words from Arabic, Urdu, Hindi, Persian, Sinhalese, Tamil and recently English. All Maldivians adhere to the Sunni sect of Islam, the official state religion. Islamic Sharia law dictates civil laws and societal norms. In 1968, the Maldives became a Republic, a new Constitution was adopted, and the country came to be governed by a President.

The country remains extremely dependent on tourism and fisheries. Tourism, accounts for 33.3% of GDP (in 2000), one-fifth of total employment, close to 30% of the budgetary tax revenues, and 70% of total foreign exchange earnings from the export of goods and services. Similarly, fishing accounts for 10% of the GDP and provides direct employment to almost 20% of the workforce.

CURRENT EDUCATIONAL/TVET SYSTEM

The world of Technical and Vocational Education and Training (TVET) is unique in the field of education in the Maldives. A lot of departments are cooperating to promote this unique but important arena of education that includes: the Ministry of Higher Education and Training, the Ministry of Education, the Education Development Centre (EDC), the Centre for Continuing Education (CCE) and the PIU-TVET Team. The Ministry of Education, EDC and CCE work hand-in-hand to promote skills development and vocational education by integrating it into the formal school system to prepare the students for the different levels or grades up through university. On the other hand, TVET prepares learners for employment and then helps them to continue their education on a part time basis.

The tradition of education is to fill the first twenty-two years of an individual's life with learning designed around growth and maturation. TVET programs are premised on mature individuals mastering skills and the concepts behind those skills, over a working lifetime to become employed and then to remain employable as technology and society change.

It is estimated that there will be about 10,000 school leavers from grades 10 and 12 combined by 2008. Already, there are about 20,000 unemployed youth in the country. As there is no TVET institution in the existing educational framework of the Maldives, there is no systematic way to train these unemployed youth and provide them with employable skills.

The Government of Maldives, concerned with the rising unemployment rate, particularly in regions outside Malé launched the Employment Skills Training Project (ESTP) in collaboration with the Asian Development Bank (ADB) to increase the number of Maldivian men and women who are actively participating in the labor force and are employed.

The project is designed specifically for the youth, aged 16 to 34, and adults previously unable to continue their education and training. The project aims to train about 2,000 youths by March 2009, at least 40% of whom will be female. The goal of the project is to increase the number of Maldivian men and women with entry-level occupational qualifications and skills for employment or for self-sustaining livelihood initiatives. A consistent and effective TVET management system is the solution to achieve this goal.

The most significant barriers to achieve the project objectives are the lack of registered training providers to conduct TVET training and the geographical remoteness of the islands. Each island needs a unique TVET system. A two-track TVET system has been adopted to overcome these drawbacks. The success of the Track 2 Employer Based Training (EBT) heavily depends on public-private sector partnership. Without the full commitment of these two parties, EBT will not be successful. To achieve a sustainable development for TVET, private sector participation is critical.

Twin Tracks of TVET System

Track 1: Institution-Based Training (IBT)

This refers to the technical colleges or similar institutions where students who have completed a requisite O or A level program can continue on to a diploma or degree program on a full time basis. The term includes part time learning where the learners come to the institution in the evening or on weekends.

The beneficiaries of IBT are the out of school, unemployed youth and those who have completed formal schooling only up to grade 10. This group will be given priority. IBT will provide entry level courses which are from three to six months in duration, full-time. Graduates of these courses can continue learning and move up the career ladder. As skills mastery is required, at least 50% of the training program will be provided with on-the-job training (OJT), applied and hands on.

Institution Based Training also includes full or part-time training offered by private sector trainers.

It is important that IBT be strengthened to meet the longer term requirements of both industry and the learners who wish to acquire higher level education in key economic areas. Other than maintaining staff competence and equipment, the main challenge in achieving this would be learners' interest and enterprise comfort together with the level of fit between the graduate's skills and workplace needs. There appears to be very little demand from industry or from the learners themselves for expanding full-time institution based trades training.

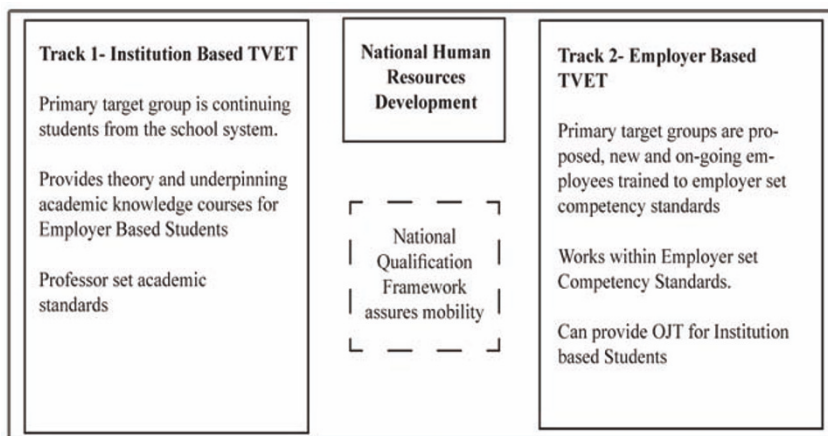


Figure 1. Twin tracks of TVET system.

Track 2: Employer-Based Training (EBT)

This refers to organized learning for employees that takes place in the work environment. It includes both mastery of skills under the direction of a worker/trainer and classroom training in the employers' premises or elsewhere. An apprenticeship program is a classic example of this approach. The same is true for pre-and post-employment training provided in the hospitality industry and the non-formal learning in family businesses.

At the present time, there is no formal employer-based training system. There is no formal apprenticeship program either. Father to son, mother to daughter skills transfer is the training mode for much of the learning in the island. The hotels and resorts have training programs for new staff and these vary from extremely basic to formal international level development activities.

Several Ministries have financed short-course trades training in fields such as barbering and tailoring. However there is no record of any impact of these efforts and the impression of the training managers is that they did not lead to employment. With no TVET National Qualifications Framework, there is no record of credits awarded for training in a career growth model.

Short-term training in trade skills such as electrical wiring is being offered and while such training rarely leads to employment, it does introduce young school leavers to basic concepts in technology, alternate career options, health and safety and an exposure to formal employment.

EBT is a better option to provide training as the employers' needs and demands can be fulfilled through this approach.

Current Situation of Skills Development and Vocational Training in the Country

Decisions about education are mainly made for the youth by their families. Majority of the youth are found to have only O level qualifications. It can be seen that experience and technical skills specific to a job are often lacking. Employers prefer to hire those with good academic backgrounds and some technical competency. Computer literacy is an additional requirement for most jobs.

Job opportunities are mostly in the tourism and construction industries. These are primarily skill-based jobs. These are mostly in the area of tourism, where people with certain skills such as chefs, receptionists, waiters, room attendants, guest relations officers are in demand.

In the area of transportation, those with skills such as boat captains, drivers, and mechanics are also in demand. In addition, skills such as performing artists, carpenters and horticulturists are also in demand and in the field of engineering, electrical and electronic engineering, civil engineering and other related technicians are also needed.

BEST PRACTICES OF TVET IN MALDIVES

For TVET to be accessible to all communities in Maldives, a public-private sector partnership has to be in place. This should be the case not only for accessibility but also because the government alone cannot bear the cost of training Maldivians or cater for the manpower demands of a growing economy. The Government, in its efforts to increase the number and ratio of skilled Maldivian workers, has launched several projects in conjunction with the private sector. Some of these projects are progressing well while a few still remain dormant.

Skills Training at Resorts (STAR) program

STAR is an on-the-job training program that strives to put the youth on the first step of the career ladder that can lead to higher jobs as well as academic achievements over time.

A partnership program initiated by the Maldives Association for Tourism Industries and TVET, STAR is a three to six months training program that will present the youth with a tremendous range of careers available in the tourism industry. This new approach to training is an exciting development for those looking for careers in this field.

In addition to providing career opportunities for apprentices in the tourism industry, STAR also focuses on helping newly-hired employees in the industry to achieve the desired level of training, certified by the Maldives Accreditation Board.

Combined with some classroom work and extensive on-the-job training, STAR trainees can develop the basic skills required to work in this dynamic industry and start climbing the ladder to success. As of now a total of thirty trainees have been recruited for training at resorts in the country, out of which five have completed training and are already employed at various resorts.

The STAR program is getting more popular and more resorts are participating in it. Some have started hiring STAR trainees. This is because the government pays a certain amount of incentive per trainee.

TVET – EBT Training

EBT provides an opportunity for trainees to earn and learn. The primary target groups are proposed, new and current employees trained by the employer based on a set of competency standards. The trainees will be placed for a three to six month on-the-job (OJT) training program with a one-month orientation in the industry. At the end of the training, the trainees will receive a National Certificate.

EBT is organized around the needs of an employer for a certain level of work-related competencies and work attitudes at the employer's set standards. This is different from the IBT targeting diploma and degree holders and the needs of the higher education community for academic achievements based on group learning. The EBT does not fit easily with the needs of institutions for a predictable learning environment based on homogeneous groups of students moving year by year through classrooms and labs. Rather, the EBT is based on new and on-going employees receiving training to meet the job requirements. In this manner, the job requirements become the organizing framework for the training program rather than the orderly body of theoretical knowledge provided in classroom instruction.

To facilitate the delivery of EBT programs, TVET advertises for training providers and receives proposals for training. Employers from the Tourism and Transport sector have given a good response to these trainings. To date, several EBT trainings are being conducted. The costs of the trainings are shared between the employer and the government. As an incentive to the trainees, a living allowance is given to them.

These EBT training programs are a good example of public-private sector partnership since in every aspect of the training, both parties are contributing and both parties are gaining something, as well. Employers are getting employees with the exact skills requirements and the government is achieving the objective of developing a skilled workforce.

Community Applied Training (CAT)

Community Applied Training (CAT) is another excellent example of public-private sector partnership which is accessible to the whole populace. The demand for training comes from the community and the cost is again shared by both parties.

CAT Training focuses on five key sectors that are deemed important for the continuous economic well-being of the country: tourism, fisheries and agriculture, transportation, construction and the social sectors. Such training programs can be selected, planned, managed and implemented by the community and focus on areas that the community has identified as priority areas of concern in employment generation.

The CAT program has been very successful and TVET is going for the second round of CAT trainings.

Career Path Program (CPP)

The school system currently allows students whose learning style is not slanted towards classroom-based learning to reduce their course load from eight subjects to only four subjects in levels 8, 9 and 10. However, the students must still stay in school for the whole day. This leads to a discipline problem and most likely to a loss of self esteem among the “non-academic” students.

With parental permission, these students would be involved in on-the-job learning (OJL) during the school time when they are free because of the reduced course load. By the end of grade 10, CPP students are assessed for competencies at the Certificate 1 level (or higher) and so have begun their career path up the National Qualifications Framework ladder.

These CPP graduates will be transferred without evident formality or difficulty to the new TVET system and they will continue with on-the-job training. At this point they will be either employees or EBT trainees. Further theory and underpinning learning would be supported by TVET through the EBT program.

Graduating CPP students would leave grade 10 with a nationally accredited “Certificate of Achievement” recognizing the competencies within Certificate 1 or even Certificate 2 that had been mastered. They will be on the National Vocational Qualifications Framework (NVQF) career ladder upon their graduation and may continue with their learning and skills development as employees.

Pilot CPP programs are being conducted at Laamu Atoll. Additional CPP programs will be offered in two schools in the capital Malé, at two schools in population centers with several employers (such as HDh Kulhudhuffushi, Addu Atoll and Laamu Atoll), and one school in a smaller island with at least two resorts within thirty minutes travel distance by *dhoni*.

Construction Industry Training Initiative (CITI)

Like STAR, the Construction Industry Training Initiative (CITI) was organized for the construction industry because of the recognition by government of the need to increase the number of Maldivians seeking careers and receiving training in the construction industry. Thus, it has agreed to contribute its competence and resources to the development, management and support of the CITI program in partnership with the representative association (MACI) from the construction industry sector.

The two partners agreed that over time, the construction industry, under MACI's leadership, will take responsibility for developing and managing an Employer-Based Training program built on Industry needs and endorsed by the National Competency Standards.

Although this is a partnership program between the private sector and the government, CITI has not been very successful. CITI was designed for both parties to be stakeholders and also for both to contribute to the training. The program's failure may be due to the fact that the Maldivian youth see the construction industry as 'dirty' and requires longer working hours.

More effort has to be put into the program to attract the youth and also for the employers to become part of CITI programs.

EMERGING CHALLENGES AND TRENDS IN TVET

Some of the challenges encountered by the TVET sector in Maldives are the following:

Most parents prefer white collar jobs rather than blue collar ones for their children, because the latter are considered by them to be of a lower calibre.

There is also the difficulty of providing access to all those interested in the program compared to the demand and those seeking technical people to work in a given field.

Similarly, from the schools, the students enrolled in vocational education programs are either academically challenged (for various reasons) or they are students with behavioral problems.

Moreover, transportation difficulties hamper the delivery of vocational education in the atolls. Due to the geographical conditions in Maldives, one centrally located TVET Institution is not the solution for TVET in the country; rather, TVET programs have to be made accessible through private employers, as well. Employer-Based Training has to be fostered for TVET in Maldives to be accessible to all communities. This is especially true since almost 50% of TVET knowledge comes from hands-on work or on-the-job training through private partnerships, something which has become a critical factor for the TVET system.

Finally, there is a lack of awareness among the parents about the importance of vocational education in the improvement of the national development of the country. This has become a hindrance when guiding the students to choose such skill-based career paths.

While some of the public-private sector partnership programs like STAR, CAT and TVET-EBT trainings are already success stories in Maldives, CITI still requires a lot of advertisements and promotions to attract participation from the ranks of the employers as well as prospective trainees.

Any government will be unable to fund all the TVET trainings. At some point, the private sector has to contribute its share towards the development of the human resources of the country. Different countries have different success stories and in the case of Maldives, certain sectors like tourism PPP have been quite successful while other sectors like the construction PPP still have to be nurtured.

NOORDEEN

In the future, TVET hopes to promote and market Employer-Based Trainings (EBT). Since EBT is demand-driven, it may be the only way that TVET programs could be accessible to the whole society as well as reduce the costs of training since the partners would be sharing the cost.

In recent years vocational education has become one of the most crucial programs for the students of Maldives. This is because it offers the chance for the students to study and continue on to higher education in many skill based subjects which are highly relevant for national development. In addition, the students find the subjects interesting and realize that there are indeed many opportunities available in this field.

*Mariyam Noordeen
Assistant Executive Director
Technical Vocational Education and Training
Ministry of Human Resources, Youth and Sports*

13. MONGOLIA

INTRODUCTION

Mongolia is the world's largest landlocked country. It has an area of 1.5 million square kilometers consisting mainly of high plateaus across the western, northern and eastern regions, and the Gobi desert in the southeast. With a total population of just over 2.5 million, it is the world's least densely populated country. Among the population, 41 per cent of people live in the rural areas. Children aged 14 and under account for 30.7 per cent of the total population. The average age in Mongolia is currently 23.5. As such, there is a tendency for the number of working aged population to grow faster in the coming years. This reveals an urgent need to address issues related with employment generation.

The key to ensuring the economic development and well-being of its citizens in Mongolia is to build a highly-educated and skilled labor force together with productive employment. Not very long ago, technical skills were accorded a low status and little recognition. In contrast, academic education was seen (and still remains) as prestigious and advantageous in order for an individual to have access to lucrative jobs. However, in recent years, a new role for the Technical and Vocational Education and Training (TVET) sector has been recognized from the perspective of promoting poverty reduction and human security, as called for in achieving the Millennium Development Goals and national prosperity through technical innovations spurred by the advancements in a globalizing world. As stated by the Minister of Education, TVET should not be the second or third choice as it is the basis for a sustainable technological and an advanced technical development.

At present, there is an increasing need for skilled manpower that would meet the demands of the labor market in both quantity and quality as well as the ever-changing needs of the people for a better life. This necessitates a holistic and integrated approach to education and human resource development (HRD), the aim of which to quote Jacques Delors is 'the complete fulfillment of the individual in all the richness of the human personality, the complexity of the human powers of expression and commitments – as an individual, as a member of a family or a community, as a citizen, producer, inventor of techniques and creative dreamer.'

Accordingly, reforming TVET in Mongolia is a political priority in the national development agenda of the government. This is because the market economy needs individuals to be equipped not only with the appropriate skills and knowledge that would enable them to be competitive in the increasingly internationalized labor market, but also share common human and spiritual values and attitudes. Most often, skills and attitudes possessed by job-seekers today are not in accordance with

what employers look for in potential workers. This situation creates a mismatch that causes a big obstacle to an increased employment rate at the national level. Hence, the policies and practices of the TVET sub-sector must be based on the principles of inclusiveness and wider access, human development needs and empowerment for effective participation in the world of work.

Recently, the policy of the Government of Mongolia emphasizes education, TVET, in particular, as a key instrument for improving equity, living standards and economic capacity of the people. The latest National Human Development Report of Mongolia (2007) underscores the importance of linking employment and poverty issues indicating that “High poverty among the unemployed shows that more jobs are needed.”

In view of this, the Parliament of Mongolia adopted a number of legislation, forming a legal framework as basis for employment relations such as the Law on Vocational Education and Training (2002), the Law on Employment Promotion (2001, amended in 2006) and the State Policy on Informal Employment (2006). A number of concrete interventions to create a legal environment conducive for initiating efforts to reduce poverty and unemployment through employment promotion have been undertaken.

The Government of Mongolia is committed to accelerating pro-poor economic growth and in reducing poverty. The strategy is to involve people in the development process by helping them to improve their health and education levels, upgrade skills and create a favorable environment for business development. In 2007, the Government of Mongolia officially announced the period as “The Year of Great Construction and Job Creation,” which resulted in the creation of new jobs, particularly in the rural areas.

CURRENT EDUCATIONAL/TVET SYSTEM

The shift to an open market economy which occurred in Mongolia in the late 1980s and early 1990s almost dissolved the vocationally trained workforce in state enterprises and industry sectors. This had negative impact on a number of vocations and professions. The number of students in the TVET institution significantly declined from 60% to 30% of the post-secondary student population. After this long period of decline, TVET in Mongolia was revitalized.

In Mongolia, formal vocational training institutions are an integral part of the broader national education system. [Figure 1](#) shows the structure of the Mongolian education system. An additional eleventh year of the complete general secondary education cycle was added in 2005 with the enrolment of seven year-olds into the first year of school. Currently, the complete secondary education is under transition within the 12-year system (six years primary, three years lower secondary and three years upper secondary) which started in 2008 by enrolling 6 year-olds in Grade One. The number of years of compulsory education is nine years. The TVET sub-sector comprises specialized upper secondary schools as well as post-secondary diploma programs housed in various types of technical and vocational education institutions. In addition, there is a non-formal education stream which emerged in the early 1990s. (11-Year General Secondary).

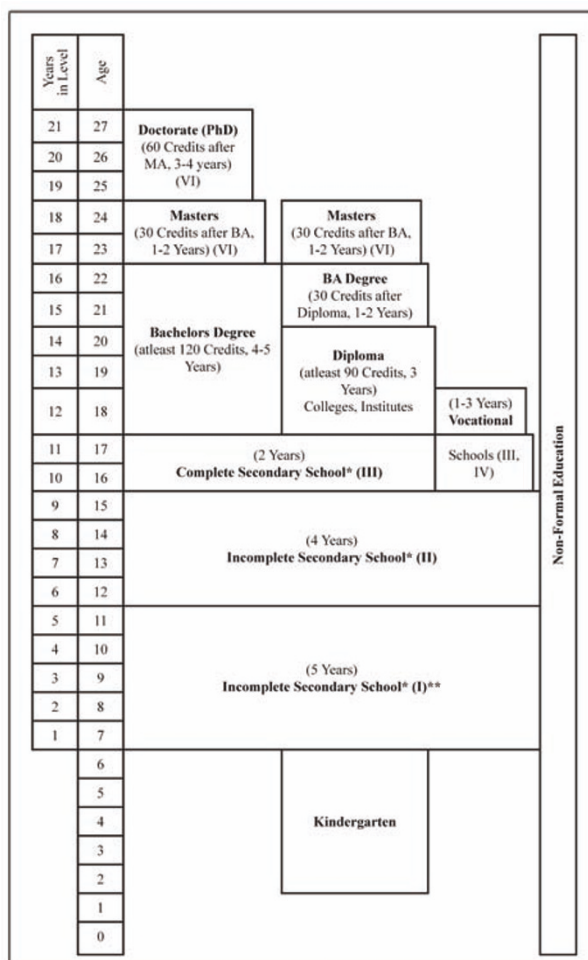


Figure 1. Structure of the Mongolian education system.

* Beginning from September 2005, the formal transition from a 10-year general secondary to a 12-year general secondary education system was phased in with the enrolment of 7 year-olds in the first year of an 11-year system, followed by enrolment of 6 year-olds into the first year of a 12-year system in 2008.

** The Roman numerals in parentheses denote UNESCO ISCED classifications designating the level of education represented.

Table 1 shows the enrolment patterns at all levels of formal schooling in Mongolia since 1921, reflecting the impacts of the social and economic policies. To illustrate the changes that occurred during the social and economic transition in the late

Table 1. Formal schooling enrolment in Mongolia by level of education, 1921–2009

Year	Kindergarten	Primary & secondary	TVET programs	Technician programs	Diploma programs	Bachelor's programs	Graduate programs
1921		40					
1922		85		15			
1925		625		105		1	
1930	30	6,820		145		1	
1935	180	4,750		375		10	
1940	146	24,311		1,332		197	
1945	576	34,543		1,744		309	
1950	1,800	68,614		3,186		1,476	
1955	3,878	83,334		4,493		3,039	
1960	9,738	107,204		8,811		6,909	
1965	24,450	155,780	4,761	9,231		10,677	
1970	29,613	230,406	10,628	11,121		8,427	
1975	36,974	301,936	13,483	13,465		13,643	
1980	49,807	372,112	22,109	18,734		23,214	
1985	62,470	415,168	27,718	22,978		24,549	
1986	69,746	423,545	29,276	23,212		23,516	
1987	70,594	430,540	32,053	23,992		22,647	
1988	81,029	438,152	33,797	22,556		20,723	
1989	88,274	446,665	34,137	20,534		19,504	
1990	97,212	440,986	29,067	18,478		17,338	
1991	95,715	411,696	19,252	15,779		16,801	
1992	85,700	384,069	11,685	8,703		19,827	192
1993	59,909	370,302	8,317	5,799		24,247	383
1994	60,959	381,204	7,555	5,943		27,870	435
1995	64,086	403,847	7,987	5,584		31,973	804
1996	67,972	418,293	11,308		3,730	39,157	1,201
1997	70,035	435,061	12,320		4,426	44,864	1,671
1998	74,299	447,121	11,650		4,094	59,444	1,734
1999	78,630	470,038	11,245		4,371	67,554	2,100
2000	79,294	494,544	12,177		4,224	77,281	3,465
2005	95,038	556,876	23,249				
2009	109,479	532,258	44,681		4,423	147,586	12,764

Source: Data presented is based on MECS, 2001, *Foundation of Education Sector in Mongolia and its Development in 80 Years* and MECS annual statistics booklets for the data of 2005 and 2009.

1980's and throughout 1990's, respective data of these years per annum are presented in greater detail. After a decline in the early 1990s, enrolment at all levels grew steadily since the mid 1990s. The gross enrolment rate in secondary education (90%), especially in the primary schools is impressively high (97%). Vocational education and training schools, serving as full-pledged occupational skills training institutions, have emerged relatively late in the mid 1960s. A special type of institution called *technikums* that prepare pre-school and primary school teachers, nurses and some clerical professionals were established in early 1920s.

Many of these technikums were merged with higher educational institutions and others re-organized in the first half of the 1990's as institutions offering multi-tiered (e.g., ladderized) programs on vocational training, associate and some undergraduate degree program (this transformation led to the introduction of special type of associate degree programs called 'Diploma Programs' offered by higher educational institutions as reflected in [Table 1](#).

As of the 2007–2008 academic year, there were fifty-six TVET institutions with a total of 30,000 students. It should be noted that despite the rapid growth in recent years, TVET enrolment is still lower than the emerging needs of the labor market. It is targeted that the number of students in TVET institutions will increase by up to 40,000 in the near future. The latest enrolment data at the beginning of the 2008–2009 academic year already indicate over 37,000 enrollees in various types of formal vocational training. At the same time, higher education continuously attracts much of the high school graduates. Now, universities, institutes and colleges enroll more than 150,000 students in their undergraduate and graduate programs.

In Mongolia, the TVET system comprises various types of formal and non-formal training institutions ([Figure 2](#)).

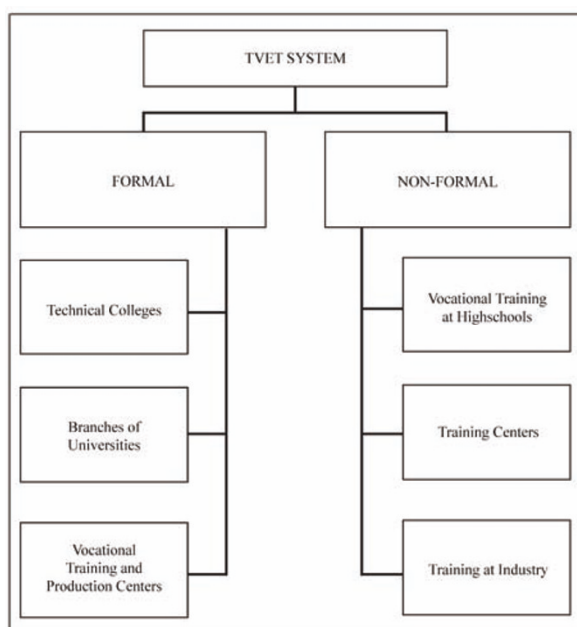


Figure 2. TVET system of Mongolia.

The formal TVET programs are delivered by vocational training and production centers (formerly, vocational-technical schools specially designed to train skilled workers), technical colleges and some higher educational institutions.

- Vocational education and training: Vocational training and education is aimed at developing basic skills for various trades which are conducted at Vocational Training and Production Centers (VTPC), Technical Colleges (TC) and some Higher Education Institutions (HEI). A vast majority of students enrolled in VTPCs come from Middle School graduates, after nine years of schooling. The training at VTPC is two and a half to three years long leading to an award of a Professional Certificate and a Complete Secondary Education Certificate. For those admitted after High School, the training lasts for one to one and a half years, depending upon the profession that the students select (see [Figure 2](#)).
- Technical Education: Technical education begins at the post-secondary school level with Grade 11 or a Complete Secondary Education Certificate as a common entry qualification. This stream of the TVET system covers two years of advanced training for mid-level skills development leading to a professional diploma. Completion of the diploma program can be linked with higher education after two years of further study or three to four years after the award of a professional certificate. This can lead to a baccalaureate degree. This system of training is normally carried out in the TCs, which hold the status of higher education institutions as well as in some branches of universities. The ladderized and flexible feature of the technical education housed in these institutions allows for lateral mobility and vertical linkage of TVET with higher education. However, the quality and relevance is a primary concern at this level for the credibility and public recognition of the higher qualification which can be achieved through an effective system of quality assurance and certification.

Operationally, the responsibility of administering and coordinating the formal TVET sector rests with the Ministry of Education, Culture and Science (MECS). At the same time, individual institutions are governed by their Governing Boards composed of representatives from MECS and other relevant ministries or government agencies, major employers, teaching staff and student body. In 2008, sixty-four TVET schools and technical colleges have been recorded in Mongolia which is either run by the government or private founders. These institutions are grouped as follows: thirteen technical colleges offering initial and mid-level technical education, eleven branch schools of universities; thirty-eight VTPCs; and two General Secondary Schools combined with vocational training. The participation of the private sector is evident with the twenty private VTPCs and colleges as shown in [Table 2](#).

Table 2. Types of TVET institutions in Mongolia

<i>Type of institution</i>	<i>Public</i>	<i>Private</i>	<i>Total</i>
Vocational Training and Production Centers	23	15	38
Technical Colleges	8	5	13
Branches of Universities	11		11
Secondary Schools combined with Vocational Training	2		2
Total	44	20	64

Some 144 professional courses are offered in the various VTPCs and TCs under the supervision of the MECS. Out of these, 117 courses deal with basic training or professional certificate courses in such occupations as cooking and bakery, food production, cafe and restaurant, sewing, beauty culture, carpentry and wood processing, secretarial, farming, mining, consumer electronics, shoe repair, heavy equipment operations and repair, photo studio operator, hotel and restaurant worker. Many course offerings are supply-driven and are being continuously offered due to the increased number of entrants and number of faculty members willing to teach the courses despite a low demand in the labor market.

Some twenty-seven courses are offered as areas of specialization in the professional diploma (equivalent to an Associate Degree) program which include auto mechanic, computer technician, food production, advertising, painting, sewing technology, cook/baker, electrical, construction, beautician/hairstylist, secretarial, public nutrition, archive documentation, musical art, dance art and singing art.

With the decentralized set-up of TVET schools, the need to strengthen the role of the School Governing Boards is crucial to provide strategic direction and guidance to the school administration in the context of national priorities and regional needs. Another task of the Governing Board is to link the institution with relevant industries via its members representing prominent trade associations and business entities.

Non-formal vocational training is conducted in selected high schools, authorized training centers and in industrial settings in the form of short-term courses or apprenticeship training. The Ministry of Social Welfare and Labor (MSWL) is the government authority to oversee and coordinate the non-formal TVET sector. Training Centers (TCs) deliver short-term courses with durations ranging from one to three months with special permission from MSWL.

Vocational Training Centers (VTCs) authorized by the Ministry of Social Welfare and Labor (MSWL) deliver short-term courses with durations ranging from one to three months. There are no strict entry qualifications for taking up these vocational courses. They are open to those who need re-training or skills upgrading. However, mainly youngsters from poor or disadvantaged families choose these courses using special training vouchers issued by employment promotion agencies. These and industrial training activities are conducted at training centers operated by private owners, companies and non-government organizations under the coordination of MSWL (see [Figure 2](#)).

About 358 TCs were registered with the MSWL. They offer short-term courses to cater to the needs of the unemployed and the poor. The TCs are managed by directors or managers with varying professional backgrounds and levels of education. Since 2000, a total of twenty-five employment promotion units (eighteen training units and seven employment offices mainly at the VTPCs) have been established in the towns and provinces. They are responsible for conducting employment training for unemployed adults using the Skills Training Voucher Scheme (STVS) through the local Labor and Welfare Offices. TCs are established and run by private owners and have flourished into a lucrative business among enterprising private training providers, particularly for the in-service training requirements of various occupations.

Over forty short-term courses that are offered in TCs are designed to cater to the service sector such as the training of hairdressers, cooks, accounting assistants, cosmetologists, waitresses, receptionists, salesgirls, sewers, textile workers, electricians, computer operators, welders, carpenters, bricklayers, and interior and exterior decorators. The training duration ranges from one to three months. In general, the courses offered at the TCs may look to be duplicating those offered by VTTCs. However, a significant difference in quality and outcomes is observed.

Some other forms of vocational training have emerged in recent years as alternatives to the traditional training modes. Thus, the Ministry of Industry and Trade (MIT) through its Small and Medium Enterprise and Technology Development Department has initiated two new training modes, specifically, the training of skilled workers for small and medium enterprises and the training for starting entrepreneurs. With support from the German Technical Cooperation Agency (GTZ), six capacity building centers were established at the national and regional levels to train vocational instructors in specific areas of technology such as wood processing, wool technology, printing shops and construction trades. Regionally, five business incubators were created to nurture promising start-up small businesses. Other government agencies such as the Ministry of Construction and Urban Development (MCUD) and non-government organizations are becoming more involved in TVET provision as the specific demands need to have a critical supply of manpower.

In connection with the growth of the leading economic sectors such as mining, construction, travel and tourism, and agriculture, there is a high demand for highly qualified technical workers. An acute shortage of skilled and highly-skilled manpower supply is expected to occur as the industry sectors continue to expand and diversify their activities. Therefore, an effective linkage between industry and the TVET system is critically needed. Likewise, equipping young Mongolians with the skills that will help them succeed in the global labor market requires a modernization of the TVET system and in improving the curricula in technical and vocational institutions, changing attitudes toward TVET and making it more attractive and effective.

Special Areas Needing Attention and Achievements in the TVET Sector

The labor market and TVET. In 2006, Mongolia's total population reached 2,533,400 with 1,577,000 working age population. The labor participation rate has been steadily increasing and has reached 63.5 per cent; and the unemployment rate has dropped to 3.3 per cent.

At the end of November 2007, the number of registered unemployed was 32,100, a decrease of 5.4% or 1,800 persons compared to the same period of the previous year. The number of unemployed women was 18,400, which is 57.4% of the total registered unemployed. At the end of November 2007, 49,900 registered unemployed persons joined the workforce. Of these 12.5% entered government or state-owned enterprises and the remaining 87.5% went to companies, cooperatives or other types of employers, such as small-scale private businesses.

Looking at the unemployed by their age group (see [Figure 4](#)), 23.3% of the registered unemployed people were between 16–24 of age, persons aged between

25–34 constituted 34.3%, 35–44 year olds 26.6% and the remaining 15.7% were from 45 to 60 of age. People in active employment (aged up to 34) compose the majority (57.6%) of the unemployed indicating the importance of targeted employment policies.

In terms of the highest education attained by the registered unemployed, 13.4% had higher education, 6.6% had technician education, 7.5% were vocational training graduates, 39% completed secondary education, 28.7% did not finish secondary education, 4.1% had primary education and 0.7% had no formal schooling. These figures suggest that a vast majority (72.5%) of the unemployed have no specific skills that will enable them to be employed, indicating the importance of effective vocational training offerings. Moreover, the real unemployment rate could be higher due to shadow unemployment or those engaged in the non-formal sector.

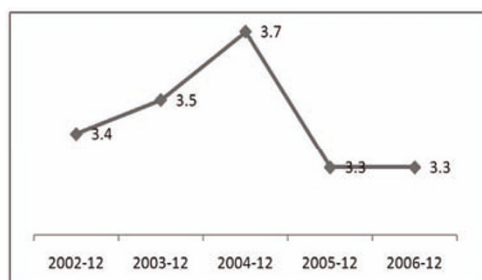


Figure 3. Unemployment rate in Mongolia.

Source: National Statistical Office, Mongolia (2008).

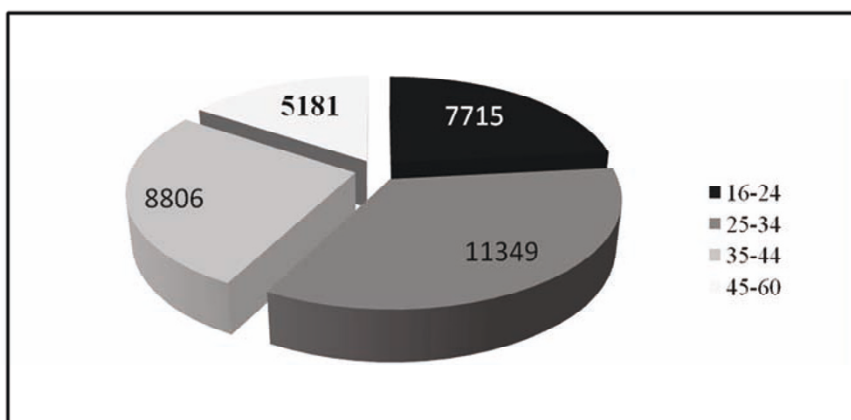


Figure 4. Unemployment by age group.

Source: National Statistical Office, Mongolia (2008).

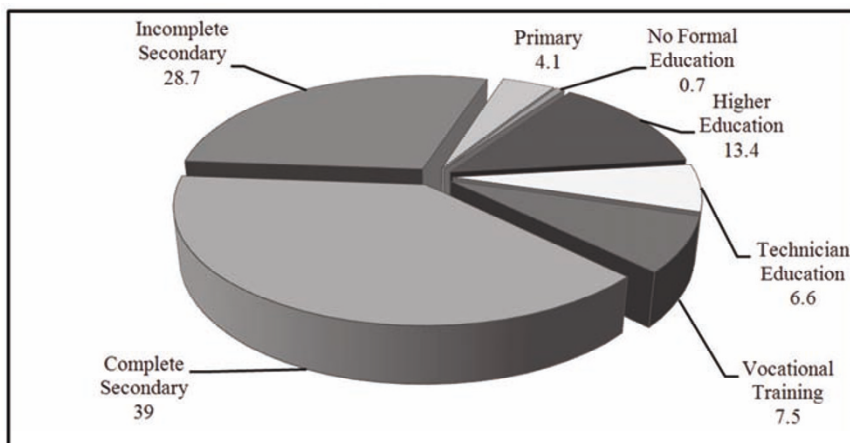


Figure 5. Composition of unemployed persons by level of education (in %).

Source: National Statistical Office, Mongolia (2008).

Although the Mongolian labor force has a relatively strong educational foundation reflecting high literacy rates, there is a high percentage of the poor population. In recent years, the national HDI has grown slightly reaching 0.718, which makes Mongolia a medium level human development nation with social indicators considerably more advanced than the average country with the same level of per capita GDP. In 2004 Mongolia's international ranking in terms of HDI was 116 out of 177 countries.

According to the labor market situational analysis, in most cases, many new hires do not meet employers' expectations and those of the workplace requirements due to a mismatch of their education and the skills needed by the workplace. As indicated in the above statistical data, the youth accounts for a big percentage of the unemployed. A survey conducted in 2006 revealed that only 58 per cent short-term vocational training graduates were able to access job placements.

The legal system in support of TVET. The legal basis of TVET in Mongolia is the Vocational Education and Training (VET) Law enacted in 2002. The law created a legal environment for the establishment of the National Council for Vocational Education and Training; a body composed of representatives of major stakeholders and authorized to make important decisions concerning skills training and manpower development matters. Another important body for the methodological provision for vocational education and training activities was established as stated in this law: VET Methodological Centers which are closely linked with MECS and MSWL to support a demand-driven TVET system. The Employment Promotion Law of Mongolia complements the Law on Vocational Education and Training by creating the legal framework for the type, form, scope and financing of employment

promotion activities. Although, the Law on Employment Promotion was amended in 2006, further clarification and reconsideration are required to comply with the recent changes in employment policies as well as the current labor market situation and business environment. The legal framework for TVET was operationalized with the establishment of institutional structures and mechanisms:

- The National Council of Vocational Education and Training (NCVET) is the overall body responsible for determining policies and strategies related to vocational education and training. It coordinates the activities of public and non-government organizations and corporations in the implementation of government policies supporting vocational education and training.
- The Vocational Education and Training Methodological Centers: MECS and MSWL jointly established and developed methodological centers. Institutional networks have been established such as the national central methodological center (NMC) based in Ulaanbaatar and six regional methodological centers (RMC). The NMC was established with specific functions to conduct qualitative analyses of labor market trends, coordinating the development of standards and norms for basic courses, and providing relevant methodological guidance.

In order to attune the TVET system to labor market demands and to ensure the legal framework towards the sound reform of existing policies, appropriate amendments have to be made in the Law on vocational education and training. This will provide a favorable legal environment to encourage the involvement of employers from both public and private sectors in the development and implementation of TVET policies, modernization of TVET governance and management structures through increased participation and commitment of industry, the creation of diverse and reliable financial resources, improvement of human resource capacity, advancement of teacher training and development systems, a succession of reforms taken in a learning environment and training content areas, changing the negative attitudes towards TVET through career counseling and directing students to TVET opportunities.

Financing of TVET. The national government is the major financier of vocational education and training. The funding of TVET schools and dormitories was taken over by the central level government in 1996. The annual budget estimation of a TVET school is based on its enrolment. In the case of VTCs under the MSWL, the annual budget allocation for vocational training and other services in 2004 was around MNT 800 million. The financing of private VTCs rests on the company or operators. Private VTCs do not receive a direct subsidy or tax incentives from the government, but students in selected programs supported through the Skills Training Voucher Scheme (STVS) are funded by the Employment Promotion Fund. NGOs secure funding from sponsorships, donations and fees from trainees.

In general, the financing of TVET is increasing year by year. In the last two consecutive years, the Government has invested an amount equal to USD 1.0 million for the rehabilitation and improvement TVET institutional facilities. From the German Government financial support, two million euros were invested

in four institutions for public food production. For the establishment of the aforementioned national and six regional methodology centers, US\$ 4.2 million was invested in the subsequent years, starting from 2002 to 2006. A number of actions have been taken in shaping the methodology management system, the renovation of training standards and instructional technology, setting up occupational standards in line with global trends and offering competency-based training modules.

A special priority in the Education Sector Master Plan for 2006–2015 is given to the TVET sector in terms of improving access, quality and management. It is targeted to (i) increase enrollment in technical education and vocational training by 56.1%; (ii) improve the quality and relevance of training in response to labor market demands; and (iii) renew management of TVET at every level of administration. Expected outcomes include the improvement of TVET services that will have an impact towards the reduction of unemployment and poverty among the population, and the improvement of capacity of professional workers which shall provide support to the development of manufacturing and services, and stimulate economic growth.

The establishment of new TVET institutions, the expansion of physical facilities and the maintenance of the existing institutions started with the support by the Government and international organizations. Among these are the small-size “Grass roots” projects funded by the Government of Japan through its Embassy in Ulaanbaatar and the World Vision backed initiatives that address the needs of a particular local community or those of the individuals’ needs. Within the framework of the Millennium Challenge Corporation (MCC) funded project, the contract covering an investment of US\$25.0 million for TVET was signed and detailed project surveys are in progress. Currently, several foreign-aided projects are underway to support the government’s efforts to reduce poverty via various training schemes. One of them is specifically focused on supporting unemployed young adults to be hired by construction companies through non-formal skills training. For this purpose, seven training providers were selected and equipped with essential training tools and equipment. The project is funded by the Japan Foundation for Poverty Reduction based at the ADB.

TVET curriculum standards and delivery. TVET curricula are designed to develop basic skills and higher-level skills at the at the secondary level. The structure of the TVET curriculum is based on 15–16 week semesters for two semesters a year. The professional certificate program involves twelve hours per week of practical work and six hours per week of sessions studying theories. The curriculum mix is based on a 60–40 ratio of practice and theory. This compares short-term vocational training courses of an 80–20 combination. Formal TVET programs are institution-based and highly structured.

There are two major players in setting training and education standards for TVET, namely (1) the Vocational Education and Training Methodology Center, and (2) the Mongolian Agency for Standardization and Metrology (MASM). It is the responsibility of MECS, through the Vocational Education and Training Methodological Center, to initiate the development of model curriculum standards for MASM’s approval through the Standardization and Conformity Assessment Policy Department.

A total of twenty-four technical committees under the supervision of the Department are in charge of reviewing draft standards in various areas such as education, health, food and agriculture for the standardization and conformity assessment.

There are sixteen common curriculum standards developed for the basic skills training of carpenters, masons, tailors, seamstresses, cooks, welders and electricians in Mongolia. About 22,000 students went through the training courses based on standards developed in 2001 with external assistance. Today, some 1,800 training modules are being developed in competency-based format for skills training and entrepreneurship development. The setting of training standards for certificate and diploma level programs is constrained by the absence of labor market surveys and a lack of internal TVET capacity. There is a need to look for other options in acquiring training standards which are internationally benchmarked and available in the international market.

The refinement and update of existing training standards are a continuous process aimed to improve the relevancy of training modules in a competency-based format which could be adapted for various levels of training. For example, within the framework of Non-formal skills training for the unemployed youth and adults project (JFPR 9085-MON), nine curricula on nine selected construction trades comprising forty-five modules have been designed. They are intended to supplement the conventional methods of training in TVET schools and Technical Colleges. These modules can be used for distance learning by gainfully employed graduates who want to improve their productivity and raise their qualifications. In addition, five competency-based training courses have been piloted.

TVET teachers and trainers. As of the beginning of the academic year 2008–2009, there were about 1,400 instructors and trainers in the sixty-four TVET schools and technical colleges. Based on the enrolment in the same year, the teacher-student ratio would be about 1:28. The teaching staff of TVET schools are categorized as those handling general education subjects, vocational, practical and combined theoretical and practical training sessions. About 40 per cent of the teachers in place are general education teachers. Vocational teachers should be versatile and capable of handling theory and practical courses for many reasons.

Table 3 shows the qualifications of the teaching staff of TVET schools as of the academic year 2006–2007. Six hundred seventy-seven or about 52.5 per cent of the total teaching staff of the TVET schools are bachelor degree holders. Fifty per cent of teaching staff have one to five years of teaching experience. About 43 per cent of these belong to the age band of 30–50 years old. Only 13 per cent of them are less than 30 years of age. Overall, about 45 per cent of the teachers are over 50-years old or approaching the retirement age.

In the last two years about 40 per cent of the total number of TVET teachers and staff or more than 100 TVET teachers and staff, have gone through some type of in-service training abroad and about 140 people, in-country. At the moment, there is no systematic pre- or in-service training structure in Mongolia. However, an incoming MCC-funded TVET project is planned to bring in substantial changes in this specific area.

Table 3. Educational qualifications of teaching staff of TVET schools

<i>The highest degree attained</i>	<i>Number of teaching staff</i>	<i>As a percentage of total</i>
Doctorate	29	2.2%
Master	356	27.6%
Bachelor	677	52.5%
Diploma	228	17.7%
Total	1, 290	100%

Quality assurance and public-private sector partnership in TVET. Quality assurance in TVET is a major concern for improvement. The existing system is planned to be strengthened by improving present capacity and resources. In addition, a quality management system should be developed based on ISO standards and models of certification. A national vocational qualification framework is being considered as a strong pillar of TVET that would create career pathways for employment.

In this regard, public-private sector partnership in TVET, has been recognized as a major initiative even earlier. It should be strengthened for developing, promoting and sustaining the TVET system. The strategic objective will be to develop a private sector-led TVET system that is responsive and sustainable. Quality can also be strengthened through efforts to improve the social image of TVET. The role of career guidance and promotion of public awareness of the economic opportunities in TVET through public-private sector partnership is of extreme importance.

Given the lessons learned from the Skills Training Voucher Scheme, the public-private sector partnership in vocational training provision is in progress in Mongolia. There are mutual benefits for engaging in partnerships for TVET. Industry has a major responsibility and interest to develop and promote TVET as its growth depends on the availability of appropriately educated and skilled human resources. As an experiment to strengthen industrial commitment to the sector, the management of a number of public TVET institutions have been transferred to private entities. In these TVET schools, industry's participation in curriculum development, school management and extension programs have been significantly increased. At the institutional level, industry has indicated its willingness to collaborate in the industrial training of trainees and in the skills upgrading of instructors. Corporate executives and general managers have expressed interest to participate in TVET for their mutual benefit.

EMERGING CHALLENGES AND TRENDS IN TVET

Challenges

There is no question on the importance of skills development towards poverty-reduction. TVET skills development initiatives should be seen from the angle of having better performance by the workforce in the labor market, and in raising the industries' performance. Extensive human resources development can effectively

result from public pre-service education and training assistance, as well as comprehensively managed assistance in skills development for the poor by including them in the national economic policy, analyses of labor demand and policy environment so that real improvements in livelihoods can be achieved.

TVET in Mongolia is on the threshold of being revitalized after a long period of decline. There is an intensive discussion among the key TVET stakeholders, namely: the government, policy-makers, industry, NGOs and other social partners. The actions to be taken involve policy and systems-wide renewal, external assistance from development partners, increased involvement of the private sector in making TVET provisions and ownership, and improving the social image of the TVET system as pathways for skills and knowledge development.

In conclusion, this paper emphasizes the following points to further advance TVET reforms and improvements in Mongolia:

- The TVET system is fragmented, not well coordinated or focused, and is constrained by a vague policy framework and limited resources. The TVET system suffers from a lack of a labor market assessment strategy including an assessment of the system's economic and social relevance. There is a need to develop the capacity and mechanism, including a labor market information system (LMIS) to ensure systematic monitoring and forecasting of the labor market demand for sustaining a demand-driven TVET system.
- There is a sense of urgency to develop a national strategy for TVET. The formulation process needs focus on skills development models and lessons learned from other countries as well as to seek external assistance from development partners. Indeed, the strategy goes beyond the national boundaries and the involvement of industry as the major stakeholder should not be overlooked in the formulation process. It is intended to emphasize the leading role of industry in steering TVET. Strengthening links between education and labor markets, through greater participation by employers in reviewing training courses, setting occupational standards, offering customized on-the-job training and developing bridge programs between school and work such as through apprenticeships and internships might eradicate the skills mismatch between supply and demand in the labor market.
- The foundation for qualification testing has been laid out by the government which is a huge task requiring the development of a National Vocational Qualification Framework (NVQF). The setting up of policy and mechanism for skills testing will enhance the vocational qualification of the workers, promote employment and support life-long learning. The establishment of an NVQ framework will lead to a unified TVET system in the country.
- The curricula used at the professional certificate and diploma level need to be updated and revised based on labor market survey and regional scenarios. A more flexible and cost-effective approach of developing curriculum and training standards should be devised by acquiring internationally benchmarked materials from the world education market, internet or other sources where available through special arrangements. These materials will be validated with the participation of the industry sector. Further, capacity building in various aspects of the TVET system should become the first priority since major changes are expected

to happen at all levels of the organizational hierarchy. There is a sense of urgency to build corporate capacity in policy formulation, planning, coordination and management of institutions. There is a pressing need to institutionalize programs on skills training and entrepreneurship by providing the legal framework for underpinning program sustainability. External assistance should be sought to continue supporting colleges to attain their full capacity to deliver employment promotion services to the unemployed and vulnerable groups for poverty reduction and a better life.

- The stronghold of any training system is the teaching staff who are qualified and committed to the goals and objectives of the organization. There is an urgent need to continuously develop instructors.
- The need to establish a training facility for the TVET sector is crucial to address this weakness. A major equipment procurement program needs to be undertaken to modernize the workshops and laboratories of TVET schools based on newly developed training standards for new technologies. At this point, it is recognized that industry participation in the selection and validation of equipment lists and specifications would be necessary. In addition, civil works need to be undertaken to rehabilitate some buildings with defective roofs due to old age and obsolete design. Renovation will be necessary to redesign workshops and laboratories according to modern workshop planning and layout.
- A campaign should be launched to change attitudes toward vocational education and training, promoting the value of practical-oriented, hands-on approaches to developing skills required in the labor market.

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Regsuren Bat-Erdene
Former Director
Higher and Vocational Education
Ministry of Education, Culture and Science

14. MYANMAR

INTRODUCTION

Myanmar has a total area of 678,500 square kilometers, the largest country in mainland Southeast Asia and the 40th-largest in the world (Zambia being the 39th). It is located between Chittagong, Bangladesh and Assam, Nagaland and Manipur, India to the northwest. Its closest neighbors are Laos and Thailand to the southeast. Myanmar has 1,930 km of contiguous coastline along the Bay of Bengal and Andaman Sea to the southwest and the south, respectively, which forms one-third of its total perimeter. The Ayeyarwady River is Myanmar's longest river, nearly 2,170 kilometers long, flows into the Gulf of Martaban. Fertile plains exist in the valleys between the mountain chains. The majority of Myanmar's population live in the Ayeyarwady valley situated between the Rakhine Yoma and the Shan Plateau.

The Government of Myanmar has planned to develop equitability. There are twenty-four special development zones in Myanmar. Under the guidance of the state of head of Myanmar, each development zone has one university, one hospital, one technological university and one computer university.

Myanmar was colonized by Great Britain for over 100 years and earned its independence in 1948. Myanmar has a great potential for development because of its rich mineral resources (copper, gold, etc), timber, agricultural land to cultivate rice, wheat, etc. Before the Second World War, Myanmar was a very high exporter of rice and had a great amount of teak reserves. Although Myanmar has this huge development potential, it could not be exploited for the country's development. In 1962, the concept of socialism was introduced and implemented through military dictatorship which affected Myanmar's internal economic development and international relations. This led to political demonstrations; the State Peace and Development Council controlled the State to maintain stability and sovereignty.

CURRENT EDUCATIONAL/TVET SYSTEM

The pre-second world war education system encouraged the youth of Myanmar to pursue education; this led to civil service employment in clerical and junior administrative positions. The male technicians and skilled workers that were needed to work in industrial establishments were brought in mainly from India. During the post-second world war period, the Union of Myanmar found itself short of skilled workers, craftsmen, middle-level technicians and engineers. This caused the education system to reform and a Technical Education system was started that was congruent with the social economic development pattern of the country, integrating it into the

general education system. In the 1950s, the Artisan Training Centers, a Technical Institute at Insein and a Faculty of Engineering at the University of Rangoon were the only institutions under the Ministry of Education which partially met the manpower needs of the country at that time. During this time the teaching staff for the institutions had to be brought in from abroad on a contract basis. Since then, the Department of Technical, Agricultural and Vocational Education was made responsible for the training of middle-level technicians as well as the skilled and semi-skilled manpower in the country.

In 1972, seventy institutes and schools: eleven Government Technical Institutes, seven State Agricultural Institutes, sixteen Technical High Schools, ten Agricultural High Schools, three Commercial Schools, two Machinery Repair and Maintenance, eleven Handicraft Schools, six Home Science, two Schools of Fisheries, one Industrial Training Center and one Technical Teachers Training Institute (TTTI) were established. In addition to the full time educational institutions mentioned above, DTAVE also offers special courses in different technical trades as follows;

1. Engineering Technology Classes of three years duration at selected GTIs.
2. Evening Trade Courses of three months duration at the selected GTIs and THSS.
3. Evening Trade courses of five months duration at selected THSS.
4. Computer Operator Courses.

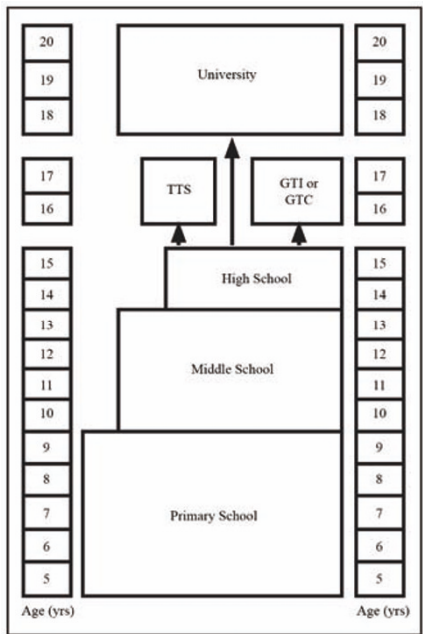
Education in the Union of Myanmar is mainly under the responsibility of the Ministry of Education. The educational policy is to provide basic education equated with livelihood and within the reach of all. Science is given importance in higher education especially for those who have promising potentials and who are industrious.

The educational structure in Myanmar is on the ratio of 5:4:2, five years at the primary level, four years at the middle level and two years at the higher level. Diversification into the technical, agricultural and vocational stream was made to provide basic education at all levels.

The Ministry of Education (MOE) undertakes policy formulation and coordination through the various councils formed under it. In addition, the MOE is responsible for funding provisions through small tokens of contributions amongst various communities. One of the most important steps undertaken was the formation of the Myanmar Naing Ngan Education Committee in 1991 to coordinate educational policies and plans, which assisted in enhancing the environment of education as it is seen now.

In order to enhance the development of Science and Technology and to reinforce the development of the state more effectively, the Government of Myanmar established the Ministry of Science and Technology in 1996. Under the guidance of this Ministry, the Department of Technical and Vocational Education (DTVE) was formed. As one of the five departments, it is responsible for the development of technical education and the training of middle-level technicians, the skilled and semi-skilled manpower of the country.

The principal objectives of the DTVE are to train technicians, skilled and semi-skilled workers; formulate programs that link education with work experiences; set priorities for occupations and skills most useful in practical fields; organize vocational



GTI - Government Technical Institute
GTC - Government Technological College
TTS - Technical Training School

Figure 1. Education structure of Myanmar.

Source: DTVE (2008).

training programs for school leavers; and train and nurture skilled technicians and experts imbued with a sense of consciousness and convictions to cherish the state.

Moreover, its functions are to implement policies and guidelines laid down by the MOST, plan for the expansion of Technical and Vocational Schools/Institutes/Colleges and Universities, plan for the build-up of highly-qualified and proficient teaching staff and take charge of budgetary matters (i.e., the purchase of teaching aids, tools and equipment).

The government is making all efforts to enable the nation to keep abreast with the global economy. Aware that human resource development is the key to a nation's development, the government gives top priority towards strengthening, upgrading, expanding and opening new technological universities, colleges, institutes and technical training schools.

Special training courses for highly qualified nationals were also initiated, known as "Technical and Vocational Education for Youth Employment".

At present, the Ministry of Science and Technology has opened and upgraded several Technological Universities, Colleges, Institutes and Schools. There are two pathways to cultivate competent engineers and skilled manpower. (Please refer to [Table 1](#)).

Table 1. Technological universities, colleges, institutes and technical schools of Myanmar

<i>No.</i>	<i>Type of institution</i>	<i>Duration of study</i>	<i>No. of institutions</i>
1	Technological Universities	5 years	27
2	Technological Colleges	5 years	4
3	Technical Institutes	2 years	6
4	Technical Training School	2 years	6
5	Machinery Repair and Maintenance Schools (MRMS)	6 months	2
6	Handicraft School	3 months	7

The role of technological universities/college/institute is to train competent engineers well. Technical training schools aim to nurture a skilled workforce for the private and public sectors. The handicraft schools encourage the people in the grass-roots level to participate actively the development of society.

The concept of a training system in Myanmar is recognized as a “Traditional Training Concept.” In 2006, DTVE, the organization mainly responsible for TVET in Myanmar, started offering new training systems to develop a highly-competitive skilled workforce. Under this system, students are awarded with certificates I and II after completion of each of the two levels of training.

EMERGING CHALLENGES AND TRENDS IN TVET

The TVET system in Myanmar faces the following challenges:

- Lack of pluralistic participation in the planning, implementing and monitoring of training programs;
- Lack of clarity in adapting the internal structure of vocational training to the level of global work standards;
- Irrelevant content due to minimal participation of the stakeholders. Most of the time, contents are not adapted to industry’s or the public’s demands;
- Lack of research on effectiveness of training.

In order to overcome these challenges, successful models of TVET are simulated as follows:

Scenario I: Simulation of the Dual System for Myanmar

The concept of TVET is a very important criteria for the continuous simulation of the dual training system in Myanmar. As already mentioned in previous paragraphs, the occupation concept is very complicated for developing countries. The same seems to be true in Myanmar.

Secondly, since 1969 the national legislative framework for vocational education had been in existence in Germany. The country has a long-established opportunity to improve the adaptation of the demand and offer of vocational education. As a developing country, Myanmar is yet to prepare a legislative framework to give significant directions for institution building and capacity building using the dual system approach. While the dual training system in Germany emphasizes an

occupational concept, some developing countries can hardly legitimize or implement the dual system model in TVET.

Lastly, the government, the employers’ organizations and the employees’ organizations have committed to participate in TVET that has been patterned after the vocational training act of Germany. In developing countries, a significant awareness is yet to be established to better appreciate a greater sectoral participation in the development of TVET programs under the dual system model. The level of potentials and risks of various TVET components have been identified in making the dual system work for Myanmar, as shown in the [Table 2](#) below.

Table 2. Risks and potentials for the dual system in a developing country like Myanmar

<i>Category</i>	<i>Risk</i>	<i>Potential</i>
Occupation Concept	Strong	Weak
Organizational Structure	Strong	Weak
Internal structure	Strong	Weak
Government, and stake holder participation	Moderate	Moderate

Scenario II: Simulation of Modularization (NVQs for Myanmar)

Firstly, England’s job or modular concept is based solely on the outcomes, with especial emphasis on the quality control, of the training process. As a developing country, Myanmar can also pursue the advantages of NVQs because of its simple concept.

Secondly, Myanmar is one of England’s colonies. Its administrative structure and bureaucratic culture have been adapted in Myanmar Society. Thus, the state can simulate an organizational structure for the NVQs approach. Also, the current training structure is quite similar to the NVQs and can adapt to the NVQ style.

Lastly, in England, the government and other stakeholders participate in the market economy culture for the development of NVQs. Decentralizing control of TVET system in Myanmar from being state-controlled could improve the NVQ development approach in the country. Please refer to [Table 3](#) for the risks and potentials for NVQs in a developing country, Myanmar.

Table 3. The risks and potentials for NVQs in a developing country like Myanmar

<i>Category</i>	<i>Risk</i>	<i>Potential</i>
Occupation Concept	Weak	Strong
Organizational Structure	Weak	Strong
Internal structure	Weak	Strong
Government, and stake holder participation	Weak	Strong

CONCLUSION

Based on Scenarios I and II, the NVQ approach can be conveniently used for the future development of the TVET system in Myanmar. The state, employer

associations, employee associations and other organizations should be aware of the NVQ approach and create a conducive environment for the development of a TVET system in Myanmar.

[†] Kyaw Htin Si Thu passed away before the publication of his contribution in this work. He will be remembered for his commitment and cooperation.

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www.myanmar.com.mm

Kyaw Htin Si Thu
Former Lecturer
Department of Technical and Vocational Education
Ministry of Science and Technology

15. NEPAL

CURRENT EDUCATIONAL/TVET SYSTEM

The technical education and vocational training (TVET) programs in Nepal comprise a range of government and private training providers. Nearly 50,000 trainees are trained annually by all training providers (Sharma, 2004). The major training providers are as follows:

Council for Technical Education and Vocational Training (CTEVT)

The CTEVT is the national TVET coordinating body and is also its major training provider. It was founded in 1989 in accordance with the Technical Education and Vocational Training Act, 1989, amended in 2006.

The mission of CTEVT is to formulate policies, ensure quality, coordinate all TEVT stakeholders and facilitate the preparation of basic, middle and higher level skills for the human resources required for the economic development of the country (CTEVT, 2005).

At present, CTEVT offers three levels of TEVT programs namely Diploma, Technical SLC and Short-term Vocational Trainings in the areas of health, agriculture and engineering, among others. It also conducts skills testing and standardization of skills learnt from formal or informal means. In addition, it also conducts training for technical instructors. The CTEVT system currently has an average yearly enrollment capacity of 13,000 students in the Diploma and TSLC levels. [Table 1](#) presents the various programs currently run by the CTEVT by trades or areas. [Table 2](#) presents the number of TEVT institutions under the CTEVT.

Table 1. Various programs currently run by the CTEVT by areas and level

Area	Program		
	Diploma	TSLC	Short term training
Engineering	Civil, Electrical, Electronics Mechanical, Surveying, Computer, Architecture,	Civil, Electrical, Electronics, Mechanical, Refrigeration and Air Conditioning, Computer, Surveying, Automobile	Needs-based vocational trainings in areas like Motorcycle Maintenance, Traditional Birth Attendance, Food and Vegetable Preservation,

Table 1. (Continued)

Health	General Health, Nursing Pharmacy, Dental Science Medical Lab Technology Ophthalmic Science	CMA, ANM, Lab Assistant, AAHW, Dental Hygienist, Amchi	Hotel and Tourism Management, Trekking Guide, Cooking and Baking Village Animal Health Worker, Fitter, Carpenter etc of varied duration.
Agriculture	Agriculture Science, Food Technology	Veterinary JTA, Plant Science JTA	
Others	-	Social Mobilization, Office Management	

Table 2. Number of TEVT institutions under CTEVT (CTEVT, 2007)

S.N	Description	Diploma	TSLC	Short-term vocational training
1	CTEVT managed	7	7	3
2	Affiliated	64	104	41
3	Annex	-	20*	-
4	Total	71	126	44

Technical Institutions of the Universities

These institutions offer programs equivalent to bachelor, masteral or doctoral degrees. They run programs largely in the area of engineering, ICT, agriculture and medicine. Some of the institutions under the universities also run technician level courses in some trades.

Five institutes under the Tribhuvan University are at present running courses in the field to impart higher education programs in the technical area. They are:

- Institute of Medicine
- Institute of Engineering
- Institute of Agriculture and Animal Science
- Institute of Forestry
- Institute of Science and Technology

The Tribhuvan University has been educating middle and higher level professionals (master's degree level [technical]) through its forty campuses. After the revolution, the council for Technical Education and Vocational Training, Tribhuvan University phased out the course on Junior Technician in Agriculture (JTA), the Auxiliary Nurse Midwives (ANM), the Community Medicine Assistant (CMA) in Health and the Trade level courses in construction. The Education Commission (1991) recommended that TU should withdraw certificate and diploma level training programs and transfer these to CTEVT. The same case is true for Kathmandu University, Purbanchal University, Pokhara University and B.P. Koirala Health Science Academy.

They also put up technical institutions in order to produce the required technical manpower.

Private Institutions

Numerous private institutes for TVET are being established in affiliation with CTEVT. Several national as well as international non-governmental organizations are also involved in organizing technical and vocational training. There is a growing number of colleges affiliated with universities, which run higher level technical programs.

Other Governmental Agencies

Many government institutions are sector-focused. They provide training for a specific economic sector such as tourism or agriculture. The Ministry of Industry, Commerce and Supplies provides training in all seventy-five districts. To a large degree, training in most ministries is specifically focused in their respective areas of concern. In addition to skills-based entrepreneurship training for potential and interested people, government organizations also conduct in-service training to upgrade the skills levels of the manpower pool.

Ministry of Industry, Commerce and Supply

The Ministry has played a vital role in the expansion of rural cottage industries by providing training in various fields. Most of these training programs are being conducted through the Department of Small and Cottage Industries Development with the help of donor agencies. The training courses are mobile in nature and vary in duration from two weeks to six months. The major occupational areas are textiles, carpet weaving, knitting, ceramics, leather work, sewing, tailoring, wood work, electrical, etc. The entry level requirements for such training courses are basic literacy and numeracy.

Ministry of Labor and Transport Management

The Ministry of Labor and Transport Management initiated vocational training programs after the establishment of vocational and skills training centers in Hetauda and Biratnagar in 1976 and 1977, respectively. Eleven skills development training centers have also been set up in different parts of the country from 1992 to 1993. The training centers under the Department of Labor offer training in more than thirty-three different occupational areas. These are woodworking, masonry, plumbing, electrical, cooking, etc. The duration of training varies from one month to one year based on the nature of the subject area.

Department of Tourism

The Tourism Training Center operates under the Tourism Department which has been providing training in the tourism and hotel management areas. These include

restaurant and bar, cooking, front desk management, travel and tour guide, trekking guide, house keeping, etc.

Ministry of Women, Children and Social Welfare

This ministry has played a vital role in the skills development of women by providing training programs in various fields but centered mainly on women's skills development. The major training areas are textiles, carpet weaving, knitting, tailoring, ceramics, sewing, house keeping, etc.

Likewise, the following ministries and government line agencies are also operating training institutes in order to enhance the vocational skill development efforts for the Nepalese people:

- Ministry of Local Development
- Ministry of Health and Environment
- Department of Agriculture
- Department of Land Survey and Maintenance
- Department of Co-operatives
- Department of Roads
- Department of Forests
- Secondary Schools

TEVT courses are also offered through the general secondary schools to provide students with a general orientation for the various vocational areas. On top of this, there are a few Annex Schools (TEVT programs attached to general schools which run technical and vocational programs similar to the technical schools of CTEVT.)

Table 3. Nepal TVET and skills development national policy-2007

<i>Outcomes</i>	<i>Key policy areas</i>	<i>Strategy</i>
For citizens: every Nepalese who aspires for it shall be entitled to at least three months of training for employment free of charge; beyond this an increasing array of life-long learning opportunities will be conducted on a fee-paying basis For training providers: all businesses and institutions, small or large, private or public, commercial or	massive expansion of training opportunities	deregulation, autonomy, decentralization; free start-up support to emerging providers; quality assurance outcome (in line with NVQs); performance comparisons, transparency and quality marks as elements of customer protection
	inclusion of and access for all citizens who need training	stipends (for tuition fees and subsistence allowance) especially for the disadvantaged groups of people; recognition of prior learning /open assessment; entry level occupational standards; preparatory and support course for mainstreaming

Table 3. (Continued)

charitable, will be encouraged and supported to offer skills development programs for school leavers and the national workforce For the business community: the supply of workers, competent and confident in their occupation will be considerably increased, thus enhancing national productivity in essence: the development of a strong and functioning market for TVET and skills development	firm integration of various teaching modes and pathways	vocational qualifications framework as a bracket for formal, non-formal and informal training and learning; bridging courses into general education; promotion of typical occupational career ladders and career guidance for the workforce as elements of life-long learning.
	enhanced relevance of courses and competencies	licensed trainers with industrial exposure; course based upon established needs with curricula based upon occupational standards; hands-on training (on-the-job and projects; independent assessment and certification
	sustained funding sources and mechanisms	massive increase in public funds; fees for all training measures beyond three months; concerted donor assistance; TVET development funds on the district level; explore contributions from former stipend recipients.

BEST PRACTICES OF TVET IN NEPAL

The Jiri Technical School has been conducting outreach programs of two to three months duration in remote villages. Regular trainees of the school go to the villages with the instructors and train the farmers in different skills. The major training areas are animal health, masonry, plumbing and community health. In these programs, regular trainees of long-term courses get more field-based practical experiences and the farmers are also trained at the same time. These programs provide two kinds of opportunities for the poor farmers. First is training related to veterinary, health and construction and second is training according to their own needs (JTS, 2007).

The Rural Training Centers, Bhimad and Khudi, have been conducting training programs on vocational enterprises for community development. The major objective of these centers is to improve the quality of life of the community residents, particularly the poor and under-privileged groups. Major activities are (i) participatory needs assessment through social mobilization; (ii) running savings and credit programs; and (iii) integrating indigenous technology (Annual Report, 2007). It has

been shown that the models used by these centers have helped uplift the living standards of the communities.

EMERGING CHALLENGES AND TRENDS IN TVET

Trends in TVET

Because employment and entrepreneurship play a vital role in enhancing the competitiveness and lifestyle of the people, each and every component of the educational system, irrespective of its level, should focus on the applicability of the knowledge and skills gained to be applied to the real workplace. In essence, the educational system and the real world of work are just two sides of a coin (Sharma, 2003).

The objective of TEVT is to develop the capability of a person at all levels so that he can gain and use the knowledge and skills needed for better livelihood. On one hand Nepal, has to develop its educational system as a means to alleviate poverty and on the other hand, it has to assure the competency of the Nepalese people to compete with the international workforce and to secure their opportunities in the international labor market.

Thus, TEVT quality will be improved by:

- Strengthening the national accreditation system and adopting APACC accreditation in Nepal;
 - Developing a standard and regular monitoring and evaluation system;
 - National standardization of skills and capacity of skills testing extended to the remote areas;
 - Regular assessment and improvement of the examination system;
 - Upgrading professionals through in-service and pre-service training;
 - Providing instructional/technical support services to the technical training providers.
- Higher relevance of TEVT can be achieved by:

- Revising the curriculum to make it relevant to the national and international labor market demands;
- Promoting linkages among educational institutions, skills training and the world of work;
- Facilitating ‘decent work’ as well as horizontal and vertical development of skilled workers;
- Incorporating the entrepreneur skills component in every training program;
- Facilitating the establishment of a labor market information center.

Increase TVET access by:

- Conducting mobile training in the remote areas of the country;
- Providing stipends to poor trainees in the rural technical schools;
- Institutionalizing participatory financing system of TEVT at all levels by mobilizing the resources of the public sector, the private sector, communities, NGOs and individual trainees to improve effectiveness, efficiency, sustainability and equity of the TEVT system;
- Establishing a coordinated approach to vocational training at the district level;
- Providing free training for the poor and helping them to find employment.

Post-training support will be provided by:

- Establishing a career counselling unit in each training institution;
- Facilitating the establishment of a job recruitment center;
- Bridging TEVT programs and micro enterprise development through the co-operative approach.

Education and skills training play a vital role in the development of a nation (also see the general education pathway in Nepal in Annexure 1). Inadequate skills and a lack of training could be the leading causes of poverty. Low skills level and a poor educational background can lead to lack of access to employment. A highly skilled person could perform tasks well and be able to make adjustments in the world of work. Therefore, the main purpose of the technical training programs is to equip the workforce with the appropriate skills to enable them to secure employment, which ultimately empowers them to overcome poverty. A majority of TVET graduates want to start their own enterprises but are constrained to do so due to financial and marketing problems. Therefore, the above-mentioned interventions in TVET are urgent.

Challenges in TVET

The current TVET program initiatives seem to be not quite effective in preparing students for employment opportunities. While no objective data is available on the employment rates of graduates from institutions, qualitative information would indicate that the placement rate is only around 50 to 60 percent.

The current TEVT system faces some shortcomings like poor access to training, irrelevant training skills, a lack of a national standard curriculum, inadequate training of the trainers, inadequate research and communication in the TEVT sector, low quality of training and a lack of post-training support systems. Despite continuous efforts by the government to strengthen the TEVT sector for the preparation of skilled and quality graduates, the quality and efficiency of TEVT programs have not been that satisfactory. Low efficiency and effectiveness have become serious concerns at the policy level. Key issues that confront the TEVT sector are as follows:

Low access to training. There are fewer training institutes available than the potential demand. The strong competition for training institutes run by the government has caused limited access to most disadvantaged groups such as women, the disabled and the *Dalit* (lower caste) communities. The poor and disadvantaged (because of their lower educational achievements) are less likely to be selected for admission to the training programs due to their poor access to basic education.

Mobile training programs have been conducted to a limited extent as a means of improving access to training for those living in remote areas. The lack of easy and economical transportation means (more navigable roads) limiting the accessibility of mobile training in many districts.

Training relevance. The TEVT system in Nepal is largely supply-driven and is focused on delivering training based on the content of a standardized curriculum.

The low job placement rates of graduates indicate that the courses offered by the training providers fail to satisfy the prospective employers' or self-employment needs.

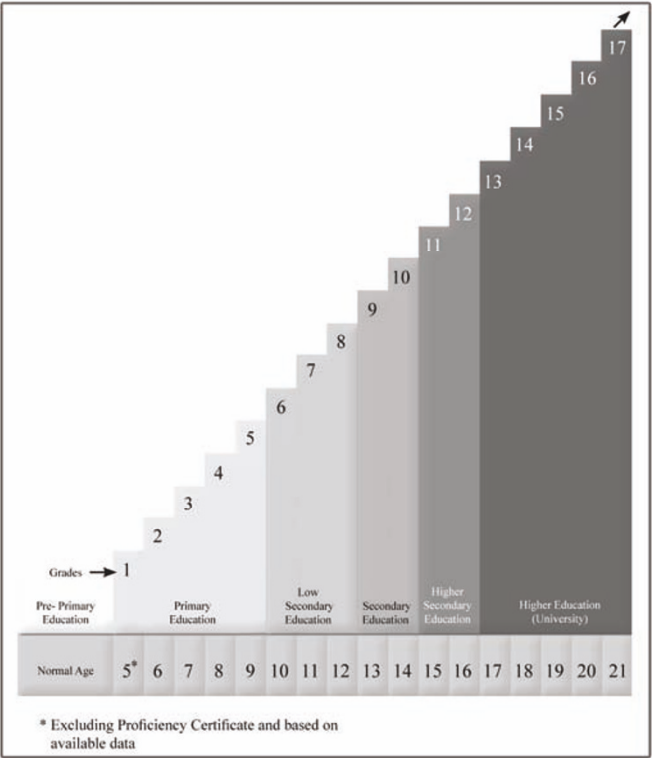
Inadequate linkages between educational institutions and labor market partners have also led to a lack of mutual cooperation. Consequently, educational institutions are not always fully aware of the needs of employers.

Most of the technical education programs in Nepal are designed to focus mainly on public sector jobs with little consideration on the emergent job opportunities in the private sector. The skills training imparted by the Technical Training Providers (TTPs) lack an entrepreneurial skills development component to make graduates capable of initiating and managing enterprises that generate self-employment. Besides, the linkage between training and employment is not in good harmony. The TEVT providers are lagging behind in connecting activities with the jobs available in industry. Consequently, TEVT graduates find difficulty in finding jobs even if job opportunities are available to them in the private sector.

Low quality of training. The quality of training conducted is also another factor that limits the employment of graduates. Many instructors especially those in private colleges are not able to access training on instructional techniques. These instructors also do not have sufficient industrial experience or technical expertise. There is also the matter of inadequate physical facilities, a lack of training materials and a shortage of hands-on learning opportunities as some of the constraints towards achieving quality training. The obvious result is the low employment rate of the graduates.

Lack of post-training support. Many TEVT providers focus solely on training rather than on the outcomes of training. Post-training support is critical in training for self-employment as it is important to provide post-training services such as micro credit and career counselling. Also important is the selection of trainees who are likely to succeed in mastering entrepreneurial skills. Similarly, there are special groups such as the disabled who have special needs in the learning process. Failure to coordinate with the service providers has resulted in low employment outcomes, or none at all.

ANNEXURE 1



Education pathway in Nepal.

Shiva Shankar Ghimire
Director
Curriculum Development Division
Council for Technical Education and Vocational Training

16. PAKISTAN

INTRODUCTION

Pakistan is geographically situated at the crossroads of Central Asia, the Middle East, China and India. It is a federation of four provinces - Punjab, Sindh, North-West Frontier Province (NWFP) and Balochistan; the two Federally Administered Tribal Areas (FATA) and the Federally Administered Northern Areas (FANA); and the Federal Capital, Islamabad. The country is a multi-ethnic society with at least one major ethno-linguistic group in each province. Urdu, Punjabi and English are the major languages. It is a predominantly Islamic country.

Pakistan covers areas of 796,096 square kilometers with an estimated population of 160 million of whom 100 million live in the rural areas. Pakistan is now the seventh most populous country in the world.

The growth of Pakistan's education sector over the last sixty years was slow in terms of policy directions and investments in human capital when compared to the other countries in the region. During these years, the focus of attention was on general education and related streams. On the other hand, the technical and vocational education stream was always overshadowed by general education. Thus, technical education and vocational training (TVET) constitutes only a small part of the whole educational system. However, some important developments in technical education have taken place in the past few years. The TVET system has expanded both quantitatively and qualitatively with the opening of new TVET institutions in the public and private sectors. The strengthening of institutions with the provision of equipment and teaching learning resource materials and the increase in the number of training programs for teachers to improve their skills and capabilities were also part of these reforms.

CURRENT EDUCATION/TVET SYSTEM

The education system in Pakistan follows two main streams: the general education stream and the vocational and technical education stream.

General Education

The general education stream consists of five years of primary education (Grade I–V, age group five to ten), three years of elementary education (Grade VI–VIII, age group 11 to 13), five years of Secondary Education (Grade VIII–X, age group 14 to 15), and two years of Higher Secondary/Intermediate Education (Grade XI–XII, age group 16 to 17) and two to five years of Tertiary Education leading to graduate and

post graduate levels. Secondary education is subdivided into middle schools (classes VI to VIII) and high/secondary schools (Grade IX and X). A few years back, intermediate colleges were working separately but now they are either part of degree colleges (B.A /B.Sc. level) or part of the higher secondary schools. The universities and affiliated colleges offer post-graduate degrees and research programs leading to M.A/ M.Sc., M. Phil or Ph.D.

At the primary level, there are 157,311 institutions with an enrollment of 17.043 million. The number of institutions at the middle school education is 42,900 most of which are being upgraded. There are 25,200 secondary level schools and 1,371 colleges. There are 120 universities in Pakistan, including thirty-six in the public sector. At the technical and vocational education level, there are 1,522 public and private sector institutions which also include colleges of technology, polytechnics, VTCs, TTCs etc.

In general, teaching staff data is not available, hence the quoted data is refers to instructional staff/teaching staff information with respect to educational institutes for males and females in the country.

Table 1. Number of institutions, enrolment and teacher level

<i>Institutions</i>	<i>Government</i>			<i>Registered private</i>			<i>Total</i>
	<i>Male</i>	<i>Female</i>	<i>Co-ed</i>	<i>Male</i>	<i>Female</i>	<i>Co-ed</i>	
Enrollment	469	452	219	218	46	118	1,522
Teaching Staff by Ownership of Institution ¹	92,074	101,523	55,847	33,816	14,525	16,403	314,188

¹ NAVTEC has collected the aforementioned data during the year 2006 to 2007 and presently in the process of collecting the same for the year 2007 to 2008.

Punjab, which is the largest province population-wise, has 608 public sector vocational institutes, technical training centers/computer training centers operating under the aegis of TEVTA. These centers offer more than 200 trade courses. The duration of the different courses varies from four weeks to twenty-four months. Enrolment in these 608 centers during the 2006 to 2007 sessions in both regular and evening programs total 164,030 trainees.

Sindh has 259 public sector vocational institutes/technical training centers/computer training centers operating under the Directorate of Technical Education and Manpower Training and the District Education Offices. The duration of the different courses also varies from four weeks to twenty-four months. Enrolment in these 259 centers during the 2006 to 2007 session in both regular and evening programs numbered 34,080 trainees.

Balochistan which is the largest province in terms of area, has 100 vocational institutes/technical training centers operating under the aegis of the Labor and Manpower Department. Of the one hundred institutes, several are no longer operational/functional and the enrollment is far less than expected. The duration of the different

courses varies from four weeks to twelve months. Enrolment in these one hundred centers during the 2007–08 sessions in both regular and evening programs numbered 6,526 trainees. In addition, 242 trainees were enrolled in short courses offered at private sector TEVT institutions.

In the NWFP there are 199 public and private sector technical and vocational training centers in the province. There are 43,348 enrolled trainees and 2,322 teaching staff.

TEVT system in Pakistan. The major steps taken for this sector thus far include the establishment of the National Vocational and Technical Education Commission (NAVTEC) in December 2005 to re-establish the TVET System in Pakistan. Moreover, Technical Education and Vocational Training Authorities (TEVTA) have also been established at the provincial levels. The Department of Manpower and Training have been merged into these TEVTAs.

For a long time, the TEVT system of Pakistan was fragmented and has been distributed among several agencies within the government. Among them are the federal as well as the provincial Ministries/Departments of Education, Ministries of Industries, Ministries of Labor and Manpower and some VET activities of the industries under the Ministries of Agriculture. The accreditation, certification and assessment of TVET institutions fall under the purview of the Boards of Technical Education, each located at the provincial level. Besides, the development of skills standards and skills upgrading through training has been undertaken by the National Training Bureau, Skills Development Councils and the National Institute of Science and Technical Education (NISTE). However, the NTB's role in the process is non-existent or minimal, in this regard.

Administration of TEVT. The educational system in Pakistan is administered by the Federal Ministry of Education (MOE), Islamabad and the four Provincial Education Departments (PED); one in each provincial capital. According to the Pakistan constitution, the general policy planning and over all guidelines (including curricula, textbooks and standards of education) is the responsibility of the Federal Government whereas the implementation of these policies, programs and projects rests with the provincial governments. The Ministry of Education develops all types of curricula for education including the TVET sector in some cases, as well. In the public sector, the provincial government through the Directorate of Technical Education implements TVET. The Ministry of Labor and Manpower at the federal level and the Provincial Manpower Departments and other departments like – Social Welfare, Agriculture, Industry Overseas Pakistani Foundation, Fauji Foundation, OGDC, etc, run their own vocational training programs. The private sector is also one of the key players in this sector.

Realizing the importance of close linkages and collaboration between TEVT institutions and industry, the National Vocational and Technical Education Commission (NAVTEC) is developing a National Skills Strategy 2008–2013, which emphasizes “a shift from curriculum-based training to competency-based training.”

At the federal level, NAVTEC is the regulatory body for TEVT and coordinates with respective provincial authorities and departments for technical education, vocational training, commercial, agriculture and industry-specific training. The Chairman of NAVTEC is from the private sector. The same case goes for the Punjab, Sindh, NWFP and Balochistan.

In the province of Punjab, TEVTA is responsible for the administration of technical education, vocational training, commercial, agricultural and industry-specific institutions. Similarly in NWFP, the technical and vocational education sector has been de-linked from the education department and has been attached to the Directorate of Technical Education and Manpower Training, Ministry of Industries, Labor and Manpower.

EMERGING CHALLENGES AND TRENDS IN TEVT

The technical education and vocational training (TEVT) system in Pakistan is divided into three sub-categories, as illustrated in [Figure 1](#):

- Pre-vocational /school;
- Technical and vocational education and training;
- Higher level engineering and technology education.

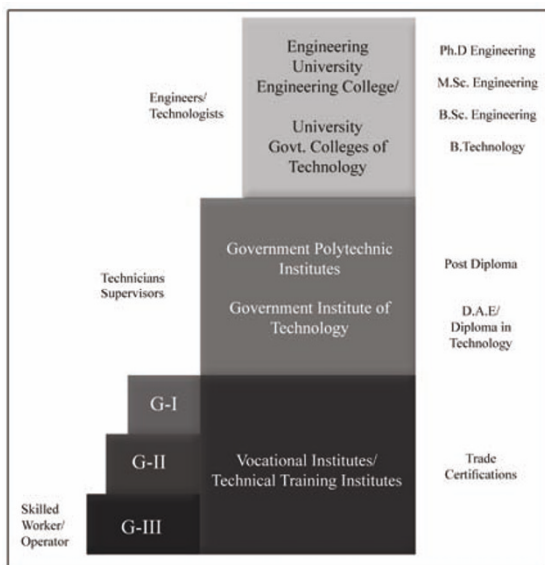


Figure 1. TVET sub-system of the Pakistan educational system.

Pre-vocational/school level. The pre-vocational courses were introduced into the general school education curriculum back in the early fifties. Many experiments were done during this period, for instance, the establishment of Technical High

Schools, Pilot Secondary Schools and Comprehensive High Schools where industrial arts, agriculture and home economics subjects were offered. Such efforts did not make any significant contributions to improve the manpower pool and instead ended up producing clerks and other office workers rather than technicians, engineers or scientists.

The Education Policy (1972–80) had suggested a major shift from general education to the world of work. A new scheme was introduced under the name “Agro-Technical Studies,” where industrial arts (wood work, metal work and electricity), agriculture and home economics courses in male and female schools for classes VI to VII were offered. In classes IX–X, vocational courses in various fields such as agriculture, commerce, home economics and industrial arts were introduced. In this regard, five Agro Technical Teachers Training centers were established for the training of teachers. For this purpose, equipment worth Rs. 30 million was provided by the federal Government through the Ministry of Education to introduce this scheme in 1,000 elementary (classes VI–VII) and 200 high (Classes IX–X) schools.

In the year 2000, the Government introduced the Education Sector Reforms (ESR) Program. Under this program, vocational subjects in 1,100 selected secondary schools were run parallel to the existing Science and Humanities courses to address gender issues and the needs of people in the remote areas. The objective was to expose students to the world of work and to prepare them to respond to the call of practical life wherever they may choose to work in and to prepare them to respond to the call of practical life, if they choose to work after completing their secondary schooling. The Matric (Technical) Stream in time will become a stable source of student intake for the DAE program. This development increases greater access to, and mobility in, technical education with linkage to higher education.

Technical education. The National Vocational and Technical Education Commission is the main executing body for TEVT at the national level. At the provincial level, TEVT issues are dealt with by the Labor and Manpower Department and TEVTAs.

There is a dividing line between technical and vocational education. Technical education refers to post-secondary school level training of middle/supervisory level technicians carried out in polytechnic institutes, etc. These technicians serve as a link between engineers/technologists at the top of the production line and skilled and semi-skilled workers at the bottom. The middle/supervisory level technicians are expected to have enough theoretical knowledge and practical skills to understand and interpret engineering and technical drawings and possess the skills to perform the duties of technicians in workshops, factories, companies and organizations. Vocational training, on the other hand, refers to the training of semi-skilled and skilled workers on various trades. Different types of skills training courses are conducted leading to vocational qualifications broadly grouped as Grade III level, Grade II level and Grade-I level. Therefore, to bridge the gap between technical training and vocational education, a mandate has been assigned to NAVTEC on which work has already started.

Technical Education as a separate stream was started in the mid-50s after the establishment of two polytechnic Institutes, one in Karachi and another in Rawalpindi, with assistance from the Ford Foundation. Since then, there has been a steady increase in the number of polytechnics. The rapid growth of the TEVT sub-sector was the result of the government's desire to increase access by the rural youth and women to technical education and vocational training to improve their job skills and means of livelihood. The lack of opportunities and access to education in the universities led to a further expansion of the sub-sector as it became an alternative channel for the youth and schools leavers. This resulted in the social demand for more opportunities for and access to TEVT. All through the years, the role of government was significant as compared to the little participation from the private sector. In the last few years, government is not only encouraging the public sector to shift from curriculum-based training to competency-based training. However, it has encouraged the private sector to enter this neglected sector in the provision of TEVT. Under the Education Sector Reforms program, a number of incentive schemes were introduced to enlist the participation of the private sector in education and training.

BEST PRACTICES OF TVET IN PAKISTAN

A three-year course leading to a Diploma of Associate Engineer (DAE) is the main program of the Technical Training Institutes and Polytechnic Institutes in the country. The objective of the DAE program is to prepare technicians to perform a broad range of jobs at the middle supervisory level. These technicians are expected to have enough theoretical as well as practical knowledge to understand and interpret engineering and technical drawings and to perform practical tasks. For this reason the curriculum of DAE courses has been designed to have 60% practical and 40% theory.

There is a persistent demand for DAE holders for the extension of facilities to higher education in the field of technology (B-Tech) on a uniform basis. The B-Tech is of a two-year duration, one year schooling and one year on-the-job-experience. To start the B-Tech degree program, various technical and polytechnic institutes were upgraded to the level of Colleges of Technology. This program is offered only by Colleges of Technology through affiliations with a recognized university in the province for the award of the degree. The polytechnic institutes offer a wide range of training programs. The list of DAE technologies offered in the polytechnic institutes across the country is given in Table 2.

Table 2. Three-Year DAE technologies/courses being offered in the government polytechnic institutes/GCTs/Monotechnics in the provinces

No.	Technology
1	Architecture
2	Auto and Diesel
3	Auto and Farm Machinery
4	Automation

Table 2. (Continued)

5	Bio-Medical
6	Chemical
7	Civil
8	Computer/Information Technology
9	Construction
10	Electrical
11	Electronics Publishing
12	Electronics/RTV
13	Food/Food Preservation & Processing
14	Garments/Dress Designing and Making
15	Glass & Ceramics
16	Industrial Arts
17	Instrumentation
18	Leather
19	Mechanical
20	Mining
21	Office Management
22	Petroleum
23	Pottery Manufacturing
24	Power
25	Printing and Graphic Arts
26	Refrigeration and Air Conditioning
27	Secretarial and Telecommunication
28	Telecommunication
29	Textile (Dyeing and Printing)
30	Textile (Spinning)
31	Textile (Weaving and Finishing)

Enrollment in the technical training centers, monotecnics and polytechnics has been on the increase. At present, there are 122 public sector polytechnic/monotechnic institutes in the country and sixty-nine in the private sector. Among these, there, are thirty-four female polytechnic/monotechnic institutes.

Table 3. Polytechnic and monotechnic institutes

	<i>Polytechnic institutes</i>	<i>Monotechnic institutes</i>	<i>Total</i>
Government	53	96	122
Private	43	0	43
Total	96	69	165

Table 3. (Continued)

Male	35	60	95
Female	34	0	34
Co-Education	24	9	33
Blank	3	-	3
Total	96	69	165

Source: NAVTEC 2008, Islamabad.

Vocational Training

Vocational Training is another mode of the skills development process catering to the unemployed youth who lack work skills and the dropouts of the schools system or those who fail to qualify for admission in the polytechnic institutes, colleges of technology or technical training centers. Pakistan inherited a system of vocational training, which was incompatible with the changing requirements of industries.

The Railway Training Center, Mughalpura was established in 1908 to meet the Pakistan Railway's demand for skilled workers. Similarly, the Technical Training Center, Mughalpura was established in 1941 to provide skilled craftsmen during the Second World War followed by the establishment of the Technical Training Center, Peshawar which became operational in 1941 primarily to train workers for war material production in the ordinance factories. After the war, the center provided technical training to mobilize ex-military personnel. The existing technical education and vocational training system was built upon this narrow base.

For more than a decade, no expansion in vocational training facilities took place. The period starting in 1957–1970 is seen as the beginning of serious efforts for the development of vocational training. The first initiative was the result of the Education Commission Report (1959), which called for the provision of technical education to improve the skills and knowledge of the workforce to meet industrial requirements. Another major initiative during this period was the promulgation of the Apprenticeship Ordinance, 1962. Yet another step taken was the establishment of the Board of Technical Education.

Table 4. Technical education and training developments

<i>Departments</i>	<i>Type of courses</i>
Technical Education and Vocational Training Authority (TEVTA), Punjab	Degree Courses in Eng'g Technologies 3-year Diploma in Associate Eng'g
Directorate of Technical Education, Sindh Directorate of Manpower Training, Sindh	Degree Courses in Eng'g Technologies 3 year Diploma in Associate Eng'g
Directorate of Technical Education Manpower Training, NWFP	Degree Courses in Eng'g Technologies 3 year Diploma in Associate Eng'g
Directorate of Education, Balochistan	3 year Diploma in Associate Eng'g
GPIW, Islamabad	3 year Diploma in Associate Eng'g

Source: NAVTEC 2008, Islamabad.

The period from 1969 to 1979 was marked by experimentation. Crash skills development programs were designed and implemented to meet the increasing demand for skilled workers overseas. The approaches towards TEVT changed due to the large scale migration of Pakistani workers to the neighboring Arab countries.

Another major experiment was the transfer of the management of vocational training centers from the Education Department to the Manpower Training Directorates under the Labor Department in 1979. The driving force behind this decision was to make training more job-related and skill-focused. New approaches to vocational training were developed by the International Labor Organization. Modules on Employable Skills and the “Standardization of Skills” were also introduced during this era.

An expansion in vocational training took place from 1980 to 1990. Thirty-one training centers were established and a number of old ones were upgraded throughout the country. The Ministry of Youth Affairs and twenty Youth Vocational Centers were established. The promulgation of the National Training Ordinance in 1980 had a major impact on the development and expansion of vocational training with the establishment of the National and Provincial Training Board. The period of 1991 onward marked qualitative improvements in vocational training with the start of women training in programs in the non-traditional trades and the closer involvement of employers in vocational training planning and administration. New vocational training centers for both male and female students were established under the National Training Project.

The duration as well as entry qualifications for the different vocational training programs vary widely. Training programs range from a few weeks to two years and entry qualifications vary from middle to secondary school pass. The vocational courses are more practical oriented as compared to technical education. The curriculum of vocational courses comprises an 80:20 practical and trade related theory. The pass-outs are expected to perform semi-skilled and skilled jobs in various sectors or can be self-employed.

Table 5. Vocational training capacity (public sector)

<i>Department</i>	<i>Type of courses</i>
Technical Education and Vocational Training Authority (TEVTA), Punjab	Short and long duration Vocational Training Courses
Directorate of Technical Education, Sindh Directorate of Manpower training, Sindh	Short and long duration Vocational Training Courses
Directorate of Technical Education and Manpower Training, NWFP	Short and long duration Vocational Training Courses
Directorate Manpower & Training Balochistan	Short and long duration Vocational Training Courses
Federal	Short and long duration Vocational Training Courses
Apprenticeship Training	Long term courses (3 years)

Source: NAVTEC 2008, Islamabad.

Table 6. Technical and vocational training capacity (public-private sector)

<i>Province</i>	<i>Installed capacity</i>	<i>Morning enrollment</i>	<i>Afternoon enrollment</i>
AJK	2,752	9,884	900
BALUCHISTAN	5,354	5,445	1,323
FATA	1,607	1,069	530
Islamabad	2,933	1,907	638
Northern Areas	1,455	3,854	551
NWFP	31,573	31,019	12,329
Punjab	146,560	164,245	44,669
Sindh	27,241	25,153	10,672
Total	219,475	242,576	71,612

Source: NAVTEC survey, 2006–07.

The Vocational and Technical Education and Training (TVET) stream also falls under the following three categories:

1. Formal Sector
2. Non-formal Sector
3. In-formal Sector

The formal sector is run by government agencies including the Ministry of Education, Labor and Manpower Division, through their departments of Technical Education, National Training Boards etc. It oversees vocational schools (with pre- and post-secondary school intakes), technical institutions, e.g., the polytechnic institutes and the colleges of technology (post-secondary school intakes). The non-formal sector is mainly run by public sector autonomous organizations like the Water and Power Development Authority (WAPDA), the Pakistan Steel, the Pakistan International Airlines (PIA), the Pakistan Telecommunications Corporation (PTCL), the Railways, Oil and Gas Development Corporation, etc. It covers vocational schools, technical training centers, agriculture and vocational training centers, etc. The informal sector is the traditional *Ustad-Shagird* system where a school leaver or an illiterate person gets training under the supervision of a mechanic/owner of the shop/small cottage industry when employed as a helper.

TVET CHALLENGES

There have been several reforms in TVET over the past thirty years addressing issues which are mostly common for all the developing countries of the region. Some notable reforms, programs and initiatives that addressed those concerns and issues are mentioned below:

- Establishment of the National Technical Teacher Training College (NTTTC) and the Polytechnic Institute for Women at Islamabad with the assistance of ADB;
- Technical Education Project with the assistance of ADB to provide equipment, laboratories, build new institutions and develop teaching and learning resource materials;

- Emergence of the National Institute of Science and Technical Education (NISTE) as a result of the merger of NTTTC and the Institute for Promotion of Science Education and Training (IPSET), Islamabad;
- Creation of the Technical Education and Vocational Training Authority (TEVTA) in Punjab;
- Creation of the National Vocational and Technical Education Commission (NAVTEC) to coordinate all TVET systems at the national level.

Among all of the above, the creation of NAVTEC has been the most important step taken by the government of Pakistan in the history of the TVET system. This has been the result of several policy recommendations for the creation of a national coordination, standardizing and regulatory body for TVET in Pakistan. NAVTEC has already started its work with its main offices in Islamabad directly under the supervision of the Prime Minister. Some of the major plans and directions are:

1. Development of a National TVET Policy
 - a. National Qualifications Framework
 - b. Training Packages (Curriculum)
 - c. Recognition of prior learning (informal sector)
 - d. Competency-Based training
2. Active Industry Involvement
 - a. Skill Standards
 - b. Apprenticeship programs
 - c. Provision of trainers
3. Assessment of Demand
 - a. Labor Market Information System
 - b. Sector-specific needs analysis
4. Developing Training Providers Capacity
 - a. Managerial and organizational resources
 - b. Strong leadership by industry
 - c. Support by NAVTEC
5. Quality Assurance
 - a. NAVTEC/Provincial, Authorities role
 - b. Accreditation of providers (Public & Private)
 - c. Capacity building of testing/examination authorities
 - d. International recognition of certification

There has been a growing realization in Pakistan about the need to upgrade and strengthen the TVET system through major policy inputs at the national and provincial levels. The establishment of TVET authorities at the national and provincial levels is among the eminent and tangible steps that have been taken besides the launching of the Technical Education Projects in collaboration with the World Bank, ILO and ADB. NAVTEC at the national level is already playing an effective role in the Review and Formulation of Policies and Strategies, Development of Skill Standards and Curricula, Accreditation and Certification, Needs Assessment, Regulation, Coordination, Public-Private Sector Partnership and Labor Market Information System (LMIS). There is, however, a need to strengthen the networking system among the national, provincial and international players to share the

experiences and resources in the region and to make the NAVTEC more active to cope with the challenges for producing the technical manpower needed that can move across borders. Moreover, there is a need to share the experiences of the different practices adopted in the developed countries so that their outcomes can provide inputs on some of the lessons learned to avoid duplication and of repeating the same mistakes committed in the other developing countries. This is especially true in the adoption of occupational skills standards developed in other countries as required for the countries which still do not have these standards.

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Mohammad Riaz

Former Director General

National Vocational and Technical Education Commission

17. PAPUA NEW GUINEA

INTRODUCTION

The Independent State of Papua New Guinea (PNG) comprises a group of six hundred islands north of Australia and includes the eastern half of the island of New Guinea Island, the second largest island in the world. PNG shares New Guinea with Indonesia on the west.

PNG is characterized by enormous linguistic and cultural diversity. The people speak a total of 837 languages with Melanesian Pidgin as the lingua franca and *Hiri Motu* spoken in the Papuan region. The English language is used in commerce, government and the schools. PNG ranks 148th out of 182 in the world for overall 2009 human development, a slide from its 139th slot in 2006–2007, according to the United Nations Development Report for 2009.

PNG has grown and developed into an economic force and has the potential to be a leading nation in the Pacific region. PNG's extensive mineral deposits of gas, oil, gold, copper, nickel, liquid natural gas) and other natural resources (agriculture, forests and fisheries) can provide a firm foundation for potential prosperity. But about 85% of PNG's people rely on subsistence agriculture and fishing for survival, sometimes in some of the most isolated spots on the planet. PNG remains as one of the developing nations on earth. Its GDP per capita is US\$2,563 but 8% of the GDP is spent on debt servicing (repaying loans to agencies such as the World Bank and IMF).

Agriculture accounts for about 40% of Gross Domestic Product (GDP) and engages 82% of the workforce. The principal cash crops are taro, coconuts, yams, cocoa, tea, coffee and bananas. Twenty-two per cent of exports come from forest products, palm oil, coffee and cocoa. PNG has access to vast resources of the Pacific Ocean, however, marine resources have been largely underutilized for lack of skilled human resources.

Industry including construction, manufacturing and the larger foreign investments in mineral exploration (gold, copper, silver, nickel, cobalt, oil and liquid natural gas) forestry and fishing industry employ the second largest number of people.

The public sector accounts for more than half of formal wage employment. High wages in the public and mining sectors tend to attract skilled workers creating shortages in the manufacturing industry. The bulk of the population (87%) is engaged in the informal sector.

For the period 2005–2010, the overarching development strategy is defined as export-driven economic growth, rural development and poverty reduction, including through good governance and the promotion of agriculture, forestry, fisheries and tourism on a sustainable basis. The strategy will be realized by empowering Papua New Guineans, especially those in rural areas, to mobilize their own resources for higher living standards.

The current government has also put in place the Papua New Guinea’s first ever framework of a National Vision 2050 which sets the overall direction for the country to attain its dream to be a Smart, Wise, Fair, Healthy and Happy Society by 2050.

An estimated 50,000 school leavers enter the labor market each year but only about 1,000 wage jobs are available for them.

At its present state, PNG needs highly-skilled and productive workers to meet the country’s demand for social and economic development, particularly in the traditional and non-traditional trades.

STRUCTURE OF THE EDUCATION SYSTEM

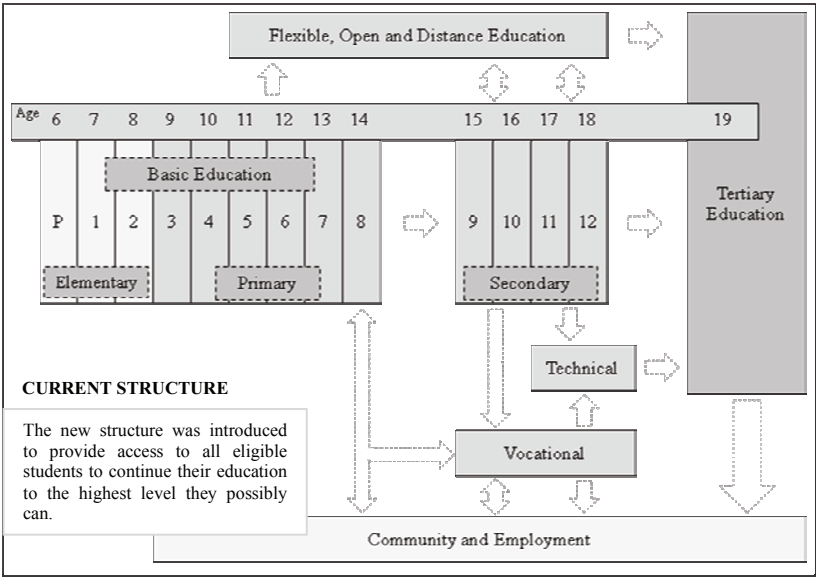


Figure 1. Current (reform) structure of the national education system.

(Source: Department of Education Annual Report 2006).

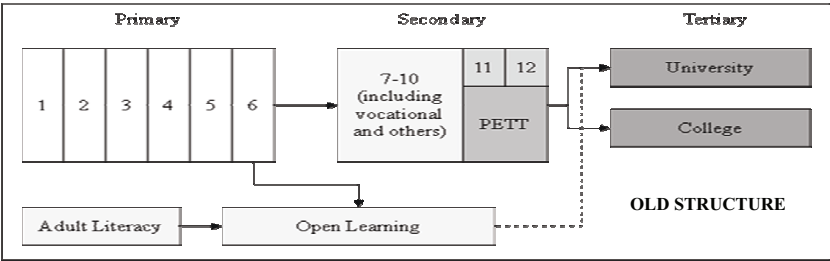


Figure 2. Old structure of the national education system.

(Source: Department of Education Annual Report 2006).

The present TVET system in PNG comprises the National Training Council (NTC), the National Apprenticeship and Trade Testing Board (NATTB) and the TVET Division of the National Department of Education whose services are linked to provide and monitor skills training in response to the demands of industry, government and the community.

A number of semi-autonomous government training institutions also conduct specific skills training programs.

There is no single coordinated training and recognition system of skills training programs and institutions in PNG, and the problem of quality and relevance of these training programs is difficult to sort out as different awarding bodies issue various certificates.

The National Education Plan 2005–2014 seeks to establish a national training regulatory authority to develop a national qualifications framework and a national training plan to address the fragmented and dysfunctional national training system. The development and use of occupational skills competency standards, assessment resources and processes and effective linkages with industry and other end-users are fundamental elements of a quality skills training and assessment system. Competency-based training is a priority of the PNG training system.

TVET plays a very important role in reducing poverty and in improving the quality of life of the PNG people. The National Government and the Department of Education have been reforming the TVET system with the assistance of the Australian government through the AusAID Education Capacity Building Program. The TVET reform program focuses on the need to:

- increase access;
- have good quality programs that are competency-based, flexible and modular to meet the needs of industry and the community;
- prepare citizens for the world of work and better life in the community;
- develop closer relationships with stakeholders to match TVET supply with industry and community demands;
- provide career pathways for life-long learning and training;
- establish a system for accreditation and recognition of prior learning to enhance opportunities;
- create an attitude of self-reliance and entrepreneurship;
- recognize the large informal economic sector which is often excluded in the mainstream system;
- involve all stakeholders, especially industry and the community, through formal and informal partnerships to ensure that relevant needs and demands are addressed through the TVET programs/courses;
- improve the information and communication technology to harness the potential of technology-based learning without losing the value of traditional teaching/learning methods; and
- establish a quality assurance mechanism to ensure a new high quality and competitive TVET system with the implementation of a National TVET Qualifications Framework, Occupational Skills Standards, Quality Assurance policies and provision of adequate teaching and learning resources.

The Education Act identifies the Technical and Business Colleges as National Institutions within the National Education System. The Act gives authority to the Secretary for Education to accredit academic and training programs conducted in these institutions.

The TVET sector within the PNG Education System started its structural and curriculum reforms in 1999. The major structural change was the merger of the Technical and Vocational sectors under the Technical Vocational Education and Training Division (TVETD).

The major curriculum reform was the re-alignment of the curriculum to meet the needs of all stakeholders through wide consultation and needs analysis. The competency-based training approach to training was adopted as opposed to the behavioral objective approach.

In 2006, the PNG National TVET Qualifications Framework was developed (through wide consultations with stakeholders) to improve industry and community recognition and understanding of qualifications, for consistency of titles and descriptions of qualifications and for improved marketability and international recognition of qualifications. The preparation of the framework was done in 2007 and implemented in the beginning of 2008. The framework involves the development of National Quality Assurance principles and procedures, transitional arrangements from the old to the new programs, policy on recognition of prior learning/current competencies, registration, accreditation of training providers, and the “authority” or the restructured national body to administer skills training and recognition in PNG.

Technical and Business Colleges. There are five technical and two business colleges that are located in urban centers around PNG.

These institutions conduct traditional courses from basic trade training to the Diploma level in the following areas:

- Science Technology
- Architectural Drafting;
- Business Studies (Accounting, Management, Office Administration and Computing);
- Building;
- Civil Engineering;
- Electrical Engineering (Power and Electronics);
- Mechanical Engineering;
- Tourism and Hospitality Management; and
- Trades courses in Manufacturing and Fabrication, Mechanical and Automotive, Electro-technology, Building and Construction, Printing and Graphic Arts, Commercial Cookery and Meat Processing, and Computing and Business Services.

These programs are primarily intended for training Papua New Guineans to work as technicians and technologists in the formal employment sector. There are now moves to expand curricular offerings to meet community needs through short courses for personal and social development.

The Education Act authorizes the Secretary for Education to grant awards to students who have successfully completed the requirements of the course.

The National Higher Education Policy, as a part of the “measures to improve quality” requires the implementation of the National Accreditation Policy; and as part of the “measures to increase the range of higher education programs” prescribes the articulation between institutions and programs. The purpose of accreditation is to provide an acceptable professional evaluation of the quality of educational institutions or programs and to encourage consistent improvement in such programs. The stamp of accreditation considerably enhances the respectability of that program.

Vocational training centers. There are more than 130 Vocational Training Centers (VTCs) spread out in the urban and rural areas all over PNG. These are managed and operated by the respective Provincial Divisions of the Education Department; hence, they are commonly referred to as provincial institutions.

Semi-government training institutions. There are a number of autonomous semi-government funded training institutions that operate within their respective legislations and offer specialized training programs according to their sector needs. They do not, in any way, interrelate with the rest of the government agencies associated with TVET and skills training. These institutions include:

- Papua New Guinea Maritime College;
- Timber and Forestry Training College;
- Telikom Training College;
- National Agricultural Research Institute;
- Highlands Agricultural College;
- National Fisheries College;
- PNG Power Training College; and
- PNG Institute of Banking and Business Management Inc.

Private training institutions. There are 132 private training institutions that are registered under the NTC Act which is mandated to accredit private training institutions throughout the country.

TVET division, Department of Education. The TVET Division, within the Department of Education structure, derives its responsibilities from the Education Act of 1983 (as amended). The Act makes provision for National and Provincial responsibilities in accordance with the Organic Law on Provincial and Local Level Governments. The National Education Board advises the Minister for Education on the National Education Plan as well as has oversight of the performance of the National Education System.

National Training Council, Department of Labor and Industrial Relations. The National Training Council (NTC) is a statutory body established by an Act of Parliament in 1991. It is a tripartite organization and comes under the Department of Labor and Industrial Relations. It is empowered to monitor the implementation of the National Training Policy (1989), distribute donor-funded scholarships among all sectors, accredit private training institutions and overseas training providers who wish to conduct training in PNG.

National Apprenticeship and Trade Testing Board, Department of Labor and Industrial Relations. The National Apprenticeship and Trade Testing Board (NATTB) was established under the Apprenticeship and Trade Testing Act of 1986. It has legal responsibility for the administration of apprenticeships, for determining occupational standards for the declared trades and the apprenticeship and traineeship programs, and for the conduct of apprentice competency assessments.

A recent Country Study on Technical Vocational Education and Training (TVET) in PNG, financed by a Japan Special Fund grant through the Asian Development Bank (ADB) and implemented by the Pacific Islands Forum Secretariat, has resolved to make skills development a high priority in the Pacific as it is recognized as a catalyst for worker productivity and national competitiveness in the global economy. The study identified strengths and weaknesses of the TVET system in PNG and suggested policies and strategies for improvement and recommended possible areas of investment.

BEST PRACTICES OF TVET IN PAPUA NEW GUINEA

Holistic reform to the TVET system. The skill base of the PNG population will determine whether the nation can achieve the UN Millennium Goals, the Government's Medium Term Development Strategy and if it could contribute to Vision 2050.

The current legislative arrangements in the TVET system in PNG are obstacles to the effective operation of the TVET system and must be changed as part of a comprehensive transformation of the TVET system. None of the three government agencies with legislative responsibilities for TVET has the clear overall mandate for national policy, planning and quality control of the entire TVET system.

The current system has overlapping responsibilities which create confusion and inefficiency, but these arrangements also leave important functions not covered – for example, the registration and quality assurance of all training providers according to approved national standards.

An indication of the overlap of responsibilities can be seen in the agencies that are responsible for the approval or accreditation of TVET courses and the registration of TVET providers.

Over the past several years, steps have been taken to improve the quality and relevance of TVET training. However, because of the legislation covering the TVET sector, these reforms have been confined only to the NDOE TVET Division.

As a result, the national TVET system remains poorly organized, dysfunctional and under-resourced. Much of it is held in low regard by industry and employers who have little respect for the quality of the training provided or of the qualifications that are awarded to the students.

TVET is a key agent in achieving the objectives set out in the Government's Program for Recovery and Development of good governance; export-driven economic growth; and rural development, poverty reduction and empowerment through human resource development.

Table 1. Government agencies and TVET providers in PNG

<i>Government agency</i>	<i>TVET providers</i>	<i>Courses/Qualifications</i>
National Training Council (NTC)	Registration of private TVET providers	Certificate and diploma level courses
National Apprenticeship and Trade Testing Board (NATTB)	Approval by employers of apprenticeship training, Trade testing and certification skills standards	Certificate of completion (Tradesmen) trade test certificates
Office of Higher Education (OHE)	Recognition and Accreditation of higher education institutions	Certificate and diploma level courses
National Department of Education (NDoE)	Registration of technical colleges and vocational training centers and vocational training centers, curriculum Development.	Various certificate and diploma courses
Other government agencies (Agriculture, Fisheries etc.)	Registration of government training colleges	Various certificate and diploma courses

(Source: PNG TVET Policy 2005).

The Medium Term Development Strategy (MTDS) states that if Papua New Guinea is to successfully participate in the global economy, there must be considerable improvements in the country's skill base and labor productivity levels. It reports that some technical trades currently face a skills shortage and there is a need to develop a manpower strategy. The MTDS recognizes the critical role of TVET in developing skills and contributing to national development.

The MTDS 2005–2010 gives TVET second priority in the education and training sector.

Investments in the TVET sector can help achieve the poverty alleviation objectives of the MTDS and the Millennium Goals. Improved skills are directly linked to improved self-reliance and employment opportunities, which in turn are linked to poverty reduction.

The national government has recognized the importance of TVET by recently making a special purpose grant of K20 million to the NDOE to upgrade its technical training institutions in 2008. However, upgrading facilities will not achieve the desired improvement in national skills without reforms on the other aspects of the national TVET system.

The reform of the national governance arrangements of TVET is consistent with the objectives of the Government's Public Sector Reform program, as reported in the MTDS, of:

- ensuring that the administrative structure of government conforms to the development priorities;

- helping to reduce the costs incurred by the government, abolish waste and non-priority activities, improve service delivery, and
- strengthening accountability and other systems of good governance.

EMERGING CHALLENGES AND TRENDS IN TVET

Emerging Trends in TVET

TVET's role in poverty alleviation. The TVET programs have made inroads in the provision of skills based education and training on entrepreneurship as a means towards alleviating poverty in PNG. The TVET system in PNG has to promote the Millennium Development Strategy (MDS) by reinforcing pillars of pro-poor sustainable economic growth, inclusive social development and good governance (ADB, 1999). In the long-run, the TVET system has to increase its central focus on competency-based skills training and other non-trade related skill areas such as cross-cutting priorities of environmental sustainability, gender equity and HIV/AIDS. The Department of Education's TVET System and those related programs in the private sector development, capacity development and regional cooperation must be aligned more towards entrepreneurship-based learning; such as skills for workers in micro, small and medium-scale enterprises to promote economic growth. In the education sector, TVET must make a significant shift with the potential of entrepreneurship learning as a prime focus of the reform measures to better equip the high proportion of school leavers without employable skills. By taking this lead, policies and practices in TVET will play a pivotal role as a means to alleviating poverty.

Poverty alleviation/reduction strategies in PNG have made some references to certain Asia-Pacific experiences and measures to curb poverty. Within PNG, the insufficient discussions and the absence of comprehensive government or country strategies have meant that only little information exists to critique poverty alleviation strategies or to make an adequate analysis of success as well as failures. PNG has to join many of the East Asia Pacific countries which are members of the Colombo Plan Staff College in the fight against poverty. The question of TVET and Basic Education priorities will need closer attention and integration given the MTDS, the Department of Education Vision, Mission and Goals on poverty alleviation fall short of reaching the goal of tangible poverty reduction by half in 2015.

PNG Educational Administrators are challenged by the universal mandates such as Education for All, the Millennium Development Strategy, PNG's Medium Term Development Strategy, the PNG Education Goals and the right to basic education for all school age children, poverty alleviation and reduction of child birth mortality.

It is the authors' shared perception and belief that many nations regard education as having high levels of influence over all forms of development including socio-economic objectives. This can be done by increasing societal knowledge that impacts on increasing productivity of the labor force and achieving growth in the economy. It can be argued that education plays a vital role in developing and upgrading a country's human resources as well as increasing the future generation's scientific

and technological knowledge. In the same vein, education can provide an effective inter-face between education in the schools and work places and in real life situations.

Information and communication technology (ICT) development. The positive role of ICT in assisting the PNG government in reducing poverty and in improving the socioeconomic development of the nation has been highly recognized. The ICT policy of the Education Department is to improve the quality of education and teacher support by interconnecting selected local schools and facilitating access by the communities to ICT facilities. This will assist the government in reducing poverty in the rural areas by improving connectivity through access to ICT-based TVET programs of learning and social inclusion.

National Education Plan. The PNG National Plan for Education 2005–2014 (“Achieving a better future”) has set out the critical immediate reforms necessary for the TVET sector. These include:

- improved coordination among the various agencies involved in skills training through the establishment of a body with overall regulatory authority;
- an advisory role for industry, business and community leaders in policy making;
- the development of a National Training Plan to establish and prioritize training needs;
- establishment of a National Qualifications Framework for both public and private institutions that will define and monitor curriculum content and standards; and
- registration and licensing of providers that seek to offer qualifications as defined in the National Qualifications Framework.

Between 1997 and 2005 several proposals were made, and some steps taken, to establish a single national authority. Some examples, According to Their Talents (1997) produced by the NDOE and The National Human Resource Development Policy and Strategy 2005 produced by the Ministry of Labor and Industrial Relations. They have been unsuccessful, so far.

National Qualifications and Training Commission. An industry-led steering committee convened by the Secretary for Education in 2007 unanimously recommended that the government should establish a National Qualifications and Training Commission within the portfolio of the Minister with responsibility for the Higher Education Commission. The proposed Qualifications and Training Commission will be separate from, and independent of, the Higher Education Commission. The Steering Committee requested that a detailed submission be prepared forthwith for presentation to the Ministerial Committee of the Administrative and Social Sectors prior to presentation to the National Executive Council.

The membership of the Commission will comprise at least fifteen members of whom ten shall be representatives from the national industry, commerce and community associations and organizations. The Commission incorporates the existing National Training Council, the National Apprentice Trade Testing Board, and

components of the Curriculum and Inspections branches of the TVET Division of the National Department of Education.

The proposed Commission will perform the following functions:

- produce a National Training Policy for recommendation to Government;
- produce a National Training Plan to identify and prioritize training needs and the expenditure of state and provincial finances on skills development and to recommend the Training Plan to Government;
- manage the registration and licensing of all training providers seeking to offer qualifications as defined in the National Qualifications Framework;
- produce industry-endorsed competency standards as the basis for skills training and assessment;
- approve qualifications as defined in the National Qualifications Framework.

National TVET Qualifications Framework. The need for a National Qualifications Framework (NQF) covering all three sectors of education - Higher Education, TVET and Schools - has been identified as a national priority in both the National Education Plan 2005–2014 and the National Human Resource Development Policy and Strategy, 2005 (National Training Council, Ministry for Labor and Industrial Relations).

The six-level National Qualifications Framework in TVET is described in terms of knowledge and skill, application and responsibility. Descriptors for each of the six levels of the TVET Qualifications Framework are given in Annex 1. The PNG

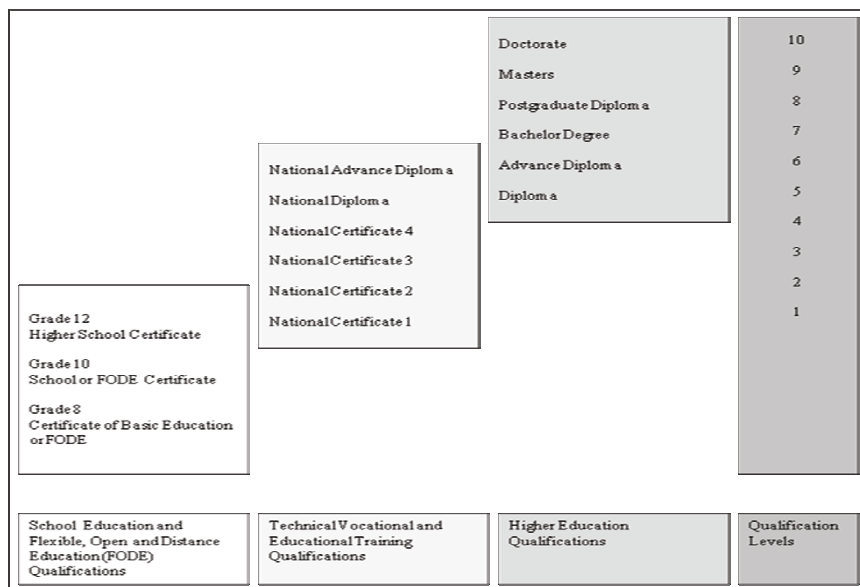


Figure 3. PNG National qualifications framework.

(Source: PNG National Qualification Framework).

National TVET Qualification Framework is consistent with the qualifications framework of other countries including our main neighbors - New Zealand, Australia, Hong Kong and the Philippines. Such equivalency is important in terms of international recognition of the skills and qualifications of Papua New Guineans.

The National TVET Qualifications Framework was endorsed by the National Education Board at its meeting in November 2007.

The full implementation of the National TVET Qualifications Framework and the national benefits that this implementation will bring require the establishment of a body such as the National Qualifications and Training Commission with a clear legislative mandate to implement its regulatory and quality provisions on behalf of the government.

Challenges in TVET

PNG recognizes that its people are the most valuable asset for national economic and social development. Towards this end, PNG will need to have highly skilled and productive workers. Skilled workers in traditional and non-traditional trades, such as in health, transport, agriculture, non-agriculture, forestry and fisheries, electro-technology, hairdressing, automotive, manufacturing and building construction will be required to meet the country's demand for social and economic development.

A recent Country Study on TVET in PNG, financed by the Japan Special Fund grant through the Asian Development Bank (ADB) and implemented by the Pacific Islands Forum Secretariat, has decided to make skills development a pressing priority in the Pacific as it is recognized as a catalyst for worker productivity and national competitiveness in the global economy. The study identified strengths and weaknesses of the TVET system in PNG and suggested policies and strategies for improvements and recommended possible investments.

The informal sector. The informal sector of the economy in PNG involves more than 85% of the population in both the rural and urban areas, and is the main source of their livelihood. The informal sector is the major employer in PNG and this has significant social, political and economic implications of national interest.

The National Government has set the pace for the Department for Community Development to aggressively undertake the Integrated Community Development Project (ICDP). The policy framework is to strengthen communities by promoting development and by enhancing community access to learning and development opportunities and by contributing to government goals of improving community livelihood. It will empower all citizens to derive and benefit from the development process as set out in the Medium Term Development Strategy (MTDS) and other national plans. Community learning and development centers in various settlements are places where sections from the various settlements link and unite to do things together and to learn useful skills for living.

Agriculture. The World Bank Development Report 2008 has put agriculture first on the development agenda, with new innovations (technological, institutional and

markets) currently offering improved opportunities which can be used in agriculture for development. Eighty-two percent of the rural population in PNG rely on agriculture-based activities to make a living. Agriculture has been given a prominent place in the government's development agenda. There is great potential for new development and expansion in the agricultural development agenda to develop new projects, rehabilitate rundown projects, and improve general agricultural activities.

Mining, Liquid Natural Gas, etc. PNG is natural resource-rich but much needs to be done to harness these resources for the benefit of the country as a whole. PNG does not have sufficient skilled workers to do so.

Organizational and management development of the national TVET system. The current arrangements involving the National Training Council (NTC), the National Apprenticeship and Trade Testing Board (NATTB) and the DoE/TVET have led to a fragmented and dysfunctional national training system. Organizational change is critical in order to improve TVET performance. The importance of sector coordination among the key players in industry and the community is urgently needed. A capacity has to be created to:

- analyze labor and community needs at the national and provincial levels;
- develop fully the PNG occupational skills standards;
- develop relevant and up-to-date TVET curricula based on needs and on the National Qualifications framework;
- implement quality assurance to maintain competitiveness locally and internationally;
- re-engineer TVET managers both at the head office and institutional levels as change leaders for strategic directions; and
- register and accredit TVET institutions.

Capital investment. There is need for the government to allocate greater investments in tools, equipment, infrastructure and continuing education and training for TVET teachers and institutional managers. The TVET institutions have been neglected in the past years. The national government and donor countries have now come to realize the importance of TVET and funds are being allocated for human and systems capacity building, including information-based systems.

International support and intervention in quality management in TVET institutions. PNG has to seek regional and international support to heighten the capacity for institutional and program accreditation and certification that will give local and international recognition to PNG TVET institutions and programs. This locates the Asia Pacific Accreditation and Certification Commission (APACC) in the forefront to place PNG TVET institutions within the international perspectives of accredited and recognized institutions.

The TVET system in PNG must change to make it relevant and competitive locally and internationally. It requires a renewal of commitment by the government to

ensure that the system and its institutions are equipped with the technology and human resources needed to provide the appropriate training opportunities to its citizens. TVET is expensive and more difficult to manage due to the changing requirements of training as the technology and workplace needs of industry and community change.

The Government has to pay particular attention to the overall human capacity of PNG as a nation. There is a need for a comprehensive focus of attention to use TVET as a vehicle to change the mind-set in the policies and practices within government and the private sector to address the demand and supply of skilled and advanced-skilled workforce to drive the economy and the overall economic growth of PNG.

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Dr. Michael Tapo
First Assistant Secretary
Teaching and Learning Wing
National Department of Education

Pedro G. Cortez
Superintendent Curriculum
TVET Division
Department of Education
National Department of Education

GLEN O'GRADY

18. SINGAPORE

INTRODUCTION

This paper examines Technical and Vocational Education and Training (TVET) in Singapore. It locates TVET in the broader landscape of Singapore's educational system and describes the contributions it has made to the economic development of Singapore. It also identifies the critical challenge for TVET in its transformation towards meeting the needs of a modern knowledge-based economy. In order to develop the specific types of skills necessary, there is a need to examine the idea of what constitutes learning and what type of teaching and training will facilitate the desired educational and training outcomes. There is a brief description of how problem-based learning has become a valuable pedagogy in TVET in helping students to develop capacities that are more attuned to deep learning.

CURRENT EDUCATIONAL/TVET SYSTEM

Singapore is widely regarded as a modern city-state and a regional and global center for industry, business, finance and communications. It has a population of more than 4 million, on an island that is approximately 680 square kilometres. The major industries are petro-chemicals, pharmaceuticals, high-end manufacturing, tourism and services. Its major trading partners include Malaysia, the United States of America, China, the European Union, Hong Kong and Japan. A critical component in Singapore's economic and social development has been its educational system and its emphasis on TVET.

The education system in Singapore, as illustrated in [Figure 1](#), is focused on developing human capital while also providing flexibility and choice for its participants. The Government of Singapore currently budgets 8 billion dollars or 3.3% of its GDP for education, annually. The government's aim is to ensure that every Singaporean has a minimum of ten years of education (primary and secondary) followed by opportunities to pursue further education or programs that will cater to the needs of the individual and at the same time meet the manpower needs of a modern and sophisticated economy.

TVET is essentially a post-secondary enterprise; however, primary and secondary education lays the foundation for young people to move into TVET. In secondary education, students study one of three courses designed to match their learning abilities and interests. There is the Special/Express Course which is a four-year course leading to the Singapore-Cambridge General Certificate of Education (GCE) 'O' Level Examination. In this course, students learn English and their mother tongue,

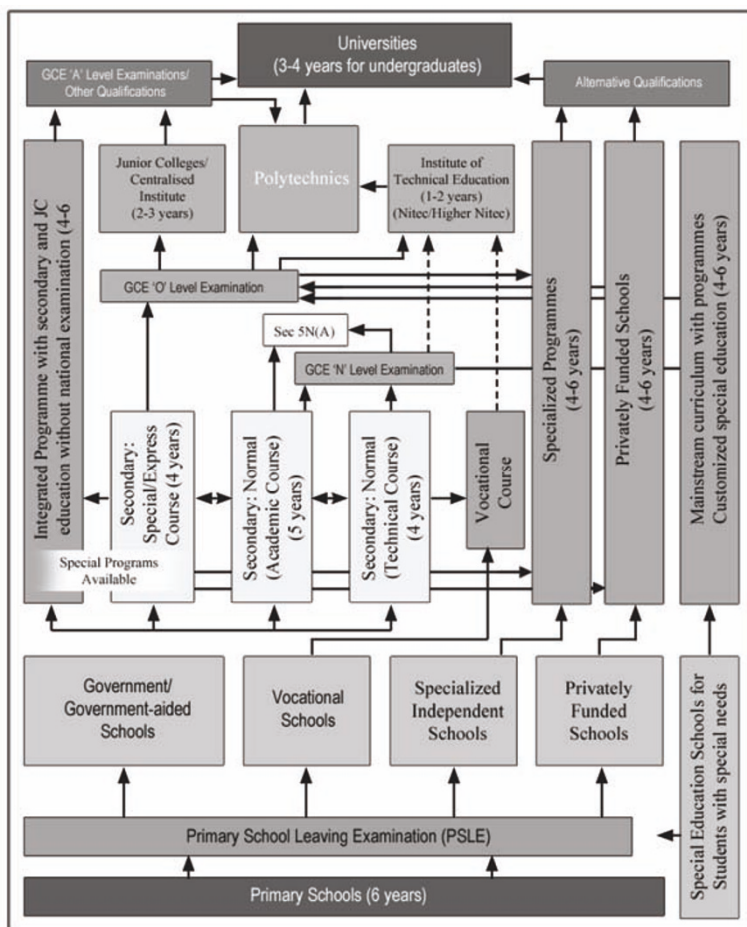


Figure 1. The Singapore educational landscape.

as well as Mathematics, Science and the Humanities. There is the Normal (Academic) Course which is a four-year course leading to the GCE 'N' Level Examination. Students who do well at the 'N' levels will qualify for an additional year to prepare for the GCE 'O' Level Examination. In the Normal (Academic) course, students learn a range of subjects similar to those in the Special and Express courses. The Normal (Technical) Course is a four-year program leading to the GCE 'N' Level Examination. In this course, students learn English, their mother tongue, Mathematics and subjects with technical or practical emphasis. Since 2005, schools have also been offering Elective Modules, which cover a wide range of subjects including nursing, hospitality, digital animation and precision engineering. To further enhance experiential and practice-oriented learning, a revised Normal (Technical) curriculum has been implemented in all schools from 2007 (MOE, 2007).

Upon completion of secondary education, about 90% of a student cohort will progress to post-secondary education and training in the Junior Colleges, Polytechnics or the Colleges of ITE. Junior Colleges provide an academic high school education for the top 25% of a school cohort. The course of study leads to the GCE 'A' Level Examination. If they do well, they can opt to enrol at the National University of Singapore, the Nanyang Technological University or the Singapore Management University for degree courses. The next 40% of school leavers would enter the Polytechnics for a wide range of practical-oriented three-year diploma courses in engineering and technology, applied sciences, business or health sciences. These are students who prefer a more applied tertiary education and have the necessary GCE 'O' level grades to take up diploma courses at the Singapore Polytechnic, Ngee Ann Polytechnic, Temasek Polytechnic, Nanyang Polytechnic or the Republic Polytechnic.

Polytechnic graduates who perform well in their diploma studies have the opportunity to pursue further tertiary education in the universities or through the degree programs (in niche areas) jointly offered by the polytechnics and specialized foreign institutions. The polytechnics offer a wide range of courses in the fields of engineering, information technology, business studies, accountancy, early childhood education, maritime studies, mass communications, nursing, dental therapy, sports and exercise sciences, biotechnology, chemical engineering, digital media design, applied science, product design and info-communications.

Students with GCE 'O' or 'N' level certificates can opt for full-time courses offered by the Institute of Technical Education (ITE). Courses at ITE lead to the National ITE Certificate (Nitec) or the Higher National ITE Certificate (Higher Nitec). These students receive training in engineering, info-communications technology, applied and health sciences and business and services. There are also formal pathways for those who do well to progress from the ITE to a Polytechnic, and then to a University. Apart from full-time institutional training, school leavers can also acquire skills certification through apprenticeship programs conducted jointly by companies and ITE.

Students interested in the creative arts can choose to enrol in special Arts Institutions such as the La Salle College of the Arts or the Nanyang Academy of Fine Arts which offer diploma programs in visual and performing arts such as music, theater, dance, interior design and fashion design.

Singapore has three nationally funded Universities. The National University of Singapore (NUS) has fourteen faculties and schools, of which nine offer courses leading to first and higher degrees, namely: Arts and Social Sciences, Business, Computing, Design and Environment, Dentistry, Engineering, Law, Medicine, and Science. Nanyang Technological University (NTU) is organized into four Colleges and two Autonomous Institutions: S Rajaratnam School of International Studies (RSIS) and the National Institute of Education (NIE). Schools under the four Colleges offer undergraduate and post-graduate programs in the following fields: Chemical and Biomedical Engineering, Civil and Environmental Engineering, Computer Engineering, Electrical and Electronic Engineering, Materials Science and Engineering, Mechanical and Aerospace Engineering, Biological Sciences,

Physical and Mathematical Sciences, Art, Design and Media, Humanities and Social Sciences, and Communication and Information. RSIS offers post-graduate degrees related to International Relations and Strategic Studies while NIE conducts professional training for teachers. The Singapore Management University (SMU) has six schools—the School of Accountancy, the School of Business, the School of Economics, the School of Social Sciences, the School of Information Systems and the School of Law.

The majority of TVET in Singapore is organized and funded by the government through Polytechnics and ITEs, although all parts of the Singapore education system are geared towards meeting the needs of the economy. The first Polytechnic in Singapore (Singapore Polytechnic) was established in 1954, with later Polytechnics opening in 1963 (Ngee Ann College which later became Ngee Ann Technical College in 1968 and then Ngee Ann Polytechnic in 1981), 1990 (Temasek Polytechnic), 1992, (Nanyang Polytechnic) and 2002 (Republic Polytechnic admitted its first batch of students in 2003). The mission of Polytechnics is to train middle-level professionals to support the technological and economic development of Singapore. Reflecting the wide range of abilities, aptitudes and interests of their students, the polytechnics seek to train students with relevant and specific skills for the workplace so that they will enjoy a competitive edge in a knowledge-based economy. Polytechnic graduates are valued as practice-oriented and knowledgeable professionals. Additionally, the polytechnics are also significant providers of continuing education and post-employment professional development programs and services.

ITE was established in 1992. Its roots lay in two earlier organizations the Adult Education Board (AEB) established in 1958 and the Industrial Training Board (ITB) established in 1973. These two boards merged in 1979 and then later became ITE in 1992 when it was recognized as a post-secondary educational institution. The mission of ITE as outlined in the Institute of Technical Education Act 1992 is to provide technical education for those being employed by industry, to upgrade their skills and to maintain the certification and standards. Essentially, it was to increase the number of skilled manpower (Law 1992).

The government has specified how these institutions with their focus on meeting the manpower needs of industry have become well regarded and key components in the development and growth of Singapore's economy.

"Our polytechnics have played, and continue to play, a vital role in training key manpower for our industries and economy. They continually review their academic curriculum and course offerings to keep abreast with the latest developments in technology, and to provide an education that meets the changing needs of our economy...Our polytechnic graduates are well recognized locally and internationally, for the high quality of their training and their hands-on "can-do" attitude to work and learn. This is clear from the high employability of polytechnic graduates. Even in the midst of the recession in 2001 and the continued economic uncertainty last year, three in four polytechnic graduates found jobs within three months of graduation in both years." (Teo 2003)

“Our Polytechnics and ITE thus play a key role in the social and economic development of Singapore. They represent key strengths within our educational system. They ensure that our school leavers have the opportunities to equip themselves with the knowledge, skills, attributes and values for a knowledge economy. They also play a major role in providing Continuing Education and Training in the upgrading and re-skilling of the workforce so that workers can keep pace with the rapidly changing needs of the economy. I am glad that our Polytechnics and ITEs have successfully contributed much to the high standards and level of skills of our workforce. Looking ahead, the constant challenge for our technical educational institutions is to stay relevant and responsive in an increasingly competitive global environment”. (Ng 2004)

There has been a growing demand for TVET-orientated education. The growth by enrolments has been especially sharp for ITE with a 183% increase in enrolments from 1997 to 2006 compared with a 35% increase in polytechnic and 49% for universities.

The demand for TVET has been accompanied by significant increases in the percentage of funding per student provided by the Singapore Government. From 1992 to 2006 there was an 88% increase in funding per student from the government compared with 65% for those in the universities. While the percentage increase was only 19% for ITE, the total funding for ITE has significantly increased due to the massive increase in the number of students.

EMERGING CHALLENGES IN TVET

TVET has undergone transformation in response to the changes in Singapore's economy. Singapore has moved from a “Factor-Driven” economy involving intensive labor in the 1960s–1970s, to an “Investment-Driven”, capital-intensive economy in the 1980s–1990s to today's “Innovation-Driven” economy which is powered by the needs of knowledge intensive industries (Law 2007). These changes in the Singaporean economy have helped foster a number of transformations in Singapore's educational system from a “survival” ethos (from 1959 to 1978) where the emphasis was upon establishing the infrastructure of a mass educational system, to an efficiency-driven model (from 1979 to 1996) where the emphasis was upon ensuring the most cost-effective education (Gan 2007). The year 1997 marked another significant shift to a phase premised on “ability based” and on “aspiration” wherein the emphasis is upon developing capabilities. This was described at the time by the then Dean of the National Institute of Education.

The proposed changes - seek to institute, in place of an efficiency-driven educational system, an ability-driven system in which efforts are made by teachers to acknowledge and develop the range of talent and abilities that the students possess and to create learning environments that will foster their growth capacity. The emphasis is on motivating students to value learning and empower them to use information for problem-solving purposes, enabling them to work in teams to lead, share and follow, to learn in an open-ended manner valuing divergence, encouraging a questioning attitude and developing communication skills. (Gopinathan 1999)

While the goal of TVET over time has essentially stayed the same, namely, teaching and training technical skills and related subject matter so that individuals can immediately enter into specific professional and industrial occupations and apply these skills with very little additional training, how TVET goes about delivering on this goal has changed. In particular what has been called into question is what constitutes learning.

Learning can be defined in a number of ways. In its simplest form, learning can be regarded as an increase in or the retention of knowledge or the application of knowledge and skills to specific contexts. In a more sophisticated and complex definition, learning can be regarded as an "understanding" that facilitates the transfer of ideas and skills from one context to another; or as an interpretive process aimed at developing the capacity to understand new or unique problems; or as the changing of a person's values and outlook (Beatty 1990). An increase or the memorization of knowledge and rote application of skills is widely discredited as a desirable outcome in and of itself in TVET since this type of outcome often fails to have significant benefit beyond a classroom (and the associated tests) in which these skills are taught.

Whereas, understanding the capacity to solve problems and the development of desirable attitudes and values are more favorably regarded (Ramsden 1992) because they are more likely to become manifest behaviors in the workplace. The learning in TVET programs in a modern economy must cater to the development of capabilities that will allow an individual to both adopt skills as well as adapt to the ever-changing technological landscape. In other words, for TVET to be successful in meeting the needs of a modern knowledge-based economy it must ensure that the workforce does not only have technical capabilities but also the ongoing capacity to continually learn new knowledge and skills. Developing these capacities of "learning how to learn" in TVET has become more important than increasing the number of students coming into TVET with the intention to use it as an alternate pathway to higher education (a university degree). More than half of all polytechnic graduates in Singapore eventually seek entry and advance standing into a university program at home or abroad.

Table 1. 27 Enrolment: Universities, polytechnics, LaSalle, NAFA and ITE (Full-Time)

Year	Sex	Universities				Total	National Institute of Education	Polytechnics					Total	LaSALLE	NAFA	Institute of Technical Education
		National University of Singapore	Nanyang University	Nanyang Technological University	Singapore Management University			Singapore	Ngee Ann	Tenasek	Nanyang	Republic				
1960	MF	1641	1861	-	-	3502	2327	2332	-	-	-	-	2332	-	-	-
	F	426	378	-	-	804	1202	55	-	-	-	-	55	-	-	-
1970	MF	4751	2310	-	-	7061	2001	2185	609	-	-	-	2794	-	-	4727
	F	1531	918	-	-	2449	1390	155	163	-	-	-	318	-	-	326
1980	MF	8634	-	-	-	8634	2328	5004	2831	-	-	-	7835	-	-	12543
	F	3926	-	-	-	3926	1977	1036	782	-	-	-	1818	-	-	2414
1990	MF	15193	-	6812	-	22005	1577	11348	11995	735	-	-	24078	-	-	15919
	F	8107	-	2689	-	10796	1212	3878	4817	552	-	-	9247	-	-	5304
1997	MF	18174	-	12760	-	30934	2169	13755	14760	9806	8271	-	46592	-	-	8223
	F	10063	-	5312	-	15375	1528	5143	6169	5157	4620	-	21089	-	-	2119

Table 1. (Continued)

1998	MF	18791	-	13318	-	32109	2196	13695	14300	11462	9277	-	48734	-	-	13808
	F	10326	-	5494	-	15820	1572	5316	6001	5942	5129	-	22388	-	-	3942
1999	MF	19873	-	13849	-	33722	3299	13581	14433	12230	10514	-	50758	-	-	16464
	F	10814	-	5740	-	16554	2333	5352	6211	6300	5647	-	23510	-	-	4339
2000	MF	21233	-	14583	305	36121	3072	13459	14378	12733	11463	-	52033	-	-	15974
	F	11341	-	6223	212	17776	2247	5408	6419	6446	5989	-	24262	-	-	4343
2001	MF	22172	-	15008	803	37983	3095	13754	14317	13143	12385	-	53599	-	-	16176
	F	11781	-	6504	579	18864	2292	5521	6623	6501	6379	-	25024	-	-	4584
2002	MF	22169	-	15598	1389	39156	3368	14271	13989	13324	13105	-	54689	-	-	17468
	F	11653	-	6822	974	19449	2455	5670	6626	6579	6892	-	25767	-	-	5138
2003	MF	22149	-	15764	2182	40095	2953	14371	13690	13117	13754	821	55753	-	-	17941
	F	11036	-	6830	1469	19335	2080	5562	6534	6462	7456	377	26391	-	-	5615
2004	MF	21781	-	16837	3010	41628	2282	13709	13417	12782	14233	1907	56048	-	-	19207
	F	11372	-	7469	1991	20832	1550	5233	6347	6302	7875	865	26622	-	-	6076
2005	MF	22105	-	17777	3781	43663	2881	13353	13715	13582	14643	3587	58880	1505	1933	21603
	F	11326	-	8094	2239	21659	1940	519	6500	6776	8010	1759	28064	906	1236	7315
2006	MF	22836	-	19114	4529	46479	2938	13656	14258	14568	15001	5479	62962	1904	2083	23636
	F	11766	-	8797	2429	22922	1998	5084	6719	7236	7913	2790	29742	1139	1352	8052

Note:

- 1) University figures are for 1st degree only
- 2) National Institute of Education figures are for Diplomas and Post-graduate Diplomas in education-related subjects. BA/Bsc (Education) figures are included under Nanyang Technological University
- 3) Figures for LASALLE College of the Arts are for full-time diploma courses only
- 4) Figures for Nanyang Academy of Fine Arts are for full-time diploma courses only
- 5) Institute of Technical Education (ITE) was established in 1992 to replace the former Vocational and Industrial Training Board. ITE figures exclude apprentices.

Adopting a more sophisticated concept of learning is a necessary requirement for TVET aimed at truly meeting the needs of a modern knowledge-based economy. However, this has tremendous implications in the way teaching and training needs to be conducted. Learning from a cognitive perspective suggests that the brain does not simply collect, store and retrieve information in ways that simply transform into ready-made behaviors (Rumelhart and McClelland, 1986; Churchland and Sejnowski 1994). The skill of an individual is premised upon his capacity to make sense of the information that predicates the desired behavior or skill. To do this, the brain connects various nodes of information in such a way that it is relevant to the situation at hand. Therefore, learning develops out of the frequent exposure to problems that requires the mind to make the necessary connections between ideas. The more regular an individual is exposed to certain types of problems, the more competent he can be by virtue of “pattern activation” (Evers and Lakomski 1996 chap 9). Hence, teaching or training that is essentially about imparting information or simply demonstrating skills may not be sufficient to ensure learning. Teaching and training need to draw how students conceptualize information and then translate this into a skill or behavior. Effective learning hinges on how well these capacities for “conceptualization” and “translation” can be developed.

The emphasis on the quality of learning has become the new challenge for TVET as the needs of a modern economy become more specific and intricate. Coupled with the increasing expectation that TVET will provide pathways to further learning

Table 2. Recurrent government expenditure on education per student (SGD)

<i>Fiscal year</i>	<i>Primary</i>	<i>Secondary¹</i>	<i>Junior college/ centralized institute</i>	<i>Institute of technical education</i>	<i>Polytechnic</i>	<i>University²</i>
1992/93	2061	3129	4780	6201	6142	15422
1993/94	2254	3412	5178	5212	6990	15450
1994/95	2523	3488	5832	7511	7584	16355
1995/96	2653	3680	6363	9547	7776	17241
1996/97	2837	4152	6726	11646	8406	15037
1997/98	2960	4469	7052	10586	9018	15125
1998/99	2808	4472	6346	7020	8144	12580
1999/00	2612	4409	6325	6452	8032	14112
2000/01	3137	5104	7304	8076	9546	15384
2001/02	3363	5304	7879	7829	9668	15262
2002/03	3535	5614	8497	8056	9793	14284
2003/04	3508	5437	8791	8367	10197	17477
2004/05	3575	5746	8850	9399	10695	17609
2005/06	3820	5793	9445	9249	10843	17793
2006/07 2006/07*	4270	6185	10001	10237	11578	18281

Source: Ministry of Education (2007) Education Statistics Digest 2007. Management Information and Research Branch, Planning Division, Singapore.

Note: 1) Excludes Independent Schools., 2) Includes National University of Singapore, Nanyang Technological University and Singapore Management University, * Preliminary figures

opportunities, the Singapore educational system (for which TVET makes up the most significant portion of post-secondary education) has moved towards defining learning in terms of capacity building. New pedagogies like PBL are necessary to develop these capacities.

CASE STUDY

Case Study: Problem-Based Learning (PBL) in TVET

The importance of “learning how to learn” and developing capacities is in part the reason for the development of new pedagogies that have emerged in TVET in Singapore. These pedagogies or approaches to training are orientated towards understanding rather than the rote memorization or drill and practice (O’Grady 2004).

One example is the use of problem-based learning at the Republic Polytechnic (O'Grady 2002).

The approach at RP is to allow students to engage in activities in teams, and to learn by attempting to respond to 'problems' posed, under the guidance of a facilitator in an environment with 'liberating controls.' The problem trigger is intentionally designed for a purpose by an 'educational architect.' The engagement invariably involves negotiations, debates and interpretations, as a collective exercise among peers and the facilitator, whereby the viables are retained and the unlikely discarded, in order to make sense at the personal as well as community levels. The presence of established prior knowledge and the accompanying justifications are duly respected in this process. No two students are expected to learn either the exact same thing or in the exact same way although all involved in a single physical setting would naturally advance in a co-evolutionary process.

It is believed that this is the way people learn throughout their lives, inclusive of when shopping or driving a car, or conducting a scientific research activity, or engineering a physical contraption. Any strangeness felt about RP's unique approach is quite likely due to the unquestioned acceptance of practices in conventional schools, where actions taken suggest an expectation that students should accept a specific set of 'truths,' practices and values, wherein (a) those presumed truths, practices and values are supposed to have a validity that is external to both the teacher and the learner, and therefore beyond question; (b) the student is to become capable of reciting those truths and demonstrate those practices by a private endeavor of acquisition, processing and storing; and (c) the ability to recite, or mechanically lay in a pre-established pattern, stored knowledge during an examination with a pre-arranged form and conducted at a pre-arranged time, is taken as a measure of the educational achievement of a student.

This common ground between the two spheres helps to facilitate closer links between TVET and higher education. One of the notable consequences of TVET in Singapore is the social stigma associated with learning in these institutions because it draws students who have "under-performed" academically. Law (2007) noted:

The consequence is a prejudice against, and a less than positive image of VET, and all its negative associations with those who do not do well academically in schools. If an education system is to maximize the potential of all students, then this perception and old mindset must change.

This prejudice has partly been overcome by a significant increase in the "ladders and bridges" between TVET and higher education. Polytechnic education for some academically strong students has become the preferred route to achieve both an industry-related diploma as well as a University degree. However, this increasing integration between the two spheres is unlikely, at least in the foreseeable future, to lead to the two spheres merging in the same way that it has elsewhere. Rear Admiral Teo in 2003 said "Although the British and Singapore education systems share a common history, they have proceeded along quite different paths since the 1980s. The UK sought to achieve what they call "parity of esteem" between vocational and academic subjects by bringing vocational studies under their GCSE

and A-level framework. Since the 1990s, polytechnics in the UK have been converted into universities. In contrast, Singapore has taken a different path. We strengthened and expanded our polytechnic and ITE sector in tandem with the university sector.” (Teo 2003)

In contrast, within the academic framework at RP any attempt to force a student to unconditionally accept a set of presumed truths, practices or values, on the basis of an external validity, is considered unethical and therefore objectionable. Promoted are experimentation, reasoning and negotiation in viable ways thought of as the best possible approach under the conditions set by the educational activity designers at the respective points in time. (Republic Polytechnic 2008)

The idea that learning is effective when someone is genuinely curious enough to ask questions and then find an answer they can defend in a manner that is convincing to themselves and others and apply these ideas to varying contexts (Feynman 1999) is an idea that is traditionally reserved for higher education. However, if effective learning is not just about accepting wisdom but trying to find why this wisdom is accepted (Watkins, Carnell, Lodge, Wagner and Whalley 2002) then teaching the associated capabilities is critical. Teaching how to reason and think entails the learners' having the opportunities to construct meaning. This is done by ensuring a learner's agency hence facilitating a monitoring and review of approaches and strategies that prove to be effective for particular goals and contexts (Watkins, Carnell, Lodge, Wagner and Whalley, 2002, p. 4). Biggs (1987) describes this as 'deep learning.' A deep learner's motive stems from an intrinsic interest in learning whereby students relate content to personally meaningful contexts. This requires higher cognitive strategies like searching for analogies and theorizing. In contrast, a surface learner studies by memorization with no intended effort to internalize the information beyond the text (i.e., remembering symbols without understanding their meaning) and they appear to be motivated by fear of failure.

Studies have shown that when education and training is characterized by heavy workloads, instructional methodologies and a strong emphasis on examinations, this often leads to learners becoming more surface than deep in their learning (Watkins and Hattie, 1985; Gow and Kember 1990; Busato et al., 1998; Vermetten, Vermunt and Lodewijks, 1999; Zeegers, 2001). Biggs et al. (2001) referred to this surface approach to learning as the “institutionalization” of learning, whereby students learn to respond to their learning situation by doing only that which they perceive is required of them through the use of suitable minimalist learning strategies.

PBL has become a valued approach for teaching by both TVET and higher education because of the desire to shift away from surface learning (O'Grady 2004). The promise of PBL has amongst many things been that students would be better at solving problems and transferring problem-solving skills (Needham and Beck, 1991); that they can advance many more causal explanations (Patel, Groen and Norman, 1991); and integrate their knowledge better than non-PBL students (Boshuizen, Schmidt and Wassamer, 1990).

In addition students would be able to engage in PBL and develop a greater understanding of concepts which leads to a better application of skills (Martensen, Eriksson and Ingelman-Sundberg, 1985; Eisenstaedt, Barry and Glanz, 1990); and

students who discuss a problem relevant to a topic would display more interest in the subject matter (De Volder, Schmidt, Moust and De Grave, 1986).

The emphasis in TVET in order to develop capacities for deeper learning brings into question the distinction between higher education and TVET. While there are some very clear distinctions between what disciplinary skills and knowledge are taught in these two spheres that make up post-secondary education, the how to learn is becoming less distinctive. Take for instance the two comments that have been made about TVET education and higher education.

“We are implementing a revised normal (technical) curriculum with a more practical orientation, to better engage students in their learning. The curriculum content is being made more meaningful to students by relating what they learn to daily life. There will be greater emphasis on group work and presentations, creativity, hands-on activities and the use of IT. And new ways of assessing students, such as evaluating their coursework, either individually or in groups, will be used instead of the traditional pen-and-paper approaches” (MOE 2006).

“The traditional way of teaching the basic sciences [to nurses] is to have an expert in a given disciplinary area lecture to a large group of students. There is not much integration of knowledge and little linking of the basic science knowledge to clinical practice. Thus, students try to absorb a large volume of knowledge that is “given back” to their teachers in the examinations and the knowledge is forgotten when they get to the wards. However, when the learning of basic science is done in the context of its application, retention of such knowledge has been shown to be more long-term. ... the use of clinical problems as triggers enables students in small groups to discuss and debate on the learning issues important to help them. ... there is a clinical problem presented to a small group of students... the facts are discussed, hypotheses to explain these facts are generated and then learning issues relevant to the problem will be identified. Then the students will go back and study/research on these learning issues. ... the students will discuss the problem again in light of what they have learnt. Perhaps more importantly than the integration of basic science to clinical practice that the student learns from their PBL trigger problem, the process of PBL allows the students to manage their own learning. When they discuss the trigger problem they learn to identify important facts, form hypotheses and decide on the important learning issues that they want to follow up. Moreover, by actively participating in a group discussion and cooperating in the search for information, students learn to be team-players, to communicate effectively and to be responsible for both their own learning and that of their colleagues. This is a mirror of the way clinicians practice. Thus, the PBL process will encourage students to be self-directed and become life-long learners as well as cultivate their team spirit, communication skills and professional attitudes. (Khoo and Chhem 2001)

“Hands-on” team orientated, problem based teaching and learning methodologies are equally relevant in both spheres because learning is a universal enterprise. The complexities of the desired skills vary according to the complexity of the ideas underpinning the skill but the processes associated with understanding or how someone goes about translating this “understanding” into a skill is essentially the same whatever the content may be.

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Glen O'Grady
Director, Centre for Educational Development
Republic Polytechnic, Singapore

19. SRI LANKA

TVET SYSTEM IN SRI LANKA

Sri Lanka's technical and vocational education and training (TVET) system has evolved over a period of 100 years. It is officially recorded that technical education in Sri Lanka was initiated in the year 1893. The specific event was the establishment of the very first technical training institute by the government. From then on, TVET has developed into its present state. It is now estimated that there are more than 5,000 training institutes in Sri Lanka which include government, private and non-governmental organizations. Even today, the government plays a key role in providing training and education in the TVET sector through a number of government departments and authorities. These are the Department of Technical Education and Training (DTET) under the Ministry of Vocational and Technical Training (MVTT), the National Apprentice and Industrial Training Authority (NAITA) and the Vocational Training Authority where approximately 65,000 students are trained annually through their training center network located throughout the country. Institutional training and on-the-job training are the key methods used by these organizations to train the students. In addition to these organizations, there are public institutions such as the Department of Social Services, National Youth Service Council and specialized institutes such as the health sector paramedical training, telecom training, etc, which operate in the TVET sector in the country.

The Department of Technical Education and Training delivers formal, institution-type training at the thirty technical colleges located in major principal and district capitals. About 15,000 students are enrolled annually in full time or part-time courses.

Nearly forty years ago, the Labor Department pioneered Vocational Training for the out-of-school and unemployed youths. Over the years, vocational training expanded and assumed considerable importance because of its usefulness in facilitating self-employment and supplying urgently needed skills preliminarily to the informal sector. In August 1995, the government established the Vocational Training Authority of Sri Lanka (VTA) as a statutory body to serve the rural, unemployed youth through employment-oriented short courses conducted through a network of nearly 200 Rural Vocational Training Centers (RVTCs). These RVTCs are in fact the 'satellites' of the twelve District Centers that provide technical and other support to this network. The three national training institutes in Colombo offer certificate level courses of longer duration.

Formal apprenticeship programs are the responsibility of the National Apprentice and Industrial Training Authority (NAITA). Apprenticeship is essentially a contract among the learner, his employer and the government which is normally the

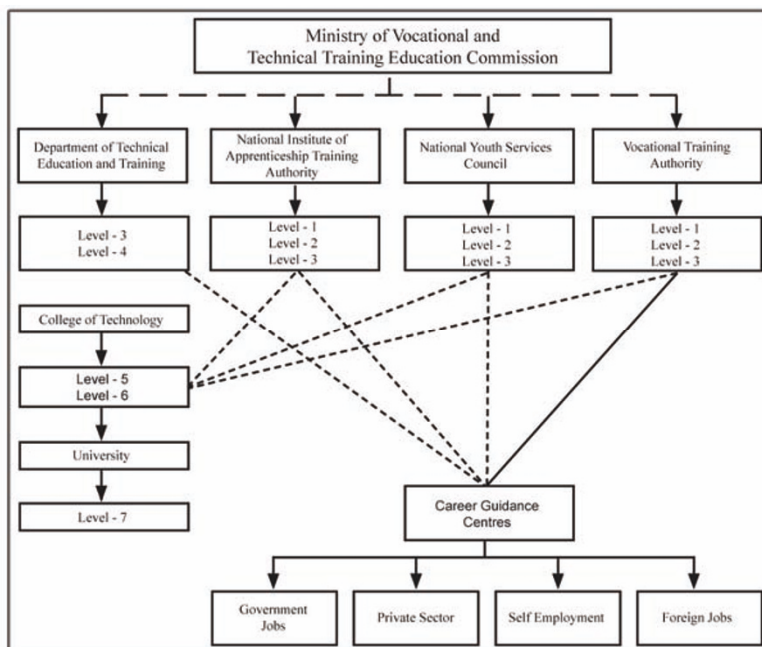


Figure 1. Implementing government units of education and training provisions in Sri Lanka's TVET's sector.

regulatory body. In the case of Sri Lanka, NAITA represents the government. The learner agrees to undergo on-the-job training for a fixed period depending on the trade or occupation. The employer is committed to provide training and pay wages, according to stipulated norms for this purpose. NAITA operates over eighty training institutions located throughout the country. The Apprenticeship Training Institute, the Automobile Training Institute and the technician training institute that award Diploma-level qualifications are the national level institutions of NAITA.

EMERGING CHALLENGES AND TRENDS OF TVET

With the country's socio-economic development, various opportunities are evolving in the TVET sector which seems to be expanding significantly in Sri Lanka. Although TVET is conceived as belonging to the industrial sector in the present context, it is a fact that the 'service sector' is dominating the other sectors such as agriculture, civil, mechanical, chemical, electrical, electronic, production, mining materials, textiles, and government, etc. that are providing avenues for blue collar jobs. But on the other hand, accounting, human resource, administration, management, marketing, banking, hospitality, health, insurance, real estate, security, trade and commerce, transport and logistics, etc. could encompass a major portion of the service sector, which represents white collar jobs.

With the increased vocational opportunities in the industrial and service sectors, the tertiary education system, especially has not been given necessary attention. There is also no appropriate guidance given to the youth towards the direction which will help them to set goals and how to achieve them by acquiring the appropriate skills and competencies needed to meet the demands of both sectors. The national education system in Sri Lanka that leads to paper qualifications such as ordinary level and advanced level certificates do not provide competencies for the youth to be employable in the TVET sector. As such, the demand for technical and vocational training courses is high and as a result, training courses offered by both the public and the private sectors as well as the NGO's have mushroomed in the country to cater to the demand through formal or non-formal modes.

Quality Standards

The vast number of TVET institutions pose a dilemma for the employers and employees as to the type of vocational training course that should be chosen or to be recognized among the array of vocational training courses available in the public, private and NGO sectors in Sri Lanka.

In order to respond to this, the Tertiary and Vocational Education Commission (TVEC) as an apex body for the TVET sector under the Ministry of Vocational and Technical Training introduced a National Vocational Qualification (NVQ) framework with a view to unify the TVET system in the country.

TVET Recognition

Moreover, there are low enrollment rates and high drop-out rates in the TVET institutions compared to other specialized training institutes. The public image of TVET is low due to its poor image, low recognition of the vocation or its qualifications. The present image and standing of the courses are acceptable only in the crafts and supervisor levels as the industry operates at relatively low levels of technology. The general recognition of the qualification is not high due to various levels and standards at the institutes, the lack of clear career development paths, the impact of different quality of resources at the institutes, the low level of interaction with industry and so on.

Occupations related to TVET are considered to be low and filled mostly by the low income groups of society. Parental expectations are biased towards a university education regardless of the capability of the students. Thus, TVET is considered only as a second option. A complete mind set change has to happen first to make the society accept the TVET sector as a worthwhile area of employment with commensurate potentials.

Technology Adoption

The TVET institutes are considered backward in terms of adopting current technologies primarily due to constraints in resources and the low level of exposure of its

management to further institutional development initiatives. In addition, the industry also continues to use old methods. Thus, TVET institutions should take the lead in this regard and be drivers of technology and influence the industry to gain wider acceptance.

The following are the key issues and challenges experienced by the TVET system of Sri Lanka:

- Lack of focus on knowledge, skills and attitudes to perform a particular occupation in a rapidly changing technical environment;
- Absence of a mechanism to ensure the quality of trainee output against the standards set;
- Absence of trustworthy qualifications that reflect the level of competency of the trainees against publicly known standards;
- Internal and external inefficiencies including duplication of courses, outdated curricula and equipment, shortage of good trainers as well as optimal utilization of workshops, laboratories and training equipment, leading to a high dropout rate of around 30%;
- Lower social acceptance of TVET programs and hence the inability to attract students to its training courses;
- Gender imbalance in enrolment;
- Need for the diversification of providers and creation of an enabling environment to attract private sector investments;
- Inadequate coordination and linkages among the public, private and non-governmental stake holders;
- Lack of sufficient awareness of the available opportunities among its clientele;
- Need for sustainability through cost recovery and other means; and
- Inadequate linkages between TVET and general education and university education.

EMERGING TRENDS TOWARDS SUSTAINABLE DEVELOPMENT OF TVET

The approach to orient TVET towards sustainable development is not new. Back in 1989, UNESCO adopted the convention on TVET, saying that its programs should meet, among others, the social, economic and environmental concepts relevant to the occupation concerned.

Matching of Supply and Demand

The private sector has been identified as the engine of growth in Sri Lanka and will be the exclusive employer for TVET graduates in the near future. As such the TVET sector needs to identify the emerging competency needs of the private sector. It is evident that TVET has to undergo a paradigm shift from the narrow task of providing workers for industry and occupation-specific skills to a broader task of workforce development and life-long learning for sustainable development and citizenship. TVET has to produce “knowledge workers” that can function in the knowledge-based economy of the present and the future.

Life-long Learning

TVET is an integral part of the education system and has the ability to play a major role in the national development process as it supplies trained youths to all levels of the world of work. At present, the TVET sector is seen by the majority as the sector that provides alternative paths for those who fail to access general or higher education. Internationally, TVET has been identified as the sector for life-long learning. The image of TVET in Sri Lanka needs to be shifted from the existing low image to a life-long learning provider for all segments of society.

Capability Building

Three of the main goals for the decade of Education for Sustainable Development (ESD) is to facilitate networking linkages, exchanges and interaction among the stakeholders, to foster and increase the quality of teaching and learning in ESD. In order to achieve these, the operations of the training institutes have to be strengthened, especially in the regions.

Teacher education is a primary focus for promoting ESD. Due to the complexity of the concept, the teachers have to be provided special training in order to teach in a way that the “Learning can be practiced.” Learning has many objectives such as; learning for qualifications, learning to do and learning for behavioral change. The teaching process demands more focus on indicators and monitoring and evaluation rather than on the final examinations.

The following strategies can be employed in order to achieve sustainability of TVET in Sri Lanka:

- Conduct in-depth research to identify the appropriate mechanisms to incorporate principles of SD into the TVET sector;
- Identify core values and core competencies for TVET related to ESD; “continuous learning, innovation, team work, respect for all, knowledge worker, customer orientation, and long-term perspective,” may be potential areas for consideration;
- Identify new activities and new targets to be served by TVET;
- Identify the areas to incorporate ESD principles initially and propose a plan of action for implementation;
- Identify indicators to be linked to performance monitoring;
- Ensure that the vision, mission statements of TVET institutes are up to date;
- Expose the facilities of the training institutes to the public and industry by allowing access to the facilities for a fee or otherwise;
- Conduct training needs analysis (TNA) for the region and identify training programs relevant to the region/district and industries, and identify social needs of the different segments where TVET can provide effective solutions;
- Design programs for various segments of society that are relevant to the geographic region; migrants, returnee migrants, child soldiers, disabled persons (disabled), housewives, professionals, university graduates, employed workers, business community, etc;
- Capacity building of trainers in related areas;
- Hiring trainers from outside for special topic areas;

- Donor assistance;
- Social marketing;
- Improve the physical appearance and common facilities and maintain the standards;
- Courses to be conducted in the appropriate language to encourage all communities to participate;
- Design training courses for all fields and levels of staff;
- Recognize the efforts towards ESD during staff appraisal, promotions and selections;
- Identify the areas in all subjects where SD principles can be incorporated and revise curricula;
- Adopt participative management;
- Activities to be undertaken by colleges/ training institutes such as tree planting, garbage recycling, and community services on projects;
- ESD to be included as a compulsory module in the B, Ed (Technical) program curriculum at the proposed University of Vocational Technology with special emphasis on Technical Teacher Education for SD.

Through the above-mentioned approaches, all TVET institutes should act in a socially responsible and an environmentally friendly manner to produce knowledge workers to assist in the country's economic development and to contribute towards achieving the promulgated Management Development Goals (MDG). All activities and decision-making will follow the principles of sustainable development. Creating a culture that promotes ESD will have a major positive impact on the behavior of trainees as they will learn by living the values that are taught. A high demand will be created for TVET trainees in the private sector and increased esteem for the staff and students.

All levels of people can then perceive TVET institutes as a place for life-long learning and a learning culture can be promoted. Knowledge sharing can also be facilitated and living in a sustainable manner be promoted. The present perception of TVET as the "alternative path for failures" will diminish and TVET will be perceived as a socially friendly and dynamic sector providing services to all.

Strong and lasting partnership with industries of the region can create a win-win situation as a result of having a customer-oriented TVET sector that is more dynamic and effective towards contributing to sustainable development. The trainee's employability in the private sector or overseas markets will be increased with the new worker attitudes and values, and by their being knowledge workers.

Hewa Katupothage Geethasena
Additional Secretary
*Ministry of Vocational and Technical Training**

**As of July 2010, the MVTT has been re-organized and is now called the Ministry of Youth Affairs).*

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20. THAILAND

INTRODUCTION

Thailand, located in Southeast Asia, has a total land area of 513,115 square kilometers. The total population in 2007 is 65.2 million, growing at an annual rate of 0.4%. In 2008, 36.8% of the population is in the labor market, with 13.7% in the agricultural sector and 23.1% in the non-agricultural sector. The unemployment rate in 2008 is 1.4%. The number of working females is slightly higher than that of the males. Buddhism, the national religion of Thailand is practiced by 95% of the population. While different dialects prevail in the rural areas, Thai is used as the national and official language. The political system in Thailand has largely changed when the 1997 Constitution expanded the rights of people in areas of political participation and in voicing public opinions.

In 2002–2007, Thailand has experienced a steady economic growth at a rate of 5.7 per cent annually and has been classified as a middle-level income country. Thailand's economic size was at level twenty out of 192 countries in the world and has been considered big. Today agricultural products are produced in such quantities that many commodities are considered to be complying with international standards and widely accepted by the world market. Thailand not only enjoys agricultural self-sufficiency but is the only net food exporter and one of the largest food exporters in Asia. Thailand has grown and diversified into an industrial country employing the latest and most sophisticated technology. Thailand has played an important role in the international labor market and market share in spite of high competitiveness. Many factors have contributed to the country's enviable economic growth including human resources.

In order to maintain and increase its market share in the world market as well as continual improvement through innovation and technology, qualified manpower is needed. However, a shortage of middle level or skilled and technician manpower has been experienced by Thailand. One of the reasons for such shortage is the low attendance in TVET programs of secondary education Thai graduates (42%). Furthermore TVET graduates prefer to continue their education to the higher level education rather than enter the labor market. Thus, there is a need to attract more students to the TVET programs and to enter the labor market.

The National Policy in the 10th National, Economic and Social Development Plan (2007–2011) states that the number of TVET students should increase from 42% to 50% by the year 2011. Cooperation and collaboration with industrial groups and all stakeholders are to be strengthened. The policy framework of the government has also been considered as important to improve TVET and competency standards are needed. Thus, the TVET Act 2008 has been enhanced and will be implemented

as soon as possible in order to enable the TVET system to respond to the economic requirements as well as individual needs.

On the other hand, there is a recognized skills gap in many fields of occupation for those who have joined the labor market. This is a result of the rapid changes in technology and the nature of work in competitive businesses and industries. A knowledge-based economy and society requires a multi-skilled knowledge workforce. Thus, TVET needs to be kept abreast of the changing world of work and technology. In order to achieve this, flexible programs have been designed to meet the needs of those in the labor market. Programs for validation of experiences or recognition of prior learning have been provided to those who were already in the labor market. In this way, they would be able to upgrade and update their knowledge and skills and receive qualifications. The widening participation in TVET programs in Thailand has been considered as an important tool for increasing human capabilities and national products as well as the eradication of poverty. In this paper, the TVET system in Thailand will be described with examples of best practices employed in Thailand. Emerging trends and challenges of TVET in Thailand are also presented.

CURRENT EDUCATIONAL/TVET SYSTEM

Thailand considers the important role of TVET in producing qualified manpower for employment and entrepreneurship. Several agencies from both the public and private sectors are involved in TVET. The Office of the Vocational Education Commission (OVEC) under the Ministry of Education is the major agency responsible for the administration of public TVET institutions as well as in formulating policies, standards, monitoring and evaluating the national system of TVET.

The education system in Thailand is 6-3-3 with six years of primary education, three years of lower secondary education and three years of upper secondary education, as illustrated in [Figure 1](#).

Upper secondary education is divided into the general and the vocational stream. The ratio of students in the upper secondary level and general education and TVET has been 60:40 over the past few years. As mentioned earlier, there are attempts to increase the ratio to 50:50 at the end of the 10th National Plan (2011).

According to the Vocational Education Act 2008, TVET can be organized into formal, non-formal and dual program. The Dual TVET program is considered as the first priority. This means that working closely with industries in planning, organizing and evaluating TVET program is necessary.

There are nine areas of specialization offered in TVET colleges which include:

- Trade and Industry
- Arts and Crafts
- Home Economics
- Commerce and Business Administration
- Tourism Industry
- Agriculture
- Fishery
- Textile Industrial
- Information Technology and Communication

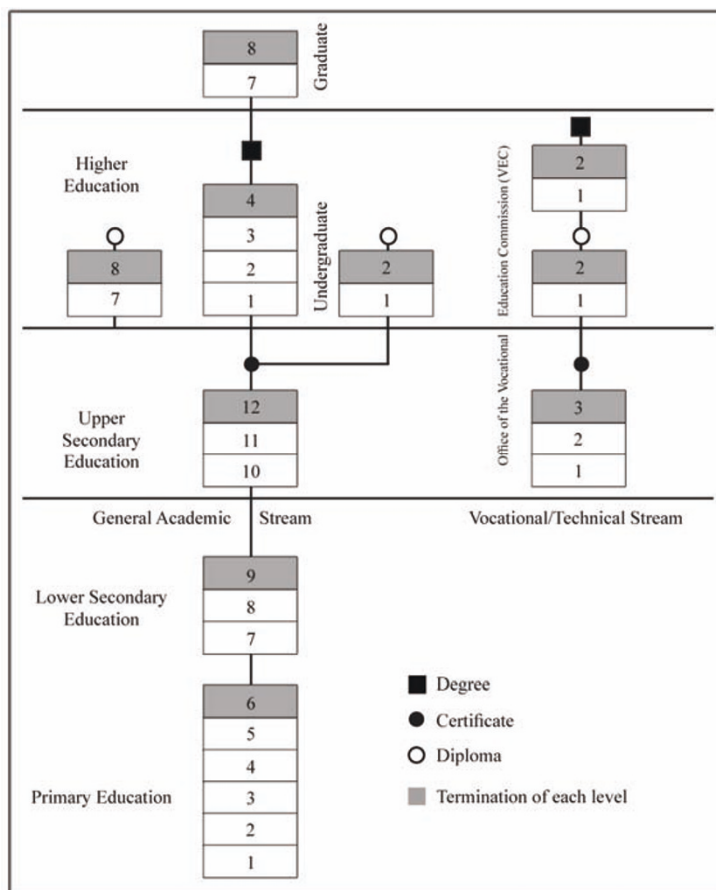


Figure 1. TVET system in Thailand.

Six programs are offered in the formal and the non-formal modes as well as in the work place or dual courses as follows:

(1) Certificate in Vocational Education (Cert. Voc.)

This program is offered to those who have completed lower secondary education (Grade 9) and are of four types:

- Certificate in Vocational Education (Cert. Voc.): This is a three-year program (Grades 10–12).
- Certificate in Dual Vocational Education (Cert. Voc.–DVT): DVT is a three-year program for students who have completed lower secondary education (Grade 9). The learning and training take place in two venues, at a college and in a company, where students execute a contract for training. During the training, the students

receive an allowance from the company. Upon completion a certificate, equivalent to the Certificate of Vocational Education, is awarded.

- Certificate in Vocational Education: Credit Accumulating System (Cert.Voc.CAS): After taking a short course, students will be awarded a Certificate in Vocational Education within three to five years.
- Certificate in Vocational Education: Evening Class (Cert.Voc.-EC): This program is, in particular, designed for those workers already in the labor market who wish to further their studies in the evenings, after work.

(2) Diploma in Vocational Education (Dip. Voc.):

Students are accepted through competitive entrance examinations for those who have completed a Cert. Voc. or upper secondary education. This program is offered in four types like the Cert. Voc. Level.

(3) Higher Diploma in Technical Education (High.Dip.Tech.):

This is a two-year program for those who have completed the Dip.Voc. and who are preparing to be vocational teachers. Admissions are made through the systematic selection process.

(4) A Special Vocational Education Program (for young farmers):

The program is designed to upgrade the skills of young farmers aged between 15–25 years. After finishing compulsory education, young farmers can go to any college of agriculture and technology to study in their spare time. Upon completion of all the required subjects, they will be awarded with a special certificate, equivalent to a Certificate in Vocational Education.

(5) Vocational Training: (Short – Course TVET)

- Short Training Course Program (225 Hours): The only prerequisite for admission is the completion of primary education. No entrance examination is required. The students must complete 225 hours of study, and upon completion, a certificate will be awarded. The starting salary for the graduates of this certificate level depends on their skills and abilities.
- Short Training Course (six - 225 Hours): In addition to the 225 hour-program, a variety of short training courses are offered in different areas. The duration of the courses ranges from six to less than 225 hours. The course duration and its contents will depend upon the interests and needs of the local people and the community.
- Cooperative Study Training (CST): Training for students from general secondary schools who select vocational subjects as their major, minor or elective.
- Agricultural Short Course Training: Each College of Agriculture and Technology provides a short course training (seven to eight days) for local farmers. The course contents vary according to the needs of the trainees.

TVET is also provided in the following types of colleges under the supervision of OVEC:

- Technical College
- Vocational College
- Agriculture and Technology College
- Commercial College
- Industrial and Ship Building Technology College
- Fishery College
- Administration and Tourism College
- Polytechnic College
- Automotive Industry College
- Golden Jubilee Royal Goldsmith College
- Arts and Crafts College

During the academic year 2008, there were 404 public TVET institutions and 402 private TVET schools. The total number of students in the formal program is 1,091,708. The ratio of students in the public and private institutions is 63:37. There are attempts by the government to increase the number of TVET students in both public and private institutions through financial incentives. For example, free tuition and other fees are offered to those who attend TVET at the secondary level. Furthermore, free lodging is offered for those in the agricultural program. A revolving fund for each student in the agricultural program is provided for investment in small farming, fisheries, horticulture or other agricultural projects.

BEST PRACTICES

Fix It Center: Integration of TVET for Poverty Alleviation

The “Fix It Center” under the Office of Vocational Education (OVEC) has been designed to provide services in the maintenance of occupational tools, agricultural machinery, equipment and household appliances to villagers in the rural areas. This is also an example of the government’s initiative to address poverty through technical and vocational training. Practical experiences in real life situations are also provided to TVET students. The rural areas or communities have become the classroom for problem-based learning workshops. This project also provides training courses in the skills needed to maintain and fix occupational tools, equipment and household appliances for those who are interested. The teachers and students work with related agencies and community leaders to organize a “Fix It Center.” The services and training are provided at a convenient time.

After two years since the inception of the project, it has proven to be very successful and has been perceived as an important tool for enhancing a good attitude towards TVET and as a tool for marketing it. Information for training opportunities has been distributed and the occupational profile and needs in each community have been developed. The project proved that learning by doing and by earning are important approaches for TVET. It showcased the capability of TVET students to learn hands-on skills and enhanced their value for social services. Partnerships and networking among TVET institutions have likewise been developed. Furthermore,

a large number of people in the rural areas requested for its continued implementation having found that TVET students are able to help them learn how to maintain and fix occupational tools especially, agricultural tools, and machinery, equipment and household appliances. This project extended the life span of equipment and machines with minimal costs.

The government has considered the great impact of this project on poverty alleviation, thus, in 2008 the Cabinet extended the project life for four more years until 2011 with a budget of 30 million Baht (2008–2011). It was planned that the “Fix It Centers” should be organized in 8,000 more villages throughout the country during the four-year extension period. This project proved that TVET instills the value of social service on skilled youngsters. The rural communities have been turned into an active classroom for a great learning experience. New knowledge and technology have been introduced to the rural areas. Occupational training for earning in the rural areas was integrated under the philosophy of a self-sufficient economy.

Practical Petrochemical Technician Project: A Model of Partnership with Industry

At the eastern seaboard of Thailand, there are a large number of petrochemical-related industries with high technology investments. The Federation of Petrochemical Industries has indicated that the shortage of qualified technicians with thinking skills and problem-solving skills has become a big problem for the industry. In order to solve this, a cooperative project was initiated by OVEC, the Federation of Petrochemical Industries and the Petrochemical Institute, a technical college under OVEC in the area accessible to the workers in the petrochemical industries was converted into a “Petrochemical Technical College.” The Federation of Petrochemical Industries provided 30 million Baht for three years to implement the project. The main objective of this project is to produce qualified technicians for the petrochemical industry. Teachers have been trained and the necessary equipment have been provided. The special features of this project are as follows:

1. The Federation of Petrochemical industries provided funding for additional salary of the staff and for the training of teachers in industry;
2. Equipment and teaching media were also provided by the companies;
3. Petrochemical companies offered on-the-job or work-based learning for the students;
4. The teaching and learning process focused on project-based learning and problem-solving or thinking skills;
5. Experienced trainers in industry worked closely to inculcate students with the desired thinking skills through the process of coaching and mentoring;
6. Administration of the project has been organized through a joint-working group composed of OVEC, the Federation of Petrochemical industries, the Petrochemical Institute and selected companies;
7. Priority recruitment of students from outstanding target groups in the local areas.

After two semesters of implementing the project, it was shown that students performed very well especially in developing their thinking skills and problem-solving abilities. This is considered a best practice for a cooperative project with industry. Furthermore, a big amount of money or 10 million Baht per year for three years have been allocated from the industry to support the project. The competency standards required by the petrochemical industry have been used as the bases for designing the curriculum and the teaching/learning process. Incentives for this project are tax reduction and having a larger pool of qualified technician manpower. This project required capable administrators and teachers who will be able to persuade the companies to join the project and who can help develop a better understanding and partnership with the Federation of Industries as well as with other stakeholders. A sense of TVET ownership among the company clusters has been developed and continues to improve.

Making TVET more Attractive: Widening Participation in TVET

Incentives and various strategies have been developed to attract more students to be part of TVET. TVET in Thailand offers various models of learning as well as provides continuing counselling and guidance in order to make learners keep pace with the changing labor market needs and career paths. The following are some means of making TVET more attractive and to achieve a wider participation:

- develop a more flexible TVET teaching and learning process to attract more students;
- facilitate pathways for learners through articulation, accreditation and recognition of all prior learning and relevant working experiences;
- develop curriculum according to the needs of local employers and the new economic structures;
- work closely with industries and all stakeholders;
- increase TVET opportunities for the economically and socially disadvantaged groups, and the disabled;
- develop ICT and distance learning programs;
- provide earning while learning opportunities through on-the-job training and self-employment;
- organize a system of transferring and accumulating credit hours;
- integrate TVET programs in the secondary schools;
- create a good image of the TVET system through social services and present prototypes of successful students;
- work cooperatively with other agencies in providing work-based learning for their staff.

OVEC also emphasized the importance of improving the character of TVET students. The main objective is to project a good public image and new paradigm for them. A contest for model TVET students was organized to be presented to the public. The ideal kind of TVET students would have the following characteristics: able to relate, responsible and representative, and socially aware. This activity has become very popular and has made the public know more about TVET.

During the past few years, it was found that more students, adults and those who are already in the labor market are enrolled in TVET programs. For example, the number of students in the formal OVEC program has increased from 615,005 in 2005 to 688,633 in 2007. And the number of part-time learners has increased from 745,349 in 2006 to 1,105,902 in 2007 and is expected to increase to 130,000 by the end of 2008.

Science-Based Technology School in TVET Colleges

Due to the problem of shortage of technologists or innovators which resulted in a weakness of technology and innovation in the country, the Thai Cabinet approved a project on a Science-based Technology School of OVEC in December 2007. This project aims to encourage and support talented TVET students to become technological inventors. The skills and knowledge are imparted through academic discipline, practical training and a climate conducive to the creation of innovation. Curriculum content is integrated with new approaches of teaching and learning. Active learning has been emphasized by project-based teaching.

The students stay in the dormitory of the college. The teachers are facilitators, coaches or mentors. More than half of the teachers come from the five famous technology universities in Thailand on a voluntary basis.

This project is implemented in a college in the eastern seaboard industrial area. This project has been carried out in partnership with outstanding technologists in Thailand, technological universities and companies. Some problems have been encountered with this new approach. The range of knowledge and understanding by the staff and some of the current rules and regulations may need to be changed. This project has proven to be very successful in the preparation of science-based TVET students. They are provided with an opportunity to learn from outstanding scientists and technology teachers. The active learning process has inspired students to do their best. Practical experiences in an industrial environment are also provided to the students. The students are expected to come up with new technology or new inventions based on their newly acquired knowledge in science and technology. After the first year of the project, it is expected that this type of the project will be replicated in other parts of the country.

A special feature of this project is its co-administration or having a school within a school. The project is organized as a school of "active learning for talented TVET students" in the Panthong Community and Industrial Education College. The college also offers other regular TVET program. Part of the plan was for the project and the college to use the same resources, facilities and staff. A lively exchange of knowledge and skills as well as other resources should be carried out. In other words, a free flow of information and sharing resources of the two school systems provide a meaningful learning community for the staff and the students.

TVET Manpower Information Center

OVEC has worked in cooperation with the Federation of Thai Industries and the Chamber of Commerce in organizing an on-line information network with every

college under OVEC. In each college, student profile information will be available for the companies. With the permission of an individual, companies will be able to access student profiles and contact them directly should they want to do so.

This network between colleges and industries has proven to be very useful for both students and employers. A similar project is being readied at the Ministry of Education. The TVET Manpower Information Center is located at OVEC and is accessible to the Federation of Industries, the Chamber of Commerce and each of the colleges. It is an attempt to match the demand and supply of TVET manpower in Thailand.

EMERGING CHALLENGES AND TRENDS IN TVET

Emerging Trends in TVET

According to the first Vocational Education Act in 2008 and as indicated in the National Policy aimed at strengthening the social and economic development of the country, the following are considered as the emerging trends in TVET:

Establishment of multi-campus TVET institutions. There are 404 colleges under the supervision of OVEC. There are from five to fifteen colleges in each province (there are seventy-six provinces in Thailand). Each college reports directly to OVEC. The size of the colleges varies between 300 – 6,000 students based on the location, program offered and other factors.

The Vocational Education Act of 2008 mandated that a consolidation of colleges into a multi-campus TVET institute must be implemented to address prevailing issues related to resource sharing, industry cooperation and overlapping programs among various colleges under OVEC. The main objective of a multi-campus TVET institute includes:

- strengthening of the quality and standard of TVET delivery;
- developing a resource sharing system among the colleges;
- widening the participation of business and industries in TVET;
- establishing decentralization mechanism at the multi-campus institutes.

Presently, there is a plan to consolidate fifteen to twenty colleges into one institute. It is expected that these multi-campus institutions will be established by next year. The multi-campus TVET institute will be independent in terms of academic supervision in order to respond to local demands. The administration process will be carried out by each institutional council comprising representatives from both industries and the concerned agencies.

Development of a Vocational Qualification System

A skills shortage and a skills gap exist in the labor market of Thailand over the past few years. There is a huge demand for skilled manpower while a number TVET graduates are looking for jobs. There is also a mismatch of TVET manpower in some fields.

Therefore, the government decided in 2008 to establish the Vocational Qualification Institute (VQI) which is intended to help the key industrial clusters to identify

the required vocational competency of their workers and to encourage TVET institutes to use those identified competencies as bases to develop and revise the curriculum. The competency standards of those key industrial clusters will also lead to TVET qualifications and others, as well. Industrial Skills Councils for at least five key industrial clusters like tourism and health, food, jewelry, petrochemicals, and logistics will be established by next year. The Council will help identify competencies that the workers needed to perform their jobs, determine their qualifications and promulgate assessment guidelines. Therefore, a competency-based curriculum will be organized and implemented with the involvement of the concerned industrial groups. The problems arising from a mismatch between supply and demand of TVET graduates could be answered and the standards for TVET graduates will become more acceptable in the labor market. The main concept is to develop a sense of ownership of TVET by industries in order to encourage them to be involved in every way that they can.

Staff Development through Industrial Experiences

In Thailand, university graduates are often recruited to teach TVET courses. It was found out that while teachers can easily teach theories, they have severe limitations when it comes to imparting practical training. Since TVET students are required to spend at least a semester in a given industry, teachers need to plan for their students to be trained on-the-job. The knowledge and experiences gained in the workplace which include work processes, familiarity with the equipment, technology and work habits are required from TVET teachers. Furthermore, dual TVET programs which have become the priority for providing the skills required by companies need the collaboration of teachers and trainers from industries. Therefore, OVEC is developing rules and regulations for providing industrial experience to teachers. Each teacher is expected to receive at least two weeks of on-the-job training in related occupations.

Articulation, Accreditation and Recognition of Prior Learning and Experiences

A “People-Centered-Development” approach was stressed at the Tenth National Economic and Social Development Plan (2008–2011). The plan also indicated that the development of a strong knowledge-based society would be fundamental towards building the competitiveness of Thailand in an increasingly global economy. Life-long learning should improve competency and vocational skills for adult learners. This means that TVET plays an important role in providing continuing education to respond to relevant labor market demands and competitive employment opportunities. A TVET system needs to be more flexible for the articulation, accreditation and recognition of prior learning and experiences. There is an increasing number of workers who are already in the labor market who are acquiring training in TVET programs. Open entry and exit to TVET programs are offered to those who can only afford to spend part-time in learning and be able to enroll and defer or stop training at any time, as necessary. An articulation, accumulation of credit, accreditation of experiences and a combination of worker achievements should be done. As long as

technology and the nature of work is changing, TVET must be ready to provide the required competencies for these changes.

Internal and External Quality Assurance System

According to the Education Act, an internal and external quality assurance system has already been established recently. As part of the internal quality control system, each college has to submit a self-assessment report annually to OVEC. Follow-up and evaluation of the performance of the college is reflected in their self-assessment report and other documents. Every five years, an external evaluation will be organized by the national organization which is responsible for the external quality assurance system. At present only the performance of the college and the achievement of the students are assessed. However, in the near future, the curriculum offered as well as the performance of teachers in each program will also be assessed. The new approach will concentrate on the curriculum and the performance of teachers in each program to help ensure the quality of each program and the relevance of curriculum to the needs of the labor market. This means that each college must work closely with the labor market to ensure the quality of the curriculum and the programs offered as well as the readiness of teachers.

Diverse Strategies in Counseling and Guidance

In order to provide information on TVET and to attract more students and adults, the following diverse strategies in counselling and guidance have been developed:

Open house strategies. Many colleges are successful in providing TVET information by using an “Open House” strategy where colleges stage public exhibitions of their students’ work or products.

Career path and job market. Information is available through the internet and other media with a career path and job opportunities of TVET graduates. Success stories of the graduates in each field or program are also presented to the public.

Social service activities. In providing information to the public of what TVET students are capable of and to understand the value of social service, TVET students have been involved in almost every social activity, for instance, conserving energy, safety travel campaign during the holidays, repair and construction of houses and schools in disaster areas. These social services activities have become new strategies for marketing TVET programs.

Mobile counselling unit. Colleges use mobile counselling and guidance to provide information on TVET. This has been very successful in attracting students in the rural areas. These strategies for counselling and guidance have increased the number of TVET students over the last three years.

Challenges in TVET

Workforce migration. Thailand, like any other country, experiences cases of worker migration from the rural to the urban areas. A migration of students is also evident. Therefore, TVET colleges in the rural areas have to offer relevant programs and job opportunities in order to keep people where they are and at the same time open up opportunities for equipping them with the necessary knowledge and skills that may be mistakenly thought to be only available in institutions located in the urban areas.

For those youngsters who migrate to the cities without the necessary skills for employment, TVET colleges must be responsible for helping them through appropriate TVET programs. Flexible programs must be offered in cooperation with the companies where they are employed or would like to be employed in.

This challenge makes TVET colleges more concerned in preparing themselves for the growing demand for part-time programs. Delivery system must be reorganized to better serve the needs of individuals. More importantly, the curriculum must be up-to-date and relevant to the labor market and rapid changes of technology. Administrators and teachers must keep pace with the information on workforce mobility in order to better serve them.

Requirement for multi-skilled graduates. The rapid changes in technology and a competitive world market have demanded new requirements from TVET graduates. Multi-skilled graduates who are not only equipped with specialized skills in their fields but also in ICT, English proficiency and other communication skills are now highly in-demand. However, most of TVET graduates still lack English communication skills. Integrating an English program in the teaching and learning of occupational subjects and day-to-day communications should be a main concern. Encouraging both teachers and students to pay more attention to English has been a big challenge for TVET colleges. It would take some time to solve this problem. Not only English skills need to be strengthened in TVET but also the degree of flexibility of the program that will allow learners to integrate knowledge and experiences into practice or work in real-life situations. Multi-disciplinary subjects must be offered through applied teaching models in order that learners can develop multi-skills in their field of study. In order to produce multi-skilled graduates, teachers must understand and be able to integrate the subjects required in the curriculum, making use of new approaches to teaching and learning. Producing multi-skilled graduates has become a big challenge for OVEC because the full involvement of all staff as well as the students and all stakeholders is needed. This limitation would take some time to overcome. Related rules and regulations are needed to be developed, as well. It is a great challenge for OVEC to do everything to strengthen teacher quality, especially in cooperation with industries and all other stakeholders for producing multi-skilled graduates.

International competency standards. In order to be competitive in the world labor market, the Thai labor force must possess the competencies that are equal to the international competency standards required by the global labor market. Therefore,

OVEC has worked with various occupational groups and industries in order to use their competency standards for designing and integrating them into the curriculum. In order to organize the teaching and learning process up to international competency standards, investments in equipment, workshops and staff development are required. Only selected courses or programs are included. International cooperation with regional TVET organizations and related international agencies are needed to facilitate an exchange of information. Cooperative research and studies in this area should also be organized to strengthen TVET in the region. It was hoped that regional TVET competency standards will be developed in order that a model for the development of TVET can be learned and implemented.

Quality of teachers. It has been considered that teachers are important factors in contributing to the improvement of the quality of TVET. The government has a policy to regulate the number of government officers or TVET teachers for more than ten years. A large number of teachers have temporary appointments which resulted in a high turn-over to more permanent jobs. Incentives need to be provided for teachers who plan to improve themselves both through studies and by gaining experience in industry. Rules and regulations are enhanced and revised in order that strategies for retaining and maintaining good quality teacher can be implemented. Year by year, the contracts of teachers have been changed to provide for longer periods of engagement with a well-designed assessment system and incentives. Staff exchanges with industries and related agencies have been organized to provide opportunities for learning experiences from each other.

TVET teachers are expected to change their perspectives from one of solely confining themselves in the colleges. They need to meet with industry representatives more often, facilitate students to learn better through different media and technology, serve as coaches and mentors to students. Moreover, they need to continue to improve themselves. All of these issues and expectations will take time and effort to be resolved.

Decentralization of administration. According to the Education Act 1997 and the Vocational Education Act 2008, a decentralization of TVET administration must be organized. This is a new experience for many of the colleges. Rules and regulations to carry out a decentralization system must be developed. A multi-campus institute will become a mechanism for the delegation of authority and power from the central government. Research studies and related analytical papers would be helpful to carefully design the system. There are a lot of things to be done. It may require a few years to establish a new administrative structure. It would be a great challenge for everyone, especially those in the colleges. Accountability and responsibility will increasingly be placed at the local level.

Presently, it is found that Australia has a very good model of multi-campus TVET institutes. Therefore, Thailand has decided to learn from the Australian experiences of more than ten years. There are other countries that have developed this model, i.e., Singapore and some other countries in Africa. It would be very

useful to learn from the success stories and lessons learned by other countries. However, each country has its own context and factors. There is a need to learn from others and adopt best practices, as applicable in Thailand. All changes require the participation of colleges and communities through a consultation process, workshops and seminars. A number of staff development programs will be organized. Hopefully, decentralization would bring about big positive changes to TVET.

CASE STUDY

Case Study of the Two Excellent TVET institutions

1. Nakornsriathamarat Industrial Technology and Ship Building College

This college is located in the southern seaboard of Thailand with a land area of 70 acres. This college used to be under the Japanese Loan Project in the past few years. Equipment and workshops were provided using 350 million Baht from the loan project. Presently, this college has become an outstanding college in offering programs in ship building, marine mechanical, marine engineering, marine electronics and marine electricity.

The special features of this college are cooperative projects with companies and related agencies in organizing and implementing TVET program.

In 2004, a program on marine mechanical at technical level has been offered in cooperation with Torisen Company Limited.

The following were activities of this cooperative project:

- specialists from the company are sent to the college to train both teachers and students;
- practical experiences on sea services in international commercial ships are provided;
- recruitment of students, curriculum design and organization of delivery system to ensure the quality of the students.

Students of this two-year program are trained to meet the international competency standard of a mechanical marine technician. This project would not be successful without collaboration with industry. Similar programs are organized with more than twenty companies. Administrators and every teacher are working hard to persuade and attract the marine companies.

The Department of Water Way Transportation and Merchant Marine as well as the Merchant Marine Training Centre has a contract with this college to produce merchant marine cadets as required by the marine industry. This is due to the fact there have been serious shortage of marine technicians for many years. Therefore, in 2005, the college was requested to work with the Department of Water Way Transportation and Merchant Marine to produce the right quality of merchant marine graduates.

The following are the activities of this joint program:

- develop a Merchant Marine Cadets curriculum;
- organize the program of higher technician level for merchant marine cadets;
- enable the graduates to apply for a certificate as marine engineers;

- provide sea service training with the training ship of the Merchant Marine Training Center;
- develop a learning network with the Merchant Marine Training Centre, the Association of Thai Ship Owners, and other related marine companies.

The graduates of this college are 100% employed. They also earn an income during their practical training in sea services program. The three year program has provided student with one year practical experiences in sea service. This college has contributed greatly to the marine industry in terms of producing qualified graduates.

2. Wangkaikangwon Industrial and Community College

Wangkaikangwon Industrial and Community College (WICC) is located about 220 kilometers west of Bangkok. WICC is one of the most popular colleges in the western part of Thailand. A number of TVET programs which include trade & industry, business, and tourism and hospitality and various short-courses are offered.

Distance learning via satellite which is the project initiated by the King is located at WICC. The distance learning system provides a TV conference line among distance school via the Wang Klaikangwon transmitting station. It is a free-of-charge service provided by the Telephone Organization of Thailand. The Distance Learning program televises live daily classes in the primary, secondary, TVET and university courses using distance learning technology which not only provides equal education opportunities to students, rich or poor, in every corner of the country but also solves the problem of teacher shortage in many fields. Furthermore, with cooperation from UNESCO, FAO, UNICEF, SEAMEO, foreign agencies and government, the Distance Learning Foundation launched a twenty four hour international program in Thai, English, French, German, Japanese, Chinese and other languages of the region, via UBC channel 17. The target audiences are those in neighboring countries, namely China (Kunming), Cambodia, Laos, Myanmar, and Vietnam.

WICC has played an important role in organizing TVET programs through the distance learning mode. The main objectives is to help improve TVET teaching and learning in secondary schools as well as in TVET institutes where there are a shortage of qualified teachers, facilities and equipment. TVET programs through the distance learning technology also provide an opportunity to those who are not able to attend regular classroom and workshop sessions. Self-learning and practices would be carried out through distance learning. It is considered that the distance learning system is an important tool for widening participation in TVET. Furthermore, programs offered through the distance learning systems would be a model for high quality teaching, demonstrating organizational good practices in the preparation of appropriate equipment, tools and the learning environment.

WICC in cooperation with the Distance Learning Foundation provides TVET distance learning programs via satellite through DLTV, Channel 13 every day from 8.00 a.m. to 8.30 p.m. These programs through satellite have provided opportunities

to those in the remote areas who cannot access education. Another advantage of the TVET program via satellite is that the learners can record the program and repeat it as many times as they want. There are trends to develop distance learning programs via e-learning, e-book, and e-library.

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ANNEX 1

Lists of Top 20 TVET Institutions / Institution Areas of Excellence

1. Wangkaikangwon Industrial and Community College/ IT and Distance Learning
2. Nakornsriathamrat Industrial and Ship Building / College Logistics and Marine Engineering and Ship Building
3. Chiangmai Vocational College /Catering and Hospitality
4. Phuket Vocational College / Catering and Hospitality
5. Nakornrachasima Vocational / College Catering and Hospitality
6. Ubonrachatani Vocational College / Catering and Hospitality
7. Nakornpathom Vocational College / Catering and Hospitality
8. Sattahip Technical College / Industrial Trade
9. Samutpragan Technical College / Industrial Trade
10. Nakornsawan Technical College / Industrial Trade
11. Chiangmai Technical College / Industrial Trade
12. Udontani Technical College / Industrial Trade
13. Hadyai Technical College / Industrial Trade
14. Srisaket Agricultural and Technical College / Agriculture and Animal Science
15. Burirum Agricultural and Technical College / Agriculture and Animal Science
16. Pramongtinasulanon Fishery College / Fishery
17. Automotive Industrial Technical College / Automotive and Industrial Trade
18. Mabtaput Technical College / Project-Based, Thinking Skills Training and Dual Vocational Training
19. Bankay Technical College / Dual Vocational Training
20. Ayudtaya Polytechnic College / Validation of Experience and Recognition of Prior Learning

Siripan Choomnoom

Advisor and former Deputy Secretary General

Office of the Vocational Education Commission

Ministry of Education