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Technical and Vocational Education and Training in an Ageing Society

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Tom Karmel and
Rupert Maclean
Editors

Publisher's note

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Foreword

The ageing of the population sits alongside globalisation, climate change and the knowledge revolution as areas which are transforming societies, including the ways in which we organise and go about our work. Technical and vocational education will be directly affected by the ageing of the population.

This significant and worldwide phenomenon motivated an international meeting of a number of technical and vocational education and training (TVET) research agencies, hosted by the National Centre for Vocational Education Research (NCVER) in Adelaide in October 2006. Experts from NCVER, the UNESCO International Centre for Technical and Vocational Education and Training (Bonn, Germany), the National Council of Educational Research and Training (Delhi, India), the Colombo Plan Staff College for Technician Education (Manila, Philippines), and the Korea Research Institute for Vocational Education and Training (KRIVET, Seoul, Korea) met to present papers on various aspects of TVET in an ageing society.

This publication is the result of this meeting and contains the presented papers and comments by discussants. The papers are also to be published in the *UNESCO–UNEVOC international handbook of TVET*.

The papers appearing in this publication will be of interest to people and organisations who are beginning to think about these issues. What emerges from the papers is a picture of a worldwide trend that touches many aspects of TVET and the labour market, but one which needs to take into account the very different economies and societies of the world.

Tom Karmel
Managing Director, NCVER

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Overview

Tom Karmel
Rupert Maclean

TVET in an ageing society

One of the most striking features of the modern world is its changing demographic profile. In almost any policy arena, the issue of demographic change (or ageing) sits alongside globalisation, climate change and the knowledge revolution as areas which are transforming societies, including the ways in which we organise and go about our work activities.

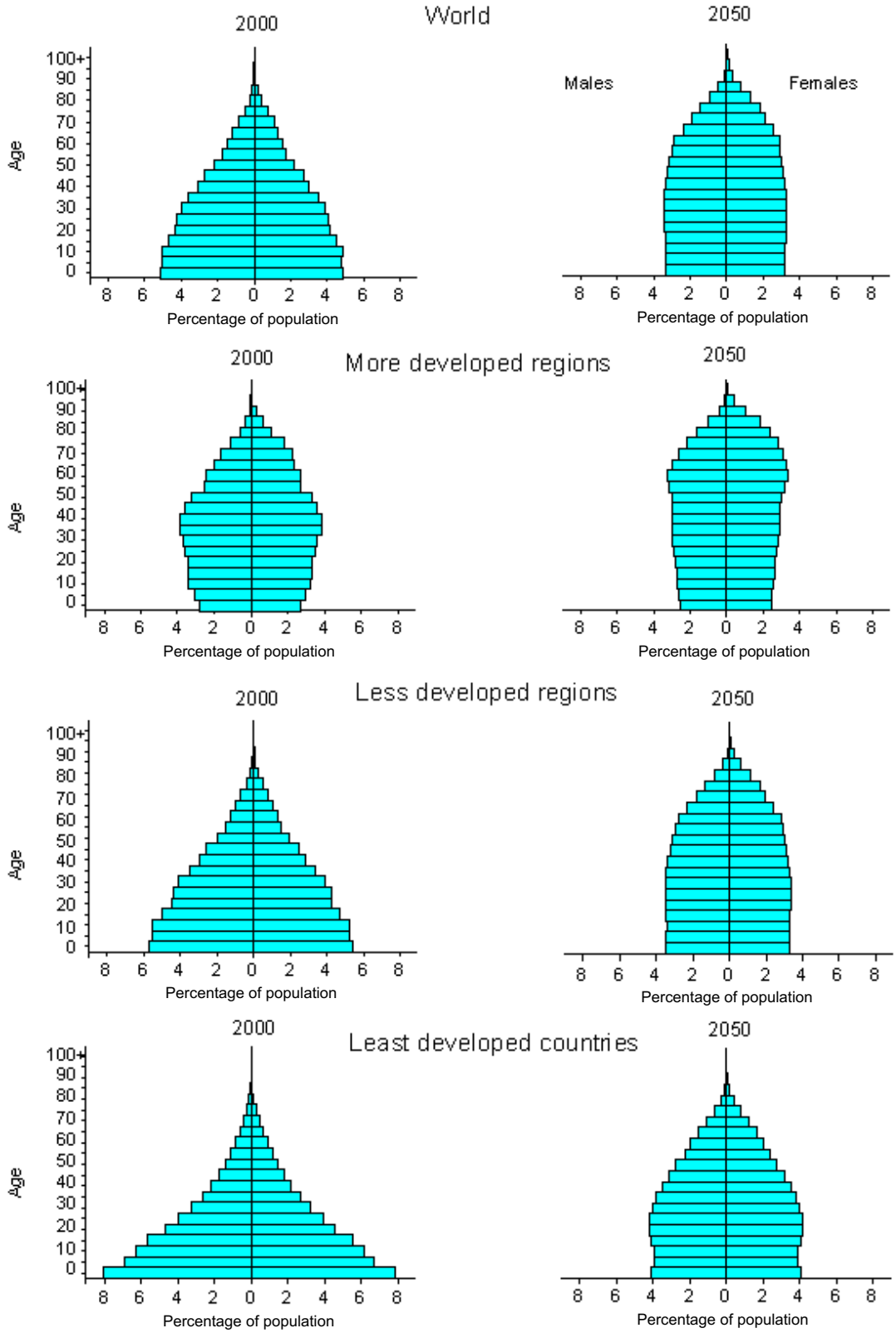
While ageing has particular salience for developed countries, in fact, the phenomenon is actually more dramatic in developing countries. By 2050, according to United Nations projections, 22.1% of the world's population will be 60 years or older, compared with 10% in 2000. The percentages of older persons will be rather less than this in developing countries, but the magnitude of the change demographic profile is arguably greater, as can be seen from figure 1. Age pyramids will be a thing of the past (they already are in developed countries). Indeed, our metaphors for age structures will have to change.

This significant and worldwide phenomenon motivated an international meeting of a number of technical and vocational education and training (TVET) research agencies, hosted by the National Centre for Vocational Education Research (NCVER) in Adelaide in October 2006. Experts from NCVER, the UNESCO International Centre for Technical and Vocational Education and Training (Bonn, Germany), the National Council of Educational Research and Training (Delhi, India), the Colombo Plan Staff College for Technician Education (Manila, Philippines), and the Korean Institute of Vocational Education and Training (Seoul, Korea) met to present papers on various aspects of TVET in an ageing society.

The first thing that stands out about the papers presented is their variety. While ageing as a theme resonates widely, its implications are widespread and will affect many different aspects of TVET. This is not a simple issue where a standard piece of research or analysis will suffice.

For convenience we have divided the papers into two sections. The first section deals with the issue at a broad policy level, while the second contains four papers, each considering a particular aspect of TVET in an ageing society.

Figure 1 Population pyramids: Age and sex distribution, 2000 and 2050



Source: United Nations Secretariat (1998)

Policy frameworks

The first paper, 'Policy framework on re-training for re-skilling of older workers through specialised TVET programs' by TJ Tesoro Gayondato and Myong Hee Kim of the Colombo Plan Staff College for Technician Education, provides a framework for transforming the role of older workers. The authors first argue that the mindset of older workers needs to be changed. They then provide a number of conceptual models for the TVET system for addressing the needs of older workers, and finally discuss the roles of the various players: institutions, industries, small- and medium-size enterprises and government agencies.

The discussion of the paper was led by Di Booker, of the TVET provider in South Australia, TAFE SA.[1] As Booker notes in her written comments, the paper generated lively discussion around social, economic and learning issues, and the differences between developed and developing countries. Booker warned against unwarranted assumptions, in particular, the presupposition that the majority of the aged is un- or undereducated. TVET needs to build on the previous education and experience of this cohort. In terms of next steps, the challenge is to put Gayondato and Kim's policy framework for TVET institutions into action. Finally, in terms of integrating the main players—government, industry, TVET and small and medium-size enterprises—there may be a role for multilateral agencies such as the World Bank.

The second paper, 'Reskilling for all? The changing role of TVET in ageing societies of developing countries' by Rupert Maclean and Margarita Pavlova, representing the UNESCO–UNEVOC International Centre, also takes a high-level perspective. While ageing of the population is more pronounced in developed countries and certainly has received more attention, Maclean and Pavlova point out that ageing poses a serious set of issues for developing countries:

> … the tempo of ageing in developing countries is more rapid than in developed countries, thus developing countries are likely to have less time than the developed countries to adapt to the consequences of population ageing.

The ageing of the population in developing countries will have very direct economic consequences. The employable population will shrink in relative terms and older people living at subsistence levels will be particularly vulnerable because of insufficient numbers of young people to support them. The paper looks at the experience of both developing and developed countries in dealing with older workers. It then presents a model of human activity (activity theory) which might be applied to learning for older people, and goes on to discuss some issues of particular pertinence for developing countries. Notable issues are the low status of vocational education and a disregard by the TVET system of the needs of the informal sector of the economy—which is so important for many developing countries. The authors suggest two major objectives to be pursued: training the workforce for self-employment; and raising the productivity of the informal sector. Finally, the paper touches on how policy-makers might go about developing strategies for retraining older people in developing countries.

Meredith Baker, Australian Government Department of Families, Community Services and Indigenous Affairs, opened the discussion on Maclean and Pavlova's paper. She made a number of observations, beginning with the point that the very rapid ageing in developing countries is associated with very positive developments (in particular, reductions in infant mortality). Further, she warned against focusing solely on retraining older workers as the solution to ageing and, to emphasise this point, described the Australian Government's policy response: a focus on the 'the three Ps'—expanding the *population*, increasing labour force *participation*, and increasing workforce *productivity*; the notion of 'well governed flexibility'; and the release of the Australian Government's (2002) *Intergenerational report*. She also raised the question of whether wider issues may be more

[1] TAFE = technical and further education

important than ageing; for example, getting markets working, addressing basic literacy and numeracy issues, and the effectiveness of TVET systems. Discussion raised a number of other points, including the idea of sustainability, the role of the informal sector and the effect of international migration.

The final two papers in the section take country-specific perspectives. JS Rajput, National Council of Educational Research and Training Campus, considers 'The changing context of TVET for the workforce in India' and Hong-Geun Chang, Korea Research Institute for Vocational Education and Training, looks at 'The reform of TVET system in Korea in an ageing society'.

A couple of pertinent facts bring home the point that ageing is an issue in India. First, the Indian aged population is currently the second largest in the world. Secondly, in the 100 years to 2016 it is expected that India's population will have increased five times, but the aged population by 13 times. While issues relating to ageing are important, Rajput argues that, in an Indian context, they are not necessarily the most pressing. Rather, the critical priorities are unemployment among youth and adults, the universalisation of elementary education, and the need to put more emphasis on TVET rather than on more academic education. It is also important to pay more attention to non-formal and open and distance education. This is not to say the issues concerned with ageing are not important. However, the overarching challenge is to have 'a well-balanced, spread-out and dynamic system of technical and vocational education', while making use of the productive talents of all members of society, including older people.

Bill Martin, Flinders University, opened the discussion of Professor Rajput's paper by sharing his immediate response: a realisation of the size and complexity of Indian society. He agreed that ageing was not the foremost issue for India and noted the many challenges that India faced in building an effective TVET system. The variety of TVET providers suggested to Martin that a key challenge for Indian policy was to bring out the best of these institutional forms by matching the needs with the form that serves it best. Finally, he highlighted, on a positive note, that India may have the luxury of time and the lessons of the developed countries in formulating a response to the ageing workforce.

In contrast to the Indian situation Chang notes that 'Many are concerned that Korea will surely be driven into catastrophe if it fails to respond wisely to the situation' (of its population ageing at an unprecedented speed). Indeed the Korean Government has established the Presidential Committee on Aging Society and Population Policy. With this as background, Chang's paper systematically analyses the vocational competency development system, noting that the participation among adults (from 25 to 64 years) is particularly low in the Organisation for Economic Co-operation and Development (OECD) context, and that many groups (including workers of small- and medium-sized firms, non-regular workers, people with low education) have little exposure to vocational programs. The paper argues that the middle and older populations need attention—in addition to the standard groups of youth, employed workers, and the unemployed. The paper concludes that the issues of globalisation, knowledge information, and the ageing of the population make it imperative to reform the Korean vocational competency development system, which has been traditionally centred on the industrial workforce. It has to be transformed into a system which is flexible and innovative and one which fosters knowledge workers and ensures equal opportunities for competency development for all.

The discussant, Josie Misko of the National Centre for Vocational Education Research, finds the notion of 'vocational competency development as a common right' of particular interest. In pursuing their conceptualisation of a new approach to vocational competency development in Korea, she suggests that the author might also investigate: how to ensure that workers are informed about rights to training and how to encourage them to undertake training; how the needs of workers with low literacy and numeracy can be addressed; the particular case of women making the transition from domestic work; and the relatively low retirement age of Korean workers.

Specific aspects of ageing and TVET

Four papers considered specific policy issues that emerge from a consideration of TVET and ageing.

Tom Karmel and Koon Ong, National Centre for Vocational Education Research, focused on the trades in Australia in their paper 'Will we run out of young men? Implications of the ageing of the population for the trades in Australia'. They noted that almost all new entrants into the trades are young men and speculated that the ageing of the population has the potential therefore to have a large impact on the trades workforce. In their paper, they present the results of a statistical exercise in which flows into and out of the trades are modelled. This supply focus is then contrasted with a view about the likely size of the demand for tradespersons. Their findings suggest that the ageing of the population does not in fact have serious implications for the supply of tradespersons. Rather, what is important is the attractiveness of employment in the trades versus other occupations. Moreover, the authors do not expect the age distribution of the trades workforce to change significantly, in contrast to what is happening in many other occupations.

Lynne Bennington, Head of the School of Management at RMIT University, opened the discussion. (The written version of her comments acknowledges the assistance of Alan Montague who took a very active part in the discussion.) She observes that Karmel and Ong's conclusion—that the ageing of the population does not have particularly serious implications for the supply of tradesmen—is similar to conclusions drawn in Canada (McMullin, Cooke & Downie 2004). What intrigues Bennington is what lies behind the models presented in the paper. Why are there so few female apprentices? Why do the majority commence before the age of 24 years: is it the low wages or age discrimination? Why have shortages in some trades been so persistent? Bennington argues that a systems approach is required to model the supply of and demand for tradespersons and, rather provocatively, suggests that the authors have not asked the right question. Would a better question have been *if there are currently shortages, why will these not continue?* However, this question is straying from the ageing theme of the seminar and so perhaps should be left for another day.

The second paper in the section, 'Ageing labour force and retraining of workers in Korea', was presented by Jihee Choi, Korean Institute of Vocational Education and Training. Choi introduces her paper with the observation that the process of ageing has been particularly rapid in Korea when contrasted with developed countries, such as France, Germany, the United Kingdom and the United States. For example, it took 14 years for the proportion of persons aged over 65 years to increase from 7% to 14% in Korea, compared with 115 years and 41 years, respectively, in France. The rapidity of this demographic transformation, together with the adverse labour market for older people (most workers are forced out of their workplace far earlier than full retirement at between 55 and 60 years) make the retraining of older persons a critical issue. In addressing this issue, Choi points to a number of factors: a high proportion of older workers are self-employed; older workers are a low priority for companies and their participation in training is at a very low rate; and older people comprise a very heterogeneous group. Finally, she argues that retraining of older workers needs to occur before people retire and that training should be directed towards helping them plan for their formal retirement and the world of work they face in the future. That is, the focus needs to be on career development.

Phil Loveder, National Centre for Vocational Education Research, opened discussion about this paper with the comment that the challenges faced by older workers in maintaining a career is a universal theme, not one peculiar to Korea. He echoed Choi's sentiment that changing demographics provide an opportunity to review employment policies and pointed to the OECD's active ageing approach as a good starting point: an emphasis on prevention and early intervention; attention to transition points over working lives; a longer-term perspective for social security systems; and a whole-of-life approach. Co-discussant, Libby Hicks-Maitland from the South Australian Department of Further Education, Employment, Science and Technology suggested that the challenge is to break down the barriers faced by older workers.

The theme of the importance of employment for 'retired' persons is carried further in 'Technical entrepreneurship development for the aged' by Man-Gon Park and Suresh K Dhameja, Colombo Plan Staff College for Technician Training. The authors observe that self-employment is the best alternative for many older people because employers are not particularly friendly towards them (hence the terms, 'senior entrepreneurs', 'third age entrepreneurs', 'silver entrepreneurs' and so on). Such economic activity is important for both the individual and overall society, not least for social as well as economic reasons. TVET has an obvious role in assisting these people in becoming successful entrepreneurs. The problems of becoming a successful entrepreneur are well known, with many small businesses disappearing in the initial years. While all young businesses face economic survival issues, the circumstances of older people differ from those of their younger counterparts. Older people are less well placed to be able to wait out lengthy periods before success. However, they often have better financial resources, tend to have the respect accorded to older members of society and have existing networks. The paper discusses the role of TVET institutes in assisting older people. This includes the provision of technical and technology information training (specifically for trades suitable for older people), the establishment of business incubators and science parks, and the promotion of technical entrepreneurship for older people. Two areas of particular relevance to this group are social entrepreneurship (giving back to the community) and use of the internet (cyberpreneurship). The authors conclude on an uplifting note:

> The 'package' of knowledge, wisdom and experience that so often comes with age is part of an inner awareness that cannot be traded, sold or stolen. It should, however, be activated, amplified and utilised in all the crossroads, fields and storefronts of society, and in the windows of our creative imaginations.

Alan Montague, RMIT University, was the discussant for this paper. Montague commended the paper, noting that ageing is often seen as a problem, leading to an ageist outlook, rather than the positive view of possibilities as taken in the paper. He also commented on the importance of taking cultural issues into account, the crucial role of small businesses in the economy, and the need to guard against the assumption that developing countries need to learn from developed countries rather than vice versa. Montague introduced two initiatives from the Australian experience that are worth consideration in other countries: the New Enterprise Incentive Scheme that assists unemployed people to start their own business and group training companies that employ apprentices and trainees and place them with host employers.

The final paper, 'The ageing TVET workforce in Australia: Issues and challenges' by Hugh Guthrie and Phil Loveder, both of the National Centre for Vocational Education Research, looks at a very practical issue for the VET sector. The workforce in the public technical and further education (TAFE) system has a particular problem because of the bulge of full-time TAFE practitioners and administrators who are approaching retirement age. The challenge for TAFE is to 'capture' the knowledge and industry goodwill acquired by this group and to train remaining staff to take over when this group leaves. Progressive disengagement from full-time work, succession planning, and helping practitioners currently in part-time jobs move into full-time employment are suggested as major ways for dealing with these challenges. Standing in the way of effective workforce development and replacement in most states and territories, however, is a lack of good data on retention and attrition. This then affects the extent to which TAFE systems and local providers are able to plan for the future.

The discussant for this paper was Rupert Maclean, UNESCO–UNEVOC International Centre for TVET, in Bonn, Germany. Maclean commended the authors for a thoughtful and useful contribution to the debate through their identification of important issues, concerns and prospects relating to the demographic challenges associated with the ageing TVET workforce in Australia. He noted that the matter of an ageing workforce has important implications for labour supply and demand. Despite its importance, this is an under-researched area which warrants greater attention. For example, more research is necessary to ascertain whether ageing and the workforce is more an issue for males than for females. Maclean notes that it would also be interesting to explore the

benefits of an ageing TVET workforce, given the implied high level of experience of older employees. Finally, he suggests that this study of Australia provides a useful foundation of information which could be augmented by further studies of other countries to identify points of similarity and difference.

Concluding comments

The range of papers presented in this volume highlights the importance of ageing as an issue right across the world. For us, the most important points to come out of these papers are: the variety of aspects that need attention; the desirability of seeing ageing as an important issue rather than as a problem; and the need to reflect on the issues. We note also that a balanced perspective is always needed. In many countries it is not the number one issue, and the fundamental challenges in developing countries need to be kept in mind: economic development, poverty and low levels of education. Even in relationship to TVET, the number one priority is to have a well-functioning TVET system, before specifically dealing with the needs of older workers.

However complicated the issue of TVET in an ageing society is, we trust that this volume will provoke thoughtful consideration by those with responsibility for TVET.

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Policy framework on retraining for reskilling of older workers through specialised TVET programs

TJ Tesoro Gayondato
Myong Hee Kim
Inter-Governmental International Organization
Colombo Plan Staff College for Technician Education
for Human Resources Development in Asia and
the Pacific Region
Philippines

> … the transition to a positive, active and developmentally oriented view of ageing may well result from action by elderly people themselves, through the sheer force of their growing numbers and influence. The collective conscious of being elderly, as a socially unifying concept, can in that way become a positive factor.
>
> (International Plan of Action on Ageing)

Introduction

One of the greatest social challenges of the twenty-first century is the ageing of human society. A number of commentators have highlighted that the increasing numbers of older people in the world today represent a phenomenon never previously experienced.

Current generations are among the first in history to be raised with the expectation of living to an old age. They are the forerunners of a longevity revolution that will be felt for centuries to come. Some 20% of all people who have ever lived past the age of 65 years are now alive. So profound is this demographic revolution that every aspect of social life and society is affected.

Retraining for the reskilling of the 'third age' will be an essential part of the new set of public policies and programs. According to recent studies, the potential areas for learning to meet the evolving economic and social needs of an ageing population are: individual health; strengthening community and family; productive employment; and self-enrichment. The prospect of retraining for the reskilling of older workers is a highly promising area and responds to the third and fourth areas.

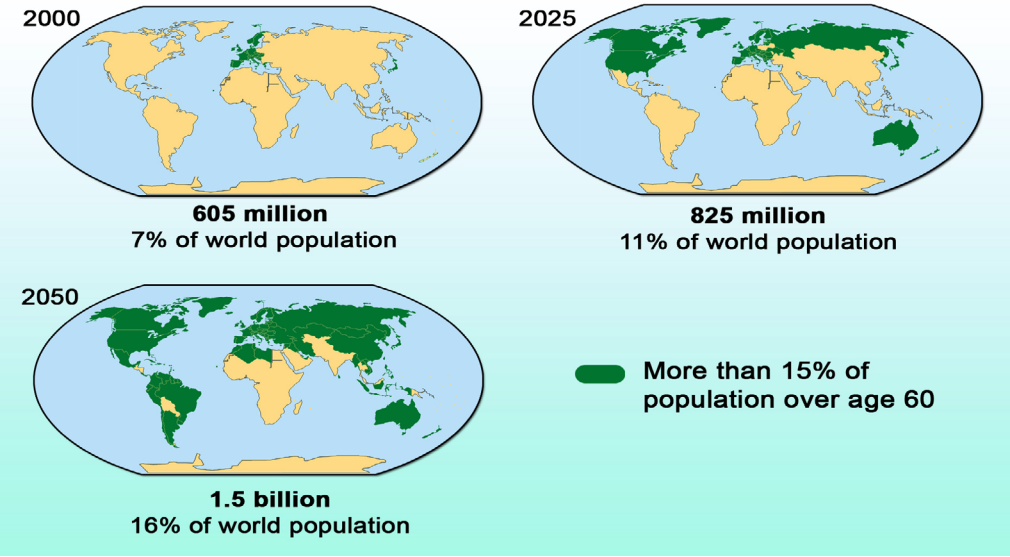
This paper discusses the changing environment, potential opportunities, challenges and issues relating to the policy directions and strategy-setting for specialised technical and vocational education and training (TVET) for an ageing society. The presentation discusses the areas for growth and the changes and shifts in the socioeconomic realities that play major roles in the shaping of policy measures and strategies relating to the development of programs for the retraining of older workers in TVET, particularly their use of delivery modes using new technologies and other alternatives. The major challenge is choosing strategies that suit the specific environment, which is primarily composed of industry, small and medium enterprises, TVET institutions and government agencies.

Global and regional issues and challenges for the ageing society and TVET systems

Global and regional issues of the ageing society

The global phenomenon of the increasing number of aged people points to the potential for the slowing-down of economic growth, capital markets, investment and trade in countries worldwide. By 2050, the European countries, Japan, Russia and China will face the most immediate impact of ageing, with more than 15% of the population aged over 60 years (see figure 1) In addition, the developing regions of Latin America, Asia and Africa will also have a significant percentage of aged population.

Figure 1 The world's ageing population

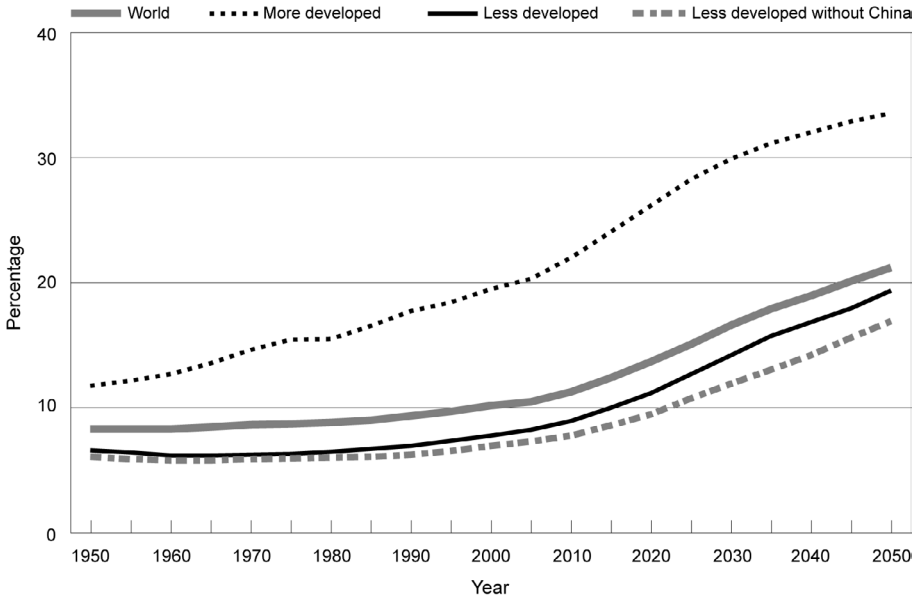


Furthermore, by 2050 the rate of increase in the share of population aged 60+ is projected to be highest among more developed countries (34%) and lowest among least developed countries (17%) (United Nations 2003) (figure 2).

A 1999 Expert Consultative Meeting highlighted the demographics of ageing to include the awareness of the increasing median age, which reflects reductions of fertility in many regions and almost all individual countries of the world. The Vienna Convention Report (1999) shows that, by 2020, the world as a whole is expected to have a median age of 30.9 years. The more developed regions will have an estimated median age of 42 years. In the less developed regions the figure will be 29.1. Thus the world is becoming distinctly older, with an increasing proportion of older people and a declining proportion of children in the total population. This report further stated that, as early as 2020, the population aged 60 years and over is expected to exceed 13% of the total world population.

Figure 3 indicates that the relative growth of the older population in developing countries, most of which are in Asia and the Pacific region, will increase between 2010 and 2020.

Figure 2 Rate of increase in the share of population aged 60 and above



Source: United Nations (2004)

Figure 3 Growth of older population in developed and developing countries

The Asia and Pacific countries in particular have risen from the ashes of the Second World War as new independent states; the past few decades have seen countries in the region undergo a tumultuous period of civil conflict, political challenges and, lately, an unprecedented period of growth.

In a region where the living environment is continually changing and where more and more individuals are expected to live beyond 60 years of age, older workers need specific life skills, such as change-management, self-reliance, trainability, independence, positive thinking, flexibility and foresight, all of which may be developed through training and development, called here *retraining* for *reskilling* of older workers.

To achieve this, these older people need enabling agents, such as the government, TVET institutions, industries and small-to-medium businesses to provide the environment for fostering lifelong education, skills-upgrading and retraining for reskilling, so that their minds and bodies are

fully occupied. Many need support in making the transition into old age a time for fulfilling individual aspirations and for adjusting careers and lifestyles, as well as family life.

Challenges faced by the ageing society

In the midst of unprecedented developments in technology worldwide, Asia is among the world's regions undergoing transition. The passing of traditional society is evident in the sense that the once-traditional villages are rapidly becoming modern urbanised centers. Increasing diversification and shifting social roles and functions are now very much in evidence.

In terms of information communications technology development, the Southeast Asian countries are progressing well. Singapore reflects the qualities of an information-endowed country. In many urban areas in Southeast Asia, the internet is becoming a part of the information sector, with numerous hardware manufacturing entities located in the region. Consequently, information services, such as call centers, are showing positive growth.

Hand in hand with the rapid and far-reaching technological developments is the considerable potential in the countries of the region for exploring the policy directions, strategies, approaches and challenges related to developing TVET programs for retraining, particularly in new technology areas, for the ageing society.

The rapidly expanding aged population has particular demands and needs. These include: retraining for employment, income security, housing and environment, health and hygiene, social welfare and family. Community-based training centers, close-to-the-family activity centers (such as churches, markets, malls, schools, sports centers, multi-purpose halls, and so on) must be tapped to generate wider participation of this group of older people in training. Skills retraining needs to be addressed by the appropriate sector—the TVET sector. Mobile technologies and e-community centers are innovations which may be investigated and developed for promoting new businesses and enterprises focusing on aged entrepreneurs.

Need for reskilling of older workers through retraining

During the 1960s, the policy of requiring all employees to retire at the age of 65 years and encouraging some employees to retire at an even earlier age began. Today, retirement is accepted, together with its ideological justifications. Sadly, rather than being a sign of status, retirement is merely the next stage in the life cycle, where individuals are no longer expected to be social contributors.

The old have come to serve as a balance between the supply and demand for labour in a highly differentiated, specialised, and interdependent market system. Their employment opportunities in such a system have become a function of the population–age structure, with openings varying by sector according to the rate of young people reaching working age, and as a function of corporate intervention in the marketplace.

The processes of 'modernisation' have regularised the structural unemployment of the older workers. This situation indicates the phenomenon of change.

Change occurs when something ends and something new or different begins. The period between these two points is called 'transition'. In this stage people have to learn to let go of the old and embrace the new. Usually it means moving from the familiar to the unknown.

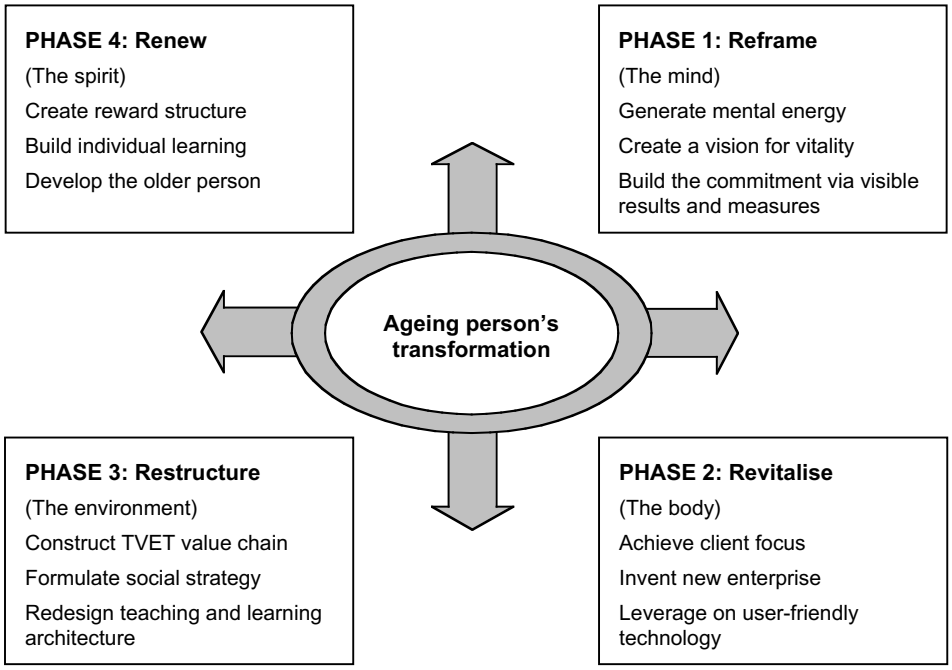
Changing the mindset of older workers

Earlier in this paper I noted the two relevant areas that have potential for teaching and learning interventions by the TVET program providers. These are their economic and social needs—for

productive employment and self-enrichment. Henry Ford's unforgettable quote is 'anyone who stops learning is old, whether at twenty or eighty. Anyone who keeps learning stays young. And the greatest thing on life is to keep your mind young.'

Figure 4 shows the ageing person's transformation process in four distinct phases to ensure a proper mindset for retraining for reskilling. These phases holistically cover the mind, body, environment and spiritual dimensions of an ageing person as s/he prepares her/himself for the challenges of taking up a new life skill or a segment of a lifelong career.

Figure 4 Model for enabling agents for transformation of the older person through retraining and reskilling



Change management through retraining in the TVET system

Enabling agents during the transition stage of older workers may be TVET institutions, non-government organisations, community leaders, and other formal or informal organisations. In the process of transformation of older people, the following are the strategies which may be effectively utilised in bringing about this change intervention program using the basic change-management strategies developed by Warren Bennis and Michael Mische (1995). Figure 5 is an adaptation of the model, here used for older workers retraining for reskilling.

In figure 5, the government serves as the key input factor for leading development of planned change for the ageing society's transformation. Resources from the other enablers like industry, education and training institutions, and even small and medium enterprises and businesses, provide the necessary resource inputs to the entire transformation process.

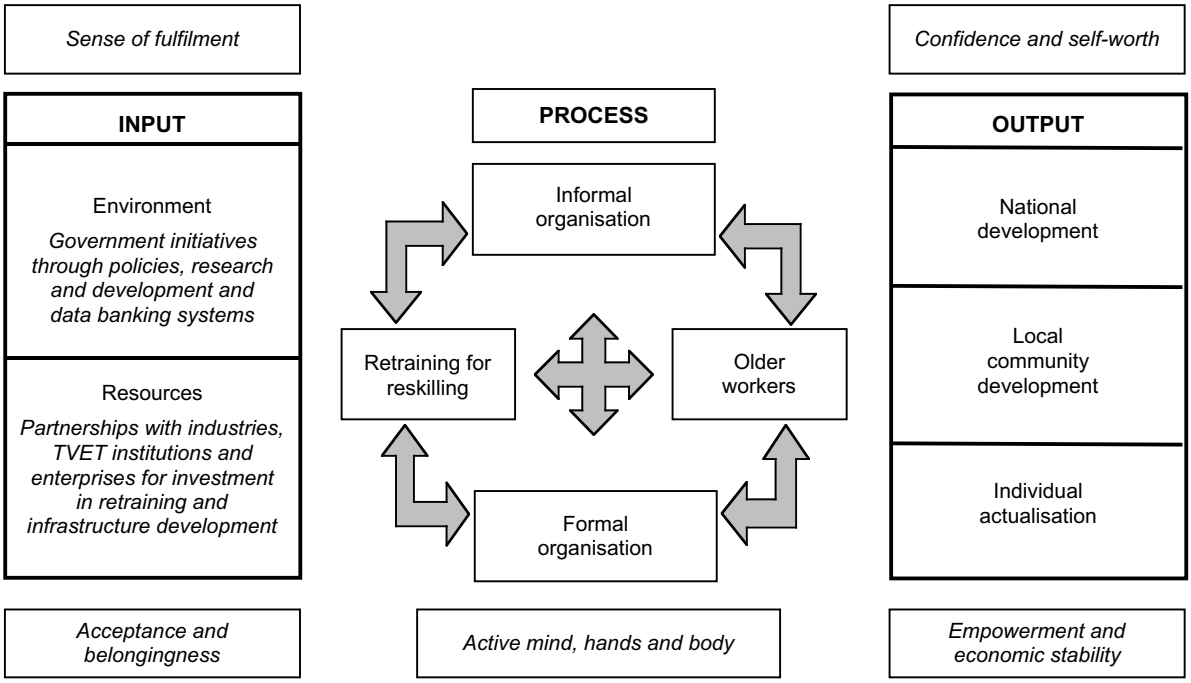
The core process involves the alignment of the needs of the older workers with the retraining interventions as demanded by those sectors of society which would benefit from the provision of new or adapted skills of the older workers. These should be matched by the support system provided by both the formal organisation and the informal organisations to which the older worker belongs.

Many benefits are realised from the retraining of older individuals: the national economy benefits; local communities benefit; and the individuals themselves benefit.

Empowerment of older workers through their achievement of economic stability is necessary to challenge the status quo in order to initiate and sustain planned change. Bennis and Mische (1995)

define empowerment as removing bureaucratic boundaries that box people in and keep them from making the most effective use of all their skills, experiences, energies and ambitions. Empowerment allows the older workers in the organisation to develop a sense of ownership over parts of the change plan that are uniquely their responsibility, while at the same time demanding that they accept a share of the broader responsibility and ownership of the work.

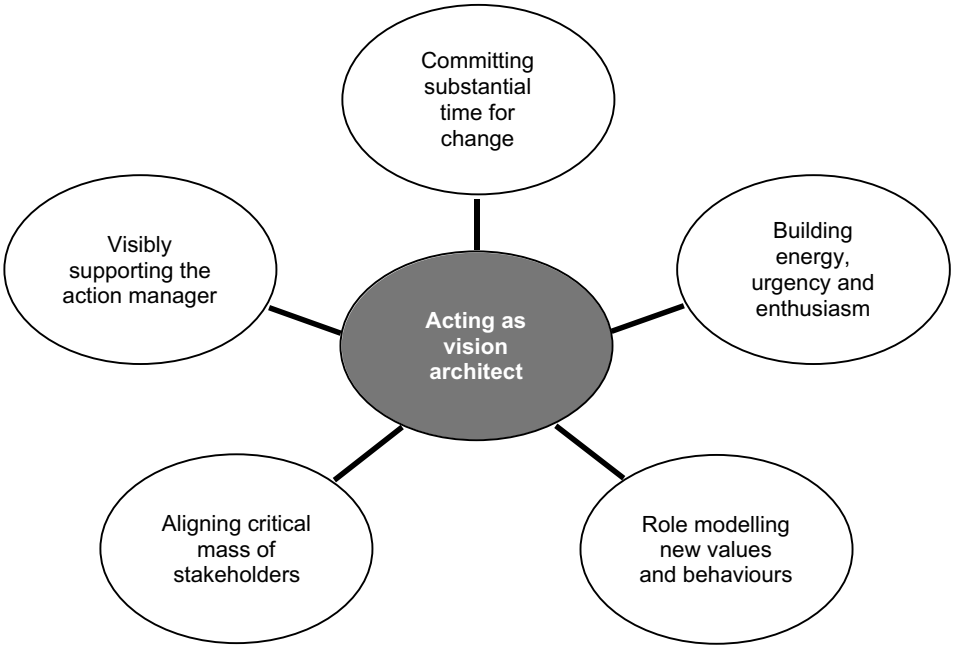
Figure 5 Congruence model for retraining of older workers



Role of change leaders in TVET institutions

Change leaders in TVET must have the following essential qualities to be able to create the enabling environment in order to plan, mobilise, implement and monitor retraining and reskilling programs for older people, as depicted in figure 6.

Figure 6 Essential qualities of a change leader



The manager with responsibility for special TVET programs should provide the older members of society with the opportunity to acquire upgraded skills and competencies for daily functions and even potential work roles. There is need for individuals and groups to acquire the ability to appreciate other cultures and traditions, while mindful and proud of their own.

There are four action 'P's' used by the action manager and the change leader during the transformation process of the elderly during their reskilling and retraining efforts: prepare, plan, present, and pronounce.

Table 1 The four action P's for older workers in the transformation process

4 P's	Actions
PREPARE	✧ Have a good reason for developing the special TVET program on retraining for reskilling of older workers. ✧ Assess your older workers for change. ✧ Prepare the people, especially those who will undergo reskilling and retraining. ✧ Consult those affected for possible suggestions on how best to implement the program for them.
PLAN	✧ Involve the older workers in the planning of the retraining for reskilling program and encourage their input. ✧ Make contingency plans, anticipate potential problems. ✧ Establish clear objectives, action points, timetable and key persons responsible for each activity. ✧ Create transition groups and structures, develop policies and procedures. ✧ Communicate the need for change and get feedback. ✧ Track your progress. ✧ Put a respected person in charge of the change process.
PRESENT	✧ Refocus attention to the vision. ✧ Get your message across clearly, using simple language. ✧ Be positive. ✧ Present the need for change in a positive way. ✧ Tell the truth and explain the need for everyone to make adjustments. ✧ Discuss support mechanisms that will help everyone affected during the transition process.
PRONOUCE	✧ Affirm your personal support to your team. ✧ Ask for commitment to partner with your organisation in the change process. Solicit comments and queries. ✧ Listen with empathy. ✧ Assure older workers that all suggestions/comments will be passed to higher management.

Proposed policy framework for retraining of older workers

Sectors involved in policy formulation

Amidst the changes in the learning landscape, technology is emerging as a primary mode for delivering education to the learners in the formal and non-formal sectors. A number of issues require policy consideration to generate awareness of and interest in the retraining and reskilling of older workers through the TVET system.

There are four main sectors involved in the formulation and development of the policy framework for the retraining for reskilling of older workers. They are the: the government sector, the industry sector, TVET institutions, and small and medium enterprises (SMEs).

The government provides policies and developmental strategies that must be regularly and continuously reviewed and assessed to be responsive to the needs of ageing society. They should provide: job models for the job seekers from the ageing workers' groups; lifelong career-

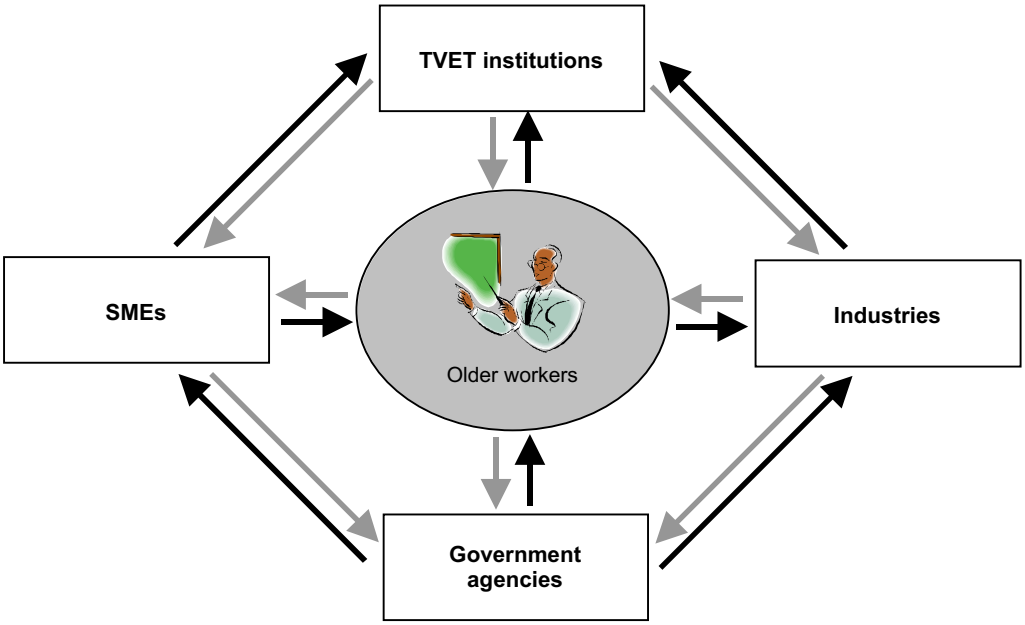
management services to the older workers to match the needs and demands of industries and business; and support for retraining for reskilling programs through TVET institutions.

Industry provides the necessary financial resources needed for investing in the recruitment of older workers and for providers' necessary support systems. Industry should provide older worker-friendly environments to ensure a safe, convenient and conducive workplace and working environment. Industry should lead the development of job models for older workers.

The role of TVET institutions is to design and develop the training modules necessary for the implementation of retraining for reskilling courses, based on job models provided by government, industry, and small and medium enterprises. The training needs of older workers also need to be taken into account. TVET institutions should provide lifelong learning interventions for continuous upgrading of the skills and knowledge of the older members of society.

Older workers are provided with the necessary training by the TVET sector to become entrepreneurs. The small and medium enterprises can assist TVET institutions by providing relevant hands-on training in various technologies to these budding entrepreneurs. The government can also play an active part by providing suitable policies, in terms of infrastructure, financial and other requirements, to these older workers to set up their own small and medium enterprises.

Figure 7 Sectors for policy formulation



Integrated policy frameworks

The perspectives for developing human resources management models for retraining older members of society is conceptualised in the following framework for policy development and implementation at the global, national and local levels.

Global change leadership

Various internationalised change leadership models may be used to effectively address the needs of the ageing society. The Colombo Plan Staff College for Technician Education (CPSC), as an intergovernmental organisation and a specialised agency of the Colombo Plan, presents a policy framework called the CPSC Model for Global Change Leadership. Its purpose is to demonstrate the effectiveness of its education programs in bringing about planned change in its member countries in the Asia Pacific region and the rest of the world.

CPSC Mandate: To provide leadership in the Colombo Plan Region by designing and conducting various programs and courses in different levels (including the older workers) primarily intended to equip TVET institutions' senior managers and administrators in the member countries with up-to-date knowledge and skills in relevant human resource development areas brought about by globalization and internationalization.

Focus Area (FY 2005–2006): Reskilling of the Ageing Society:

- Cross-cultural communication skills development
- Conferences in the Internationalization of Education
- Synergistic technology transfer of new ICT skills to the ageing sector
- Reskilling towards standardized international language for greater understanding among senior officials in Regional and Global TVET
- Re-tooling in the new technologies
- Reskilling programs in electronic, mobile and ubiquitous teaching and learning systems
- Development of thinking skills
- Re-integration for Institutional knowledge and memory
- Analytical and problem-solving competencies
- Familiarization with change or crisis and management models
- Building of the CPSC Alumni and Retirees Society

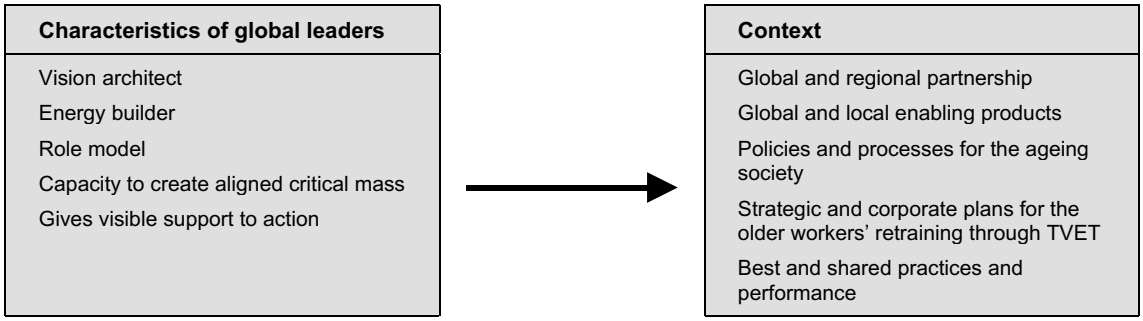
As the only regional institution established specifically to enhance the quality of TVET, the Colombo Plan Staff College provides leadership by designing and conducting various programs and courses at different levels. Starting in the fiscal year 2005–06 a series of focused studies are being undertaken to look at various aspects of the reskilling of the ageing society, including reskilling in standardised international languages for greater understanding; cross-cultural communication skills development; re-integration for institution knowledge and memory; internationalisation of education; synergistic technology transfer of new information communication technology skills.

These activities are primarily intended to equip TVET institutions' senior managers and administrators in the member countries with up-to-date knowledge and skills in relevant human resource development areas brought about by globalisation and internationalisation. They are likewise trained to develop thinking skills, analytical and problem-solving competencies, and appropriate change- or crisis-management models that are necessary to meet the demands of expanding technological developments in a global market economy.

The key focus areas are: global and regional partnerships with TVET institutions and relevant international and regional organisations and transnational industries and business enterprises; strategic and corporate planning exercises to address issues related to older workers' retraining within formal or informal organisations; promotion of the best practices, as well as shared management practices utilising accreditation and certification and quality systems management; policies and processes for the ageing society with strong support from the Colombo Plan Staff College's governance and related diplomatic and ministerial focal agencies; and studies on emerging global and local products utilised for upgrading of TVET training systems.

The left-hand box in figure 8 represents the characteristics of effective global leaders; these are the universal qualities of visioning, energising, role modelling, aligning of the critical mass and support of action management.

Figure 8 Proposed policy framework—global change leadership



National framework for retraining older workers through TVET systems

The collective personality of a country is visualised when leadership drives whom and what the nation should be. The mind maps shown in figures 9 and 10 serve as the charter that provides consistency of purpose for the nation. These may be utilised in the development of strategies for retraining older workers through the TVET system: mission or values; strategic thrust or value chain; goals or road map; and review of resource allocation, evaluation and recognition. Moreover, the interplay of the key sectors—government, TVET institutions, industries and small and medium enterprises—with the older workers group are elaborated below. These two figures collectively represent the national framework.

Figure 9 Key sector relationships for older worker retraining

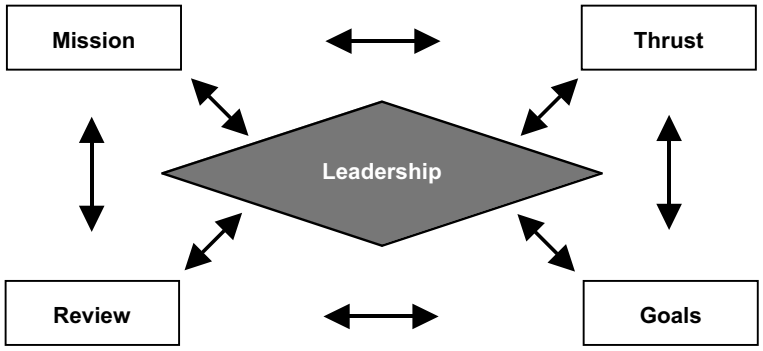
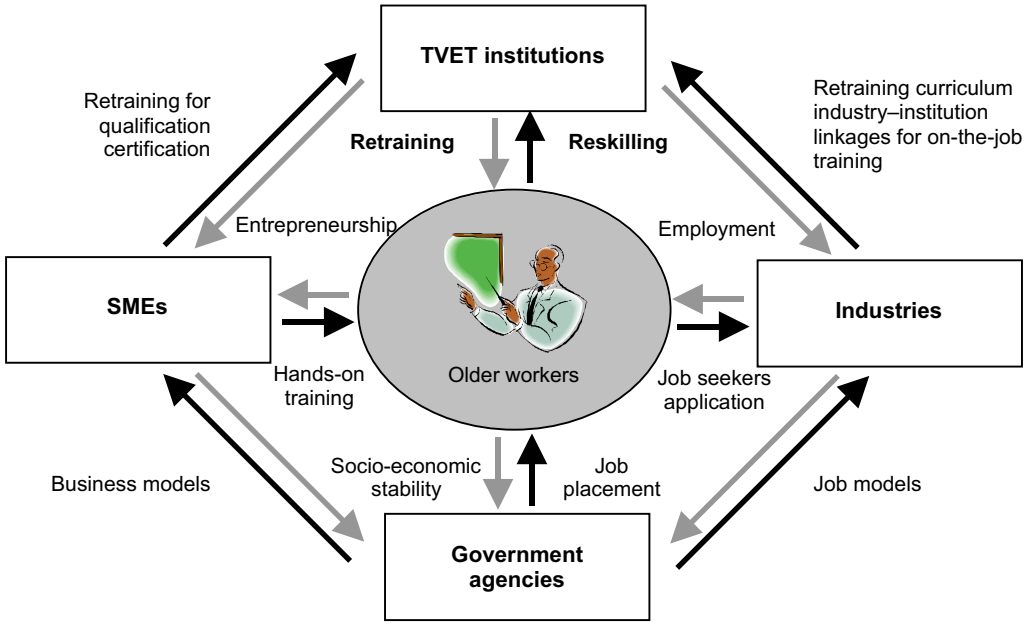


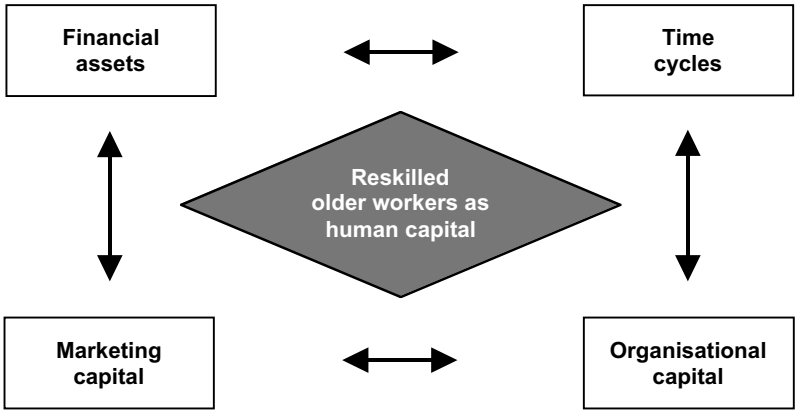
Figure 10 Relationships between key sectors in older worker retraining



Policy fundamentals for local TVET application

The framework for local TVET application is centered on the human capital or the abilities and talents of people. The other contributors are: financial assets, which are the core capability which enables the strategic resources to perform; time cycles, which refers to the management of time in both the external and internal environments; organisational capital, which is comprised of the five S's of *strategy*, *systems*, *structures*, *style* and *synergies*; and marketing capital, which is interchangeably called goodwill. Human capital and organisational capital are most critical in our globalising environment.

Figure 11 Proposed policy framework: Local TVET application



These three frameworks—the Global Change Leadership Model, the National Retraining for Older Workers Framework, and the Local TVET Application model—are combined to create an integrated methodology, which is activated through shared management practices.

These multi-level policy frameworks, taken as an integrated whole, have the following features:

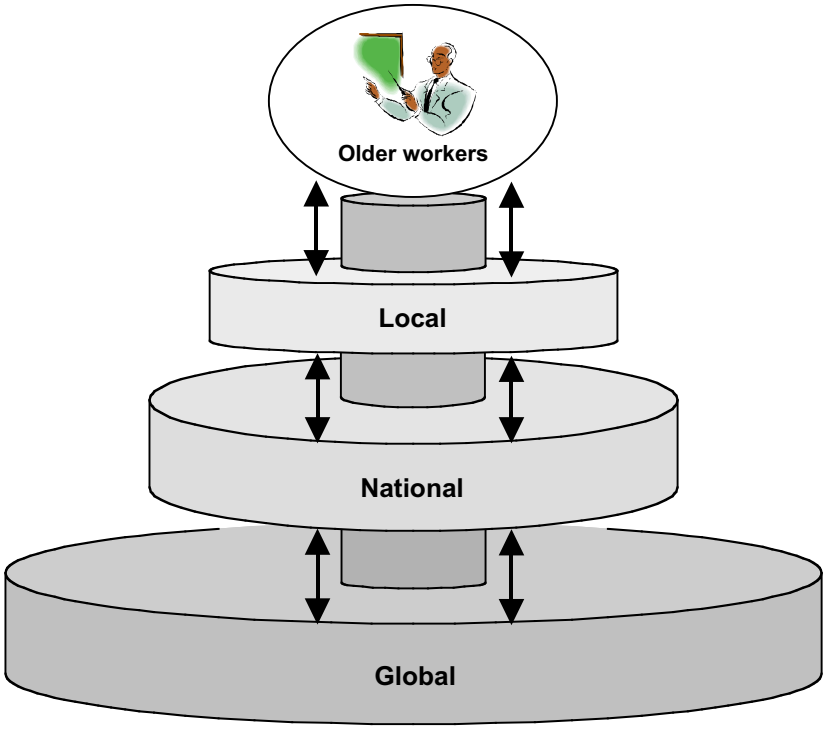
- It is a logical construct that integrates business principles and practices into a single, interactive methodology of management. This framework is a prerequisite for an effective global–national–local organisation.

- The globalising environment provides the tempo of change through: *partnerships*; (strategic and corporate) *plans*; (global and local) *products*; (policies and) *processes*; and (best and shared practices and) *performances*. These business enablers may be termed as the 5 P's in the global environment.
- The national sub-environment emphasises the connectivity of people, and the relational, rational and creative elements of management are highlighted through the driving force and vision of national leadership.

The local processes are involved in operational management with a focus on value-added enterprises.

The comprehensive and integrative processes provide a coherent and consistent flow of ideas, information and communication at each level of environment. The policy framework is structured to serve as a mind map in the implementation of appropriate programs to ensure the development of the world's and the nation's important resource—the older members of our society. Figure 12 demonstrates the relationships betweens the various levels and the older worker.

Figure 12 Global–national–local relationships and the older worker



Conclusions

The world's older population is increasing at a significant rate, resulting in corresponding socioeconomic implications for individuals, local and national governments and international development agencies. The rapidly expanding old-age population has particular demands and requirements which need to be addressed through retraining for reskilling, leading to productive employment and self-enrichment.

However, there is no focused national or regional development program among the countries cited above that can be considered as specific to the 'older workers' or the ageing society. Some early work in this area through the development of policies has been undertaken in a number of developed and developing countries, although these were inadequate in terms of the specific focus and importance necessarily required by the ageing society.

To manage the rapid change in both the macro and micro environments of the ageing society, there is a need for enabling agents, such as the government and TVET institutions, to provide the environment for fostering lifelong education, skills-upgrading, retraining, reskilling and re-tooling. Educators and TVET administrators in the region have to develop strategies which respond to the learning needs of the ageing population.

The change leaders for the realisation of specialised TVET programs for older workers should provide the opportunity for the ageing society to acquire upgraded skills and competencies for not only daily living, but also for employment opportunities and for the creation of small and medium enterprises, leading to greater economic stability and empowerment.

The four main sectors involved in the formulation and development of the policy framework are the decisive focal areas for the successful implementation of retraining programs, since they can become the enabling-change institutions for retraining for reskilling of older workers at the national level.

In the future, lifelong learning for the 'third age' will be an essential part of public policies and programs. In the Asia Pacific region where the living environment is continually changing, older workers need new sets of life skills, starting with a reframed mind, revitalised body, restructured environment and renewed spirit. Older people who have been retrained though the facilitation of international and regional organisations with responsive TVET institutions will have gained a holistic and change-adaptive lifestyle. It will be essential for those organisations implementing these models to embrace the experience and contribution that older people bring and to recognise the role they have in developing the new global change leaders of the future.

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Discussant's comments

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Synopsis of paper

The paper set out to provide an overview of the changing demographics and the potential, challenges and issues for policy direction and strategy-setting for technical and vocational education and training (TVET) in an ageing society.

The authors provided comprehensive figures of the world's ageing population and comparisons between developed and developing countries, identifying that the main demands of the older population would be employment, income security, housing, environment, health and hygiene and social welfare and family.

A model of learning was presented which indicates that the older generation's transformation process from the familiar to the unknown will include moving through phases that include reframing the mind, revitalising the body, restructuring their environment and renewing the spirit.

Enabling agents were identified to include government agencies, TVET institutions, industry and small and medium businesses, with a key role being played by TVET institutions in the change or empowerment process of older workers through retraining. A model for the development of an integrated policy framework was developed which elegantly outlined the interrelationship of these organisations.

Four actions were identified as essential for TVET institutions to initiate change that results in the provision of retraining courses and services for older people. These are preparation, planning, being present for staff, and pronouncing or affirming support and commitment.

Comments

The paper generated considerable discussion around a range of government policy, social, economic and learning issues. Key differences between developed and developing countries (for example, support processes, pensions, dependence on family, taxation systems etc.) were discussed. A significant issue for some countries is whether in fact they have (or will have in the future) the resources that can be diverted to the continued education of older people at the expense of investment in youth.

Of relevance to the direction of TVET institutional policy would be further research into whether education levels are increasing or decreasing as the population ages. We need to be careful that in considering this issue in a global context we are not generalising about educational levels of the

older community. We should not assume that the majority of the aged population is un- or under-educated. The challenges to TVET will also include the need to build on this cohort's education and work/life experiences.

The underlying theme of the paper is that a holistic approach to training is required to enable older workers to either remain in work or to take new directions, and this led me to consider the concept of 'work ability' developed by the Finnish Institute of Occupational Health (FIOH) under the guidance of Professor Juhani Ilmarinen. The model considers the impacts of health, competence and individual values and motivation on the ability to remain in work and also 'looks at the work environment; the demands of work, community and organization at work and management and leadership. As an integrated approach, work ability also extends outside the work environment to factors that are known to influence work ability such as family, friends and relatives and the broader social and policy environment.' <http://www.businessworkageing.org/newsletters/April%20Pg5.htm>.

While the paper provides a policy framework for TVET institutions, the next step would be to consider how this framework can be put into action and to identify the issues relevant to the development of training curriculum that targets the needs of older people. Questions that may need to be considered include, will they want to:

- be fast-tracked through courses
- undertake training on a casual as needs basis or as formal programs.

Additional questions include:

- what additional processes for recognition of prior learning or current competencies will need to be considered
- what might be the teaching and learning methodology barriers etc.
- what are the lifelong learning imperatives of this age cohort.

The paper identifies that 'TVET institutions shall provide lifelong learning interventions for continuous upgrading of skills and knowledge of the elderly members of society'—perhaps retraining should not just be an 'add on' but a component of the lifelong process?

The paper outlines a process for the integration of government, industry, TVET and small and medium enterprises as influencers in the training and retraining process, but we need to consider whether there are other organisations and agencies that need to be included. What is the role of funding and multilateral agencies such as the World Bank, Asian Development Bank, multinational industry bodies etc.?

Not included in the written paper but outlined during the presentation was the case study of how the model of an integrated policy framework is being practised at the Colombo Plan Staff College. It would be interesting to look at this model in a wider context and consider how this fits in the TVET circle of control.

Conclusion

The paper and presentation provide an excellent starting point for the development of debate on an appropriate policy framework with the potential to inform the practice of providing retraining and lifelong learning opportunities for the older population.

Re-skilling for all? The changing role of TVET in ageing societies of developing countries

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Introduction

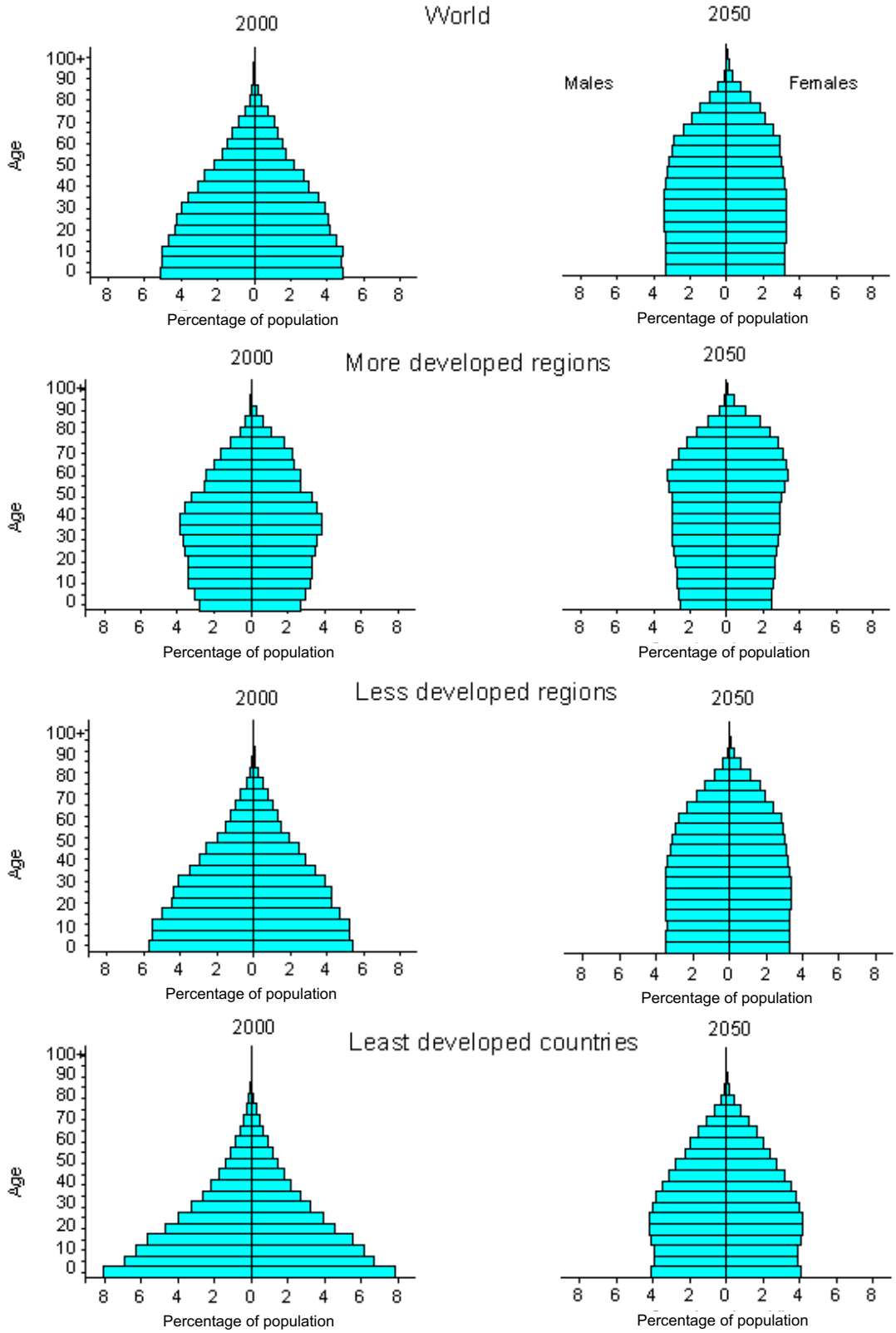
The changing age profile of the world's population is now a well-established fact. Research undertaken by the United Nations Department of Economic and Social Affairs demonstrates that, by 2050, 22.1% of the world's population will be 60 years or older (in 2000 it was only 10%). However, a closer look at those statistics reveals that the situation in developed and developing countries is quite different. For example in Europe in 2000, 19% of the population was aged 60 or over, while in Asia this was only 8% (United Nations Secretariat 1998). Even within the Organisation for Economic Co-operation and Development (OECD) countries (for example, Turkey, Mexico and the United Kingdom) there are differences in demographics.

However, modelling done by the United Nations demonstrates that the rate of ageing in developing countries is more rapid than in developed countries, thus developing countries are likely to have less time than developed countries to adapt to the consequences of population ageing. For developing countries age-related reforms are often not at the top of the political agenda, since other pressing issues, such as poverty alleviation, skill development for youth, and unemployment capture most attention. There is thus an urgent need to explore the issue of the ageing population in developing countries and identify some approaches and strategies for dealing with this important emerging issue.

Population in statistics

Over the past few years, the world's population has continued on its remarkable transition path from a state of high birth and death rates to one characterised by low birth and death rates. At the heart of that transition has been the growth in the number and proportion of older people. Such a rapid, large and ubiquitous growth is something new for our civilisation. Modelling of the population profile demonstrates that by 2050 the tendency for population ageing is evident across the globe. Figure 1 shows the rate of ageing for the different regions in the world.

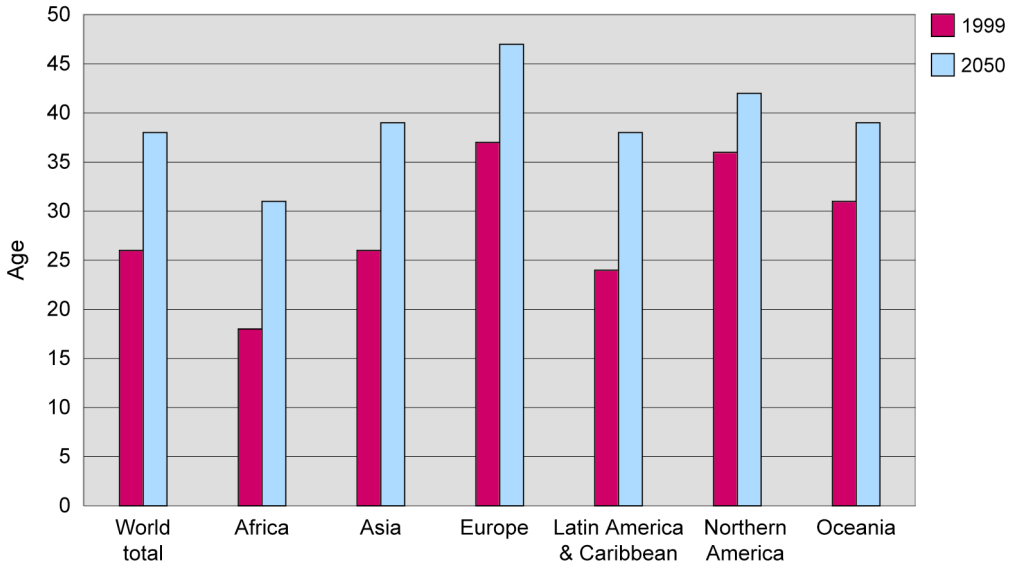
Figure 1 Population pyramids: Age and sex distribution, 2000 and 2050



Source: United Nations Secretariat (1998)

Figure 2 shows the median age by region. It illustrates that the difference between the current and future median age is much larger for Africa, Latin America and Asia than it is for Europe and Northern America. The high speed of change for the developing world is also evident.

Figure 2 Median age by region, 1999–2050



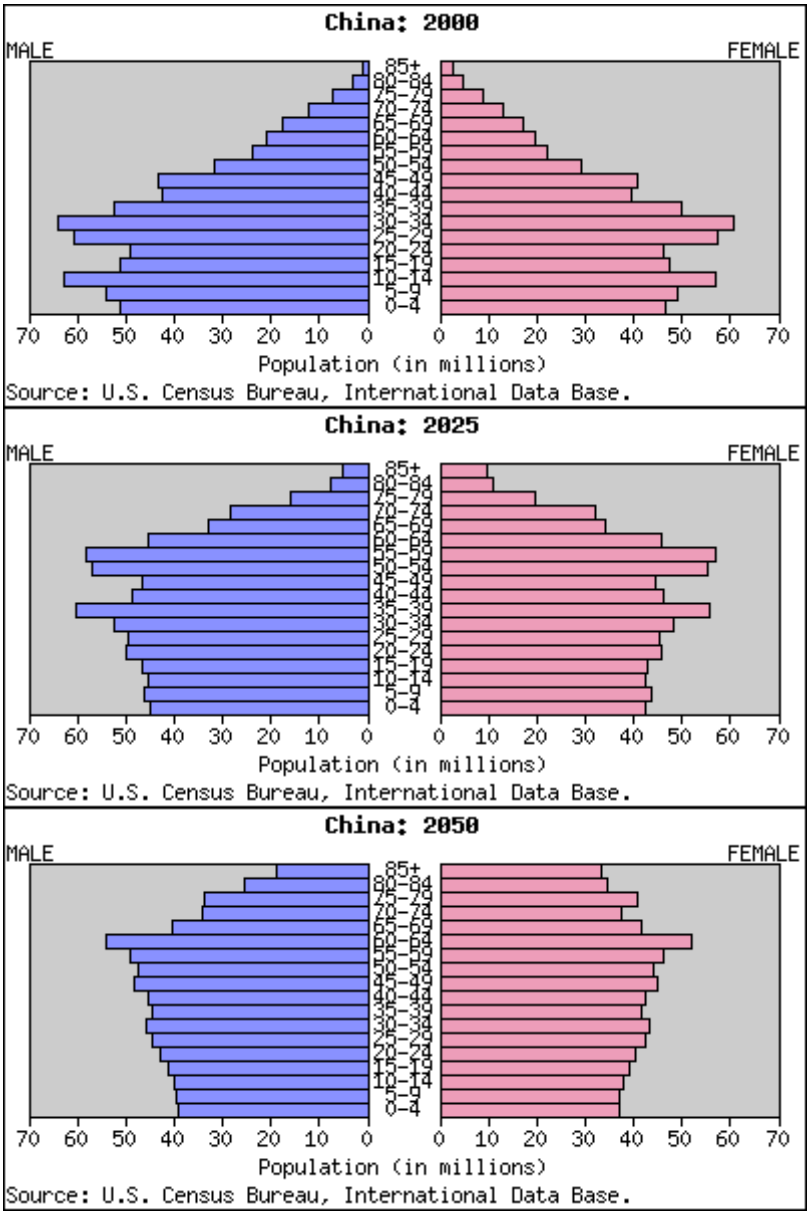
Source: United Nations Secretariat (1998)

China and India are the two most populous nations on earth and presently comprise a little more than one-third of the world's population (Fathers for Life 2006).

Demographers, as well as the general public, believe that unchecked population growth is a serious problem for those countries. However, the problems faced by China and India in the next few decades will be quite different from what most expect. Both countries will be facing a population problem of unprecedented proportions. As a consequence, they will lose the steady renewal of their working and productive population sector. The productive, employable population sectors of these countries will shrink to less than two-thirds of their population, meaning that, even if all people of working age were to be gainfully employed, they would have to support at least a third of their population (and growing) that is not yet or no longer capable of working.

Another issue is that there won't be the necessary wealth to maintain the standard of living that people have become accustomed to. What that means is that for many presently living at or barely above subsistence levels, the situation will get worse. Not the least of the reasons will be that elderly people will have no younger people to help support them, while the state will be unable to do so because of insufficient financial resources. Projections for population distributions for China and India for the years 2000, 2025 and 2050 are presented in figures 3 and 4.

Figure 3 Projection for the population distributions for China



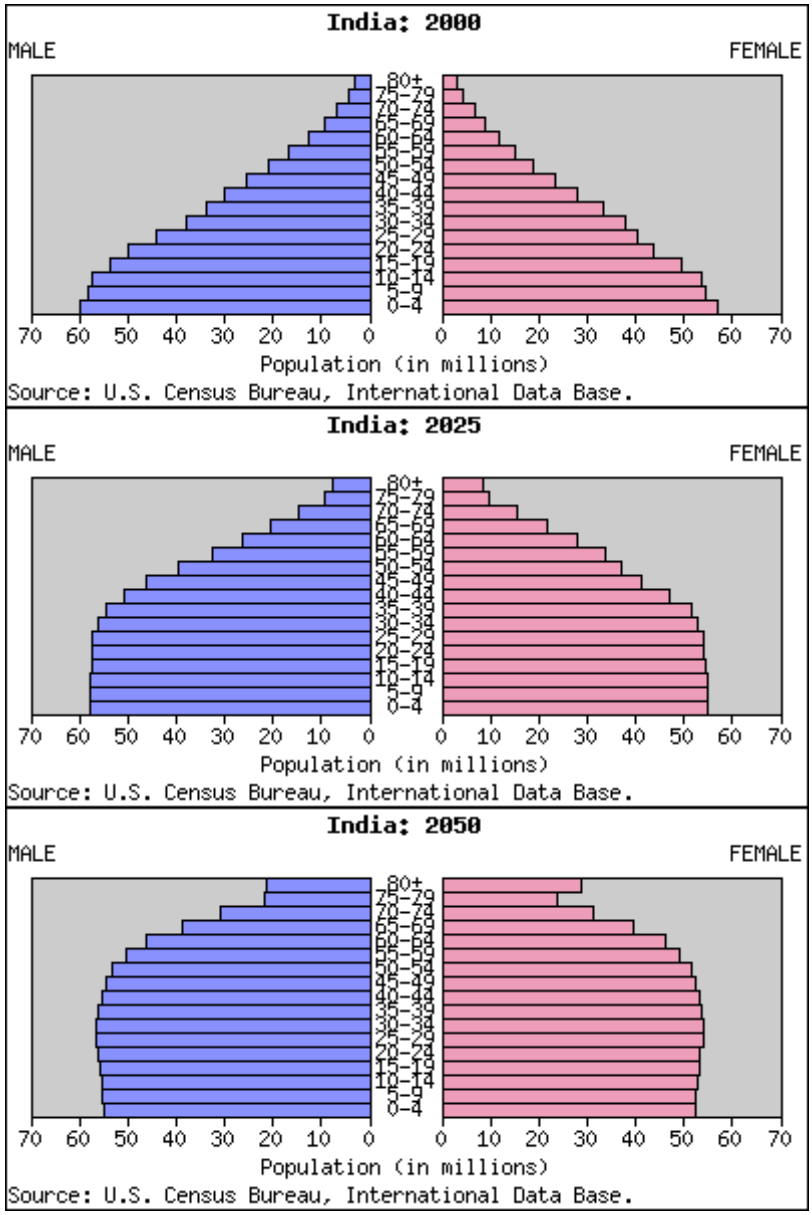
Thus, supply of labour, reduction of economic growth and social security may be the major problems for these countries in the future.

Thus, four major features of the current demographic revolution identified by the United Nations (2003) are relevant to the developing countries.

- Currently, striking differences exist between regions. One out of five Europeans, but one out of 20 Africans, is 60 years or older. Thus, at this particular moment ageing is not an issue for developing countries.
- The majority of older people (55%) are women. Among the oldest group, 65% are women.
- As the rate of ageing in developing countries is more rapid than in developed countries, developing countries will have less time than developed countries to adapt to the consequences of population ageing.

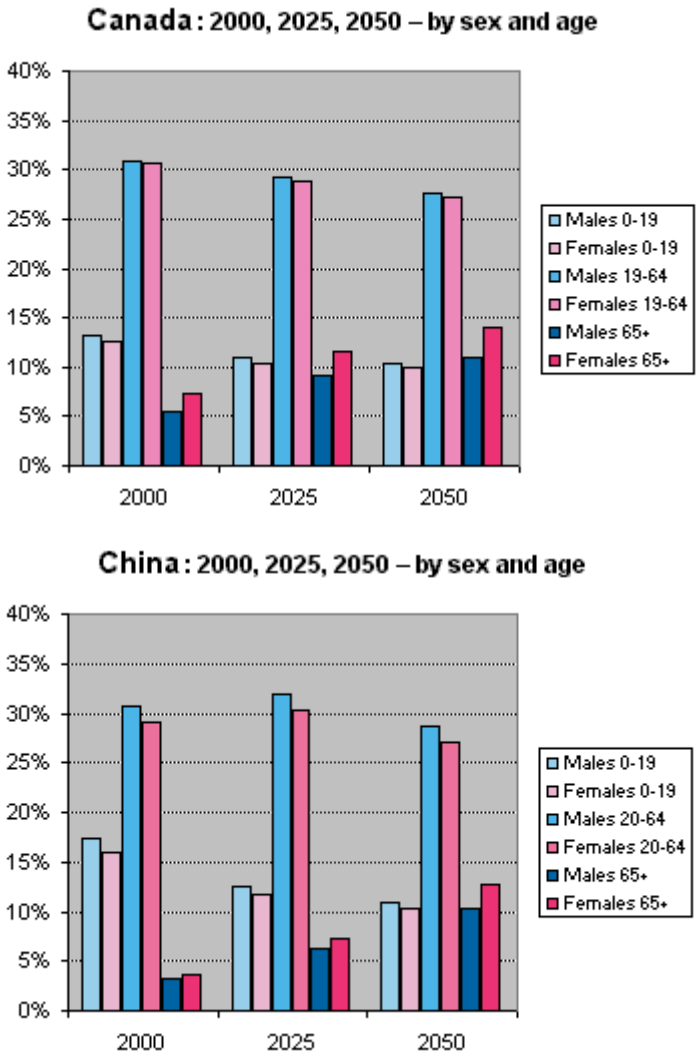
- The impact of population ageing is increasingly evident in the old-age dependency ratio; that is, the number of working-age persons (age 15–64 years) per older person (65 years or older). This is used as an indicator of the 'dependency burden' on potential workers. Between 2000 and 2050, the old-age dependency ratio will double in the more developed regions and will triple in less developed regions. The potential socioeconomic impact on society that may result from an increasing old-age dependency ratio is an area of growing research and public debate (United Nations 2003).

Figure 4 Projection for the population distributions for India



The last illustration that highlights the speed of changes for developing countries is presented in figure 5. Currently the percentage of the population over 65 years of age in China is much less than in Canada; however, by 2050 the percentage of the over-65 age group will be very similar across the two countries.

Figure 5 Comparison between Canada and China by sex and age for 2000, 2025 and 2050



Can we deal with the issue in developing countries by drawing on experience from developed countries?

To answer this question, a brief summary of the current trends in initial technical and vocational education and training (TVET) provision in developed and developing countries is presented to identify differences and similarities between them. Then the major concerns in relation to the process of the ageing population in developed countries and its relevance to developing countries are explored.

The current trends in initial TVET in developed countries

The recent report produced by UNESCO[1]–UNEVOC on worldwide participation in formal TVET programs identified a number of quite common trends in initial TVET that are apparent in the more developed countries and at least emergent in some of the less developed countries (UNEVOC–UIS 2006). The report relates them mainly to accelerated globalisation[2] in terms of scientific and technological advance, rapidly changing markets and intensified global economic

[1] UNESCO = United Nations Educational, Scientific and Cultural Organisation

[2] The SKOPE project based at Oxford and Warwick universities provides evidence of how skills demands have increased across a range of European countries.

competition. Global demand for skills is mostly evident in the most economically globalised regions, including North America, Europe and East Asia. In other less developed regions of the world, where many countries are still only marginally engaged in the global economy, changes in skills demands have been less dramatic.

Among the trends identified in more developed countries are:

- the massification of upper secondary TVET
- the creation of broad vocational tracks
- the reform of apprenticeships.

The baseline level of TVET is changing. In many OECD countries between a third and half of young people go through some form of tertiary education. For the remainder, it has become typical to continue in education and training at least until the end of the upper secondary stage. Level 3 qualifications are increasingly seen as the minimum necessary to ensure reasonably good prospects in the labour market in most developed OECD countries. Level 2 TVET qualifications are gradually being phased out in many regions. The policy in many states is now for comprehensive general education to last at least until the end of compulsory schooling to ensure the acquisition of the new basic skills to an adequate level.

Some vocational programs at level 3 have been adapted so that they contain a larger element of general education and more generic forms of vocational preparation. These programs, such as the *baccalauréat professionnel* programs in France, prepare participants for a cluster of occupations in a given sector rather than for a single occupation.

Apprenticeship systems have experienced a decline in a number of developed countries. The recent reforms of the apprenticeship systems in a number of countries[3] have sought to make the apprenticeship system more flexible, to increase its reach across sectors, and to raise its status in the eyes of young people. Greater flexibility has been sought by extending the upper age limits for apprentices, by modularising programs, and by broadening training by reducing specialisms and enhancing general education. Extending the range of apprenticeships has involved seeking to establish programs in new sectors and various measures to encourage more of the very large and the very small employers to become involved (UNEVOC–UIS 2006, p.37).

The current trends in initial TVET in developing countries

The situation in the less developed countries is quite different. As stated in the UNEVOC–UIS report (2006), many less developed countries face multiple problems in delivering effective TVET and in ensuring high-level participation, over and above those experienced in the most developed countries. These include, in many cases, problems of supply in terms of:

- lack of public finance for physical infrastructure and equipment
- lack of adequately trained instructors
- problems of communication and coordination, particularly in remoter areas
- inadequate ICT infrastructures
- inadequate system capacity in terms of central planning agencies, research and development capabilities, standard setting bodies etc.
- lack of finance and/or capability to undertake routine and preventive maintenance of the physical plant and equipment.

[3] Denmark and Greece in 1989; Luxembourg in 1990; Portugal in 1991–92; France in 1992–93; Ireland and the Netherlands in 1993; Spain and the United Kingdom in 1994 (OECD 2006, p.137).

Barriers to access on the demand side may be equally problematic including, in many of the poorer countries:

- low levels of literacy which impede participation in TVET
- lack of resources to pay for TVET tuition and materials
- inadequate information and counselling with regard to what is available
- traditional attitudes which constrain female access to TVET (UNEVOC–UIS 2006, p.42).

From this analysis it is evident that developed and developing countries are currently facing different issues and trends in terms of TVET provision in general.

Ageing population—experience of developed countries

In terms of the ageing population, most OECD countries are undertaking ageing-related reforms through an accumulation of small changes aimed at later retirement, job opportunities, training, reduced labour cost and career management (Spiezia 2002). Integrated policies aimed at addressing the specific needs of older workers are rare. As stated in the recent OECD report (2006), 'action is required on many fronts if work is to be made a rewarding and attractive proposition for older people: work incentives [such as pension reform that encourages later retirement] must be improved; employers must be encouraged to hire and retain older people; and the employability of older workers must be strengthened' (p.137). Thus, 'a co-ordinated and comprehensive package of age-friendly employment measures and policies is required' (OECD 2007, p.137) and TVET can play its important, but limited role in achieving this goal. Its role can be mainly related to improving the employability of older workers and, in particular, to promoting training. As highlighted in the OECD report (2006):

> An important requirement for improving the employment prospects of older workers is to upgrade their skills. Older people in the workforce tend both to have lower prior levels of education and to engage in less training than younger workers. Tackling this double disadvantage is not an easy task, and no country has yet found an ideal way of doing so.
>
> (OECD 2006, p.118)

The request for up-to-date skills and effective approaches towards their development was met by the OECD in 1998 when seven principles to guide ageing-related reforms were formulated. Among them, a strong emphasis was placed on the need to ensure that more job opportunities are available for older workers and that they are equipped with the necessary skills and competence to take them up (OECD 1998 cited in Spiezia 2002).

Although in developed countries the TVET system is well positioned to respond to the above need, the progress achieved between 1998 and 2006 is limited. A number of studies (for example, Dawe & Elvins 2006) have identified some barriers to the skill development of mature-aged people that need to be addressed to facilitate a better attachment to the labour market. The Dawe and Elvins report is focused on individuals' attitudes to learning and the ways the narrow skills base of older workers (as a barrier to learning) can be dealt with by TVET. 'Age-enhanced' activities (those in which work remains within older people's capacities and performance improves as a result of experience, with the additional knowledge compensating for a decline in information processing or physical capabilities) can be seen as a framework for developing training approaches. Theoretical approaches adopted in this paper consider individuals within the context of where they perform their activities, using 'tools' they have learnt in their personal and social relations throughout their life.

An approach proposed by Warr (1994) is summarised in table 1.

Table 1 Task categories and expected relationship of performance with age

Task category	Basic capacities exceeded with increased age	Performance can be enhanced by experience	Expected relationship with age	Illustrative job content
Age-impaired	Yes	No	Negative	Continuous paced data-processing; rapid learning; heavy lifting
Age-counteracted	Yes	Yes	Zero	Skilled manual work
Age-neutral	No	No	Zero	Relatively undemanding activities
Age-enhanced	No	Yes	Positive	Knowledge-based judgements with no time pressure

Source: Warr (1994, p.314 cited in Spiezia 2002, p.101)

In a sense in traditional societies the communities appreciate the wisdom of the elderly and their knowledge-based judgements.

Application of this approach has two implications: within each institution careers have to be managed in order to move workers as they grow older progressively from age-impaired work to age-neutral or age-enhanced work; and the need for appropriate training for elderly workers. Training for the age-enhanced work would realise a higher return for the employers when formal training enhances the working knowledge accumulated on the job, and the know-how of older workers is updated when technological and organisational changes make it obsolete (Spiezia 2002, p.102). Thus, a major organisational challenge would be to create a particular learning culture among older workers and within organisations.

The approach presented above is supported by the findings of recent research published by the National Centre for Vocational Education Research (NCVER) (Dawe & Elvins 2006) that concluded that 'labour market-related gains are greater for the mature-aged who complete higher-level qualifications' (p.3). It was also reported that three major factors emerged as barriers to the skill development of mature-aged people. These are:

- negative attitudes and behaviours of employers and employees towards older people working and to learning new skills and knowledge
- individuals' personal circumstances and attitudes to learning
- public policy beyond vocational education and training, such as some aspects of superannuation and retirement income policies (p.3).

Thus a learning culture (within the learner and within the organisation) that reflects the need and appreciation of learning for older workers has been highlighted in the literature as a major important factor supporting effective skill development for older people. As the OECD (2006) suggests, 'training that is targeted and has a strong on-the-job element is most likely to be successful' (p.122).

Ageing population—experience of developing countries

Developing countries, however, do not see the issue of an ageing population as an important item on their agenda. Why is this so? The major reasons for concern for developed countries as argued by Spiezia (2002) relates to 'financial sustainability of pensions and health-care systems and a possible reduction in economic growth' (p.1). These reasons are not particularly relevant to developing countries. Thus, there are a number of issues that should be taken into account when formulating policies for developing countries: currently, the ageing population is not an issue for developing countries; currently, the concerns stated above by Spiezia (2002) are not

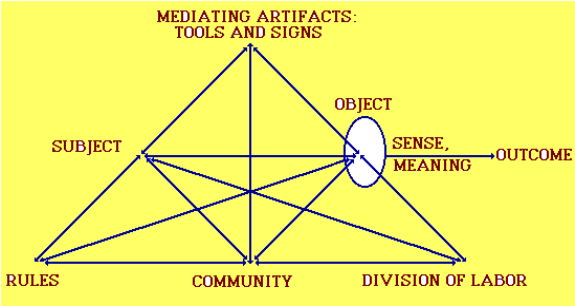
relevant to developing countries; and TVET trends in developing countries are very different from those in developed countries.

However, the results of population modelling demonstrate that forward planning should be undertaken to address potential problems in the future, such as supply of labour, reduction in economic growth and social security. In that context, to what extent can we draw on the limited experiences of developed countries in addressing the issue of the ageing population through education and training? Would the concept of a learning culture be a framework for addressing the issue in developing countries?

Activity theory

The theoretical perspective adopted in this paper is based on activity theory as a conceptual tool developed to help in understanding the process of learning situated within a particular cultural–historical context. Developed by Vygotsky (1978, 1987), then Leont'ev (1981), it looks at the complex interrelations between the individual subject and his/her community. The theory was further developed by Wertsch (1991), who introduced Bakhtin's ideas (1981, 1986) on dialogicality, and by Engeström (1987, 1993, 1995, 1999a) through the development of ideas on multiple perspectives and networks of interacting activity systems. Figure 6 represents the model of human activity.

Figure 6 The structure of a human activity system



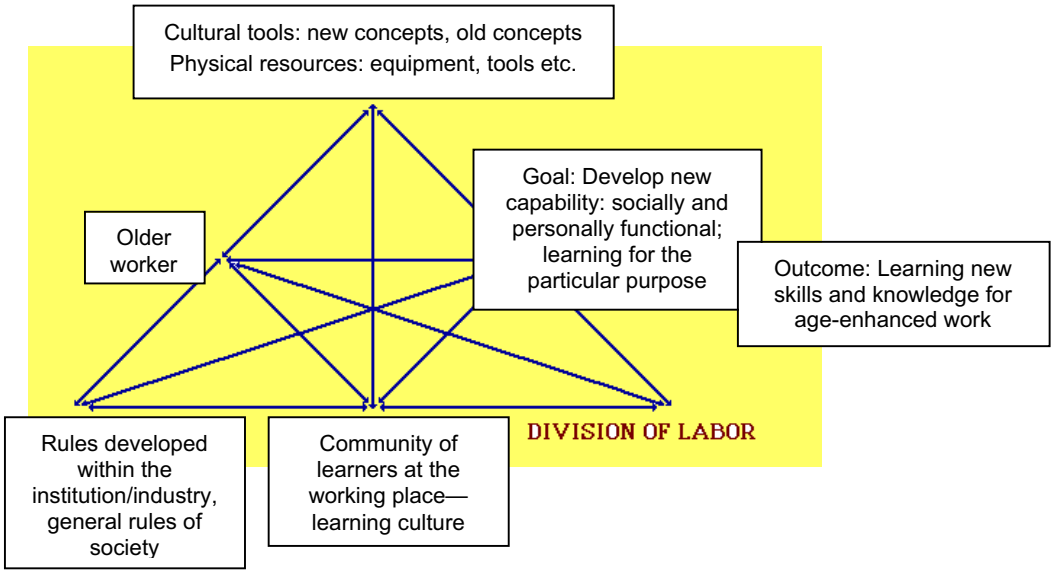
Source: Engeström (1987, p.78)

Within this model, older individuals are considered within the context where they perform their activities, using material and immaterial tools (mediating artefacts) they have learnt in their personal, social and working lives. An application of activity theory also suggests that all components of the system are different for different contexts (developed and developing countries). Rules, for example, include general rules imposed by society and working communities; these influence the activity of the older workers.

From this model it is evident that a person's learning activity is the outcome of the interaction of multiple factors where individual aspects are difficult to separate from contextual ones. Individual performance is fully embedded in the context, and social relations are the main drivers in their individual lives. Older people, who have utilised the particular tools for a long time, are challenged by the complex relationships associated with their new learning activity. The adaptation of new tools has both social and individual implications.

In constructing a learning activity to achieve a particular set of outcomes, for example, 'age-enhanced' work, all components of the model should be adjusted to match these requirements. The majority of components will be different for the contexts of developed and developing countries.

Figure 7 The structure of the learning activity for older people



When analysing the difference, a number of limitations that influence such an analysis should be accounted for. Firstly, the object of activity is a 'moving target' (Engeström 1999b) that is closely related to the particular context at a particular time. Secondly, both developed and developing countries differ widely in both the extent to which they have identified issues concerned with learning by older workers and the extent to which they have addressed it. When activity theory is used to analyse the learning activity, a number of factors should be considered.

For example, differences in the object of activity are closely related to tensions in wellbeing—survival paradigms used in the world values surveys (Inglehart 1997). If we take the African continent as an example, Africa includes many of the world's least developed countries and is the focus of intensive aid policy in which TVET might be expected to play a part. What are the specificities of the context that should be seen as influencing the structure of learning activity for older people?

A number of studies conducted in Africa and summarised in the UNEVOC–UIS report (2006) identified its specificity. For example, in the case study of TVET in four Francophone Africa countries (Côte d'Ivoire, Madagascar, Mali, and Senegal), David Atchoarena and André Delluc found that the inherent deficiency in TVET programs and their patterns of delivery is that they ignore the informal sector, especially the artisans' micro-enterprises. Originally modelled on the French school system, TVET in these countries has often not fully taken into account the possibilities of the traditional apprenticeship for meeting the needs of the artisan sector, which both provides jobs and often stands in need of improvement (Atchoarena & Delluc 2002). This is mainly because their TVET programs have maintained a fairly large amount of general content not relevant to the specific skills required for the informal sector (UNEVOC–UIS 2006, p.46) Thus this request to emphasise the informal sector will affect almost all components of the model: division of labour, mediating tools, community, rules and goals.

Generally speaking, the low proportion of TVET in general secondary education is partly due to the public's attitude towards this branch of learning, which is usually regarded as leading to low-status occupations and lack of progression to higher levels of education (Atchoarena & Delluc 2002). This definitely should be reflected in community and rules components. Moreover, the

pupils who enrol in this kind of education are considered to be those who have failed in general education. This results in a contradiction between the generally negative image of TVET and the strategic role it is supposed to play in the economy, especially in the informal sector, as regards the sectors more integrated into the global economy (Atchoarena & Delluc 2002).

Numerous concerns have been voiced over the past decade about African TVET. Atchoarena and Delluc (2002, p.38) summarise these concerns in terms of:

- poor quality
- very high cost
- training not suited to actual socioeconomic conditions
- disregard of the informal sector's needs
- disregard of the labour market and of the high unemployment rate among graduates.

In view of the changes in the labour market, the objectives of technical and vocational education have become more diverse: they are no longer simply economic but also social, including the fight against poverty and the integration of young people into the working world. All of these objectives are in line with the articulations of the Millennium Development Goals (Atchoarena & Delluc 2002, p.38). Given the prevailing economic trend, two other major objectives have been identified and must now be pursued: to train the workforce for self-employment; and to raise the productivity of the informal sector (Caillods 1994 cited in Atchoarena & Delluc 2002). Both will influence the objective of learning and activity for older people.

Another important issue is that many children in Africa are getting training through apprenticeships within family business or in formalised village polytechnics (rules and community components).

This analysis demonstrates that the model based on the activity can be appropriate for the African context, where informal training and training through apprenticeships are playing an important role, and for the contexts of other developing countries due to the nature of the activity theory that is focused on the individual.

How to develop strategies for retraining the ageing population in developing countries?

Although TVET development trends are different for developed and developing countries, activity theory can provide a useful concept of analysis of learning for older people within a particular context. For developing countries there is a particular need for a complex approach towards the issue. Development of public policies oriented towards the current and future awareness of the demographic trends should be supported by trialling and analysis of the different types of training interventions that could be employed to prevent labour market exclusion of older workers in developing countries. However, as O'Connell (2005 cited in Dawe & Elvins 2006) found in his analysis of developed countries, there is a lack of information available about which types of training interventions should be employed or how these interventions should be funded. Thus, for both types of countries the role of research on this issue should be highlighted; the starting point for this research could be based on an activity theory model.

The learning taking place through formal or informal training will be different in different situations, and the activity theory models could be used to analyse and reflect upon each situation. Differences in the objective of the activity in the different contexts constitute an important basis for the development of strategies for the ageing population. Is it a survival strategy or a wellbeing strategy? Both educational knowledge and educational policies need to re-examine assumptions behind the belief in the universal validity of approaches designed within the context of developed countries.

Conclusion

This paper has analysed demographic trends within developing countries and demonstrates that, although an ageing population is not a current issue, in 50 years time it will constitute an emergency situation. A key concern is that there are current problems related to the provision of TVET, but there are also other emergency issues that prevent governments of developing countries from orienting their policies towards the future issue of an ageing population (although the rate of increase in the proportion of older people in developing countries is higher than in developed countries).

The paper focused on the role of the TVET within a comprehensive approach for broad ageing policy development undertaken by some countries. Improving employability is seen as a major area where TVET can make a contribution. Vast differences identified between developed and developing countries led to the conclusion that a critical approach is required when considering the application of experiences from other countries. However, it is proposed that research should play the leading role in formulating any policies for developing countries. The analysis undertaken on the basis of activity theory can be useful for understanding learning activities of older people in developing countries. Such an approach firmly positions it within a particular context—including the need, policies, and meaningfulness for learners and employers. This analysis can help to develop training interventions for policy formulations and contribute to an increase in public awareness of the ageing issue and its potential socioeconomic impact on society.

Thus, the starting point for formulating the TVET role and the informal training role in improving employability of older people should be an analysis specific to the context of each country and states/regions within the country. Such an analysis would help to promote understanding of the relationships and tensions between older workers' particular environment, their goals and their outcomes.

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Discussant's comments

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Synopsis of the paper

This paper argues that, because the speed of ageing in developing countries is faster than developed countries, developing countries will have less time to adapt than developed countries to the consequences of population ageing. Accordingly, the authors argue there is an urgent need to explore the issue of population ageing in developing countries and identify some approaches and strategies for dealing with the emerging issues; otherwise, in 50 years time their ageing populations will result in an 'emergency situation'. This is because other issues, such as poverty alleviation, prevent developing countries from orienting their policies towards addressing the issue of relatively fast population ageing.

The authors then ask whether there are any lessons from developed countries for developing countries to address the issue of population ageing. To answer this question, they focus their analysis on one possible solution. This solution centres on increasing the employment rate of older workers by enhancing their job opportunities and their skills and competencies. Within the context of technical and vocational education and training (TVET), they conclude that the main lesson from their review of the literature is that a learning culture (both within the learner and within the workplace) that reflects the need and appreciation of learning for older workers is a major factor supporting effective skill development for older people.

The authors then go on to ask whether the concept of a learning culture would be an appropriate framework for addressing the issue of an ageing population in developing countries. They do this by using 'activity theory' (a cultural–historical theory of activity, based on Marxist philosophy, developed in the 1920s and 1930s by a group of Russian psychologists[4]), as a framework for developing and analysing strategies for retraining ageing populations in developing countries.

The main lesson that I drew from the authors' analysis is that the design of retraining for older workers in the developing country context needs to be cognisant that people do not learn in isolation from their own history; their social environment and communities; their interactions with other people and their knowledge, skills and judgements; the way they have learned previously

* Discussant comments were written while the author was employed at the Australian Government Department of Families, Community Services and Indigenous Affairs. The views in these comments represent those of the author and should not be attributed to the Australian Treasury or the Australian Government Department of Families, Community Services and Indigenous Affairs.

4 Source: <http://www.edu.helsinki.fi/activity/pages/chatanddwr/chat/>

(formally or informally); and their technological know-how. Accordingly, the bottom-line message of this paper is that the success of TVET for older workers in developing countries as one means of solving the problem of an ageing population depends on its being individually tailored, rather than having a 'one size fits all' model.

Comments

Overall I found the paper to be very thoughtful and thought-provoking; it was well written and easy to read, had a logical flow and was well argued. The questions raised by the paper (that is, Is the faster tempo of ageing in developing countries a problem? Does it might matter for some countries more than others? And what might be the lessons from developed countries for developing countries?) are certainly worthy of examination. However, I do have a number of comments about the paper.

- While there are negative aspects associated with ageing, the fact that developing countries are ageing faster than developed countries can be seen in a positive light. Advances in medical technology have led to reductions in infant mortality (and hence the need for high birth rates in these countries), as well as longer lives.
- The research method, which largely comprised a literature review, was appropriate. However, I would also point the authors to an OECD (2006) publication called *Live longer, work longer*. This publication focuses on policies to improve the employment prospects of older workers, drawing on the lessons learned from 21 country reviews. It sees ageing as both a challenge and an opportunity and contextualises the role of increasing the employment of older people within other broad strategies to address ageing (which I will return to later). It also underlines the importance of strong macroeconomic conditions, well-functioning labour markets and policies to encourage greater labour force attachment over the life course as being especially important for underpinning higher participation rates among older people (OECD 2006, p.13). The next version of this paper would benefit from the inclusion of a review of this publication.
- While I would have still gone from the big picture and drilled down to focus on the lessons from developed countries for developing countries, I felt the paper jumped too quickly to focus on one possible solution—retraining older workers. I felt the middle section of the paper would have benefited from further discussion of the broad spectrum of ageing policies in developed countries currently being implemented to tackle ageing. This would have served to better contextualise the focus of this paper. This discussion might include a consideration of the following issues:
  - the focus in developed countries on enhancing economic growth (or at least growth per capita), while at the same time generating an economic environment that will sustain the resource needs of an ageing population and provide a high quality of life for all its citizens
  - an outline of the Australian Government's policy response to ageing as an illustrative example of a developed country's approach to ageing. The Australian Government's policy response includes three interlinked policy components.

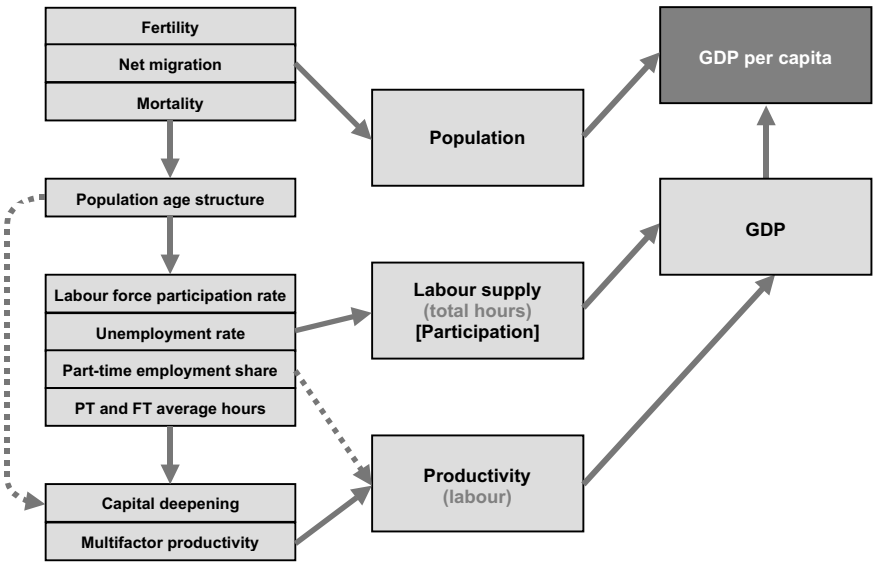
    The first is what is called the 'three P's'—population, participation and productivity. Figure 1 (sourced from the Productivity Commission's [2005] report on ageing) outlines the links between the three P's and economic growth (as measured by gross domestic product [GDP]). There we see that a focus on increasing the participation rate (and employment) of older workers is but one of a number of policy avenues available to the government. Moreover, TVET impacts on at least two of the P's—through increasing participation rates (and therefore the supply of labour) and through enhancing labour productivity.

    The second key policy area involves more specific policies aimed at health and retirement incomes, which seek to address possible pressure points and which buttress the three P's framework.

    The third is a focus on what the Australian Prime Minister, John Howard, recently described as 'well governed flexibility' (rather than fixed plans) (Howard 2006). By this we mean an

economy that has flexible labour, product and capital markets, including a flexible and responsive TVET system where users drive the system. This approach builds upon the approach to Australia's economic development. That is, in a small, very open economy such as Australia's, the dismantling of trade barriers and protection levels in product markets has necessitated a concomitant move towards flexible labour and capital markets in related areas.

Figure 1 Tackling ageing—the 3 P's of economic growth



Source: Productivity Commission (2005, p.xviii)

- But what else might developing countries learn from the Australian experience in the context of TVET and ageing? To answer this, I looked back at the history underpinning how Australia got to where it is today.

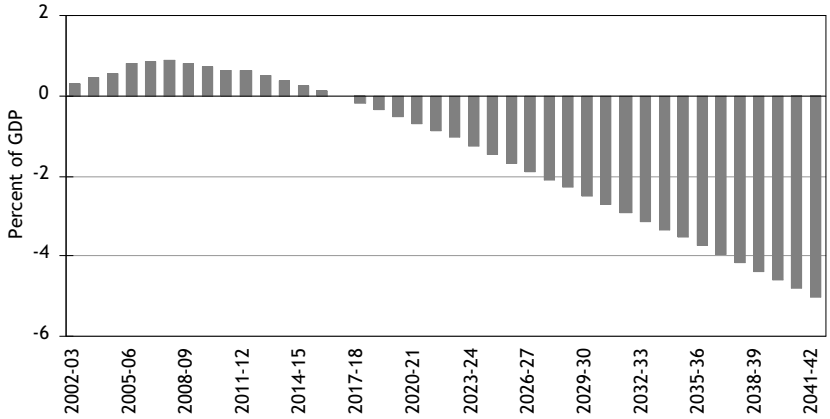
  It was not until the mid-1980s that the issues of an ageing population structure were recognised, including the development, in 1985, of Australia's current superannuation policies (that is, a focus on people contributing to their own retirement savings rather than relying on the government to provide for them in old age). Further analyses during the late 1980s and early 1990s (for example, Economic Planning Advisory Council 1992) led to the raising of the qualification age for women to access the old-age pension from 60 to 65 over a 20-year period. Since the late 1990s a much sharper, whole-of-government approach has emerged. A key element of this is the Australian Government Treasury's (2002) *Intergenerational report**.

  Under the *Charter of Budget Honesty Act 1998*, the Australian Treasurer is required to publicly release and table an intergenerational report at least every five years. This report is required to 'assess the long term sustainability of current Government policies over the 40 years following the release of the report, including by taking account of the financial implications of demographic change' (Australian Government Treasury 2002, p.iii).

  The *Intergenerational report* published projections of the demographic change—along with other factors, such as the effect on health spending of the increase in demand for new technology and treatments—to the Australian Government's fiscal balance over the period 2001–02 to 2041–42 (figure 2). These projections were based upon the maintenance of existing budgetary and other policy settings. The discipline of this approach results in the sustainability of current policies being subject to scrutiny.

* Subsequent to the provision of these discussant comments, a more recent intergenerational report has been released and is available at <http://www.treasury.gov.au/igr>.

Figure 2 Projection of fiscal pressure on Australian government fiscal balance 2001–02 to 2041–42



Source: Australian Government Treasury (2002, p.7)

Further breakdowns of the component of the increased spending (Australian Government Treasury 2002, appendix A, p.69) have led to changes to health and retirement policies in Australia. It is important to note here that Australia has a social security system and a partially publicly funded health system. Developing countries will have different forecasts for spending, depending on their systems. The point is that such modelling lays out the consequences of *not* changing and helps point to priority areas for change.

Following the *Intergenerational report* process, the Productivity Commission (2005) was also commissioned to gather further detailed evidence on the economic implications of an ageing population in Australia. Its analysis revealed that the cost of ageing would be about 6.5% of GDP in 40 years (base case) and, while there were some warnings about some pressing concerns in some areas (for example, health and aged care), their message is that early action would prevent population ageing from becoming a crisis.

- Having touched on the background of the Australian Government's ageing policy development and its implementation, I have identified the following three questions as being relevant to investigating the lessons of one developed country (Australia) for developing countries in the context of TVET and ageing.
  - To what extent should there be a focus on getting markets working and well functioning as a key platform to facilitating a strong economy?
    - Is the most critical area for TVET in developing countries maximising basic education (literacy and numeracy) and fixing the TVET system so that it works effectively (for example, the African situation described in the paper) rather than spending limited resources on retraining older workers?
  - Would it be prudent to gather evidence on the economic consequences of ageing and understand the consequences of *not* changing policies to respond to ageing?
  - Would it be possible to use the three P's as a framework to prioritise investment in policies to facilitate strong and sustained economic growth so that the economy can minimise the impact of the consequences of ageing?
    - This framework highlights a relevant issue likely to face many developing economies in the future; that is, what will be the impact of the demand for TVET-trained labour from developed economies be in the future?

It would seem to me that understanding the role that TVET systems play within each of the above three considerations is the key to exploring the potential role of TVET in responding to population ageing (as well as the faster tempo of ageing) in developing countries.

By way of conclusion, I would like to say that I enjoyed this paper very much. It stimulated me to ask a number of questions and to start the process of exploring the answers to them. I have also focused on the areas where I felt I could add some value and my comments are intended to provide further ideas for possible further developments of this valuable and thought-provoking paper.

General discussion

The general discussion focused on the possible lessons (or otherwise) from developed countries for developing countries, the role of the informal sector and the effects of international migration.

Possible lessons from developed countries

Most participants felt that there were some possible lessons from the experience of developed countries for developing countries in responding to the issue of relatively fast ageing population growth. For example, one participant thought that there was a real opportunity for many developing countries over the next 20 or so years to set themselves up well for the following 20 years to 2050. In particular, if the major milestones of strong productivity growth and developing efficient infrastructures are achieved, then many of these countries (for example, China and India) would potentially be in a very good position to meet the challenges associated with a rapidly ageing population. Nonetheless, given the speed of ageing, nimble action by developing countries would be required.

By contrast, a number of participants were less optimistic about the potential lessons from developed for developing countries. One participant, citing the significant differences in social security and health care arrangements between developed and developing countries, wondered whether there was much to be learned from developed countries and concluded that the 'Australian policy cupboard was bare' (in the context of assisting the TVET sectors of developing countries respond to ageing).

Another participant felt that the inherent focus in many developing countries on current priorities meant that analyses on the costs and consequences of ageing would not be undertaken.

Another participant also noted that the relatively fast pace of ageing would also impact on preparation within a country for the many social changes which accompany ageing.

These comments generated further discussion about the way that developing countries might use a similar approach to that used in Australia. That is, modelling, analysing, and then responding to the consequences of ageing within the context of their particular circumstances rather than borrowing the actual policy responses developed by Australia.

Another participant noted that the main lesson from Australia was the idea that *sustainability* in terms of policy direction matters, irrespective of which path a country is going down. Cross-country differences also matter in this context (for example, the size of the population in many Pacific Islands contrasts significantly with China and India, for example) and hence the policy directions within many developing countries are likely to be different.

Role of the informal sector

One participant felt that more attention needed to paid to the role of the informal sector in skills development because of the magnitude of skills development (in both developed and developing countries) that occurs in that sector.

The size of the informal sector in the economies of many developing countries also meant that applying the Australian Superannuation Guarantee legislation would probably not be sensible.

Effects of international migration

One of the participants raised a number of issues relating to the effect of international migration on TVET and ageing in the context of a global market for TVET skills. It was noted that foreign remittances (from workers trained in developing countries but employed in developed countries) were often very important in the economies of these developing countries. Many of these workers had TVET skills (for example, domestic service, construction and paramedical); however, the lack of qualification frameworks in many countries inhibited such international migration movements.

While acknowledging the importance of these foreign remittances to a developing country's economy, one participant pointed out the experience of Tonga. It was argued that foreign remittances to Tonga from the second generation of expatriate workers were not as high as from those in the first generation.

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The changing context of TVET for the workforce in India

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India

Introduction

India is a nation on the march. Hence, India is under global observation. India is emerging as a major economic power, and the entire world is keenly watching the way it will transform itself in near future. The Indian economy grew by 8.9% in the first quarter of the year 2006–07 (*Hindustan Times* 2006), although the government of India had aimed at 8% only. A comparison with the same quarter of the previous year indicates a maximum increase in the areas of trade, hotel, transport and communication. There was considerable decline in electricity, gas and power supply, and stagnation in agriculture, forestry and fisheries. The day these details appeared in the national media there was another significant development that attracted attention. Based on a survey conducted by the National Sample Survey Organisation, it was reported that '58% Employable Population Was Jobless in 04–05' (*Times of India* 2006). According to this survey, 44% of people living in rural areas were employed. For urban areas the figure was a mere 37%. In rural India the proportion of the male workers engaged in agriculture activities declined from 81% in 1977–78 to 67% in 2004–05, indicating the level of rural-to-urban migration. The two aspects of economic growth and the employment position very clearly set the agenda for understanding the challenges and opportunities before India. This understanding is essential to appreciate the Indian initiatives, achievements and failures in the process of development, poverty alleviation, creation of job opportunities, provision of education and technical and vocational education and training (TVET), and social security to the aged.

Currently, about 60% of aged persons live in developing countries. This percentage will rise to 75 by the year 2025. In the year 2000, for the first time in human history, numbers of those above 60 exceeded those below 14 years of age in a number of developed countries like Germany, Japan and Spain. This silent revolution has begun to create an impact on all aspects of human endeavour and activity. The Indian aged population is currently second largest in the world. In the 100-year span of 1916 to 2016, while the total population increased by five times, the numbers of older persons increased thirteen times. The only social security available to around 85 to 90% of them is that of the traditional joint family system. The concept of pious obligations ensures protection of rights by creating human obligations. These emanate from one of the basic values of life evolved as a part of *Dharma*—the righteous conduct—and are best expressed as 'gratitude'. Every individual is supposed to discharge four pious obligations. These are debt: towards gods; towards parents; towards teachers and the creators of knowledge and wisdom; and towards humanity. These can be discharged by worship, by maintaining continuity of family, by acquisition and dissemination of knowledge and by every type of social service (Rama Jois 1997). This traditional system too is changing visibly under the influence of contemporary global changes. India has already crossed the

United Nations defined percentage of 7 of those above 60, which means that India is now labelled as an ageing country; the present 7.7% will rise to 12.6% by 2025 (National Council of Educational Research and Training 2003).

India accounts for a meagre 2.4% of the world's surface area of 135.79 million square kilometres, supporting 16.7% of the world's population. In 1951, India's population was 361 million and was 1028 million in the 2001 census. The population increase between 2000 and 2020 is estimated at 320 million. Eighty-seven per cent of the total growth will be in the age span 16 to 64 years. In this growth the share of 0–14 years would be just 3% and those above 65 years will be only around 10%. The life expectancy is also likely to rise to 71 years for males and 74 years for females by 2020 (Indian Government Ministry of Information and Broadcasting 2006).

The increase in the literacy rate between 1951 and 2001 was from 18.33% to 64.84%. The sex ratio, females per 1000 males, changed from 946 in 1951 to 933 in 2001. The rate of urbanisation is projected by the rural and urban population ratios, which were 82.7% and 17.3% respectively in 1951 and were estimated at 72.2% and 27.8% in 2001. By 2020, 35% of India's population is likely to be urban. These projections have been made based on several factors, including population growth, growth of the working-age population, labour force participation rates, educational enrolment at higher levels and school dropout rates. India's labour force reached approximately 375 million in 2002. These figures indicate a rise of between seven and eight-and-a-half million per year in the labour force, projecting a total of between 160 to 170 million by 2020, that is, 2.0% per annum (Indian Government Planning Commission 2004). Total unemployment in India has been estimated to be around 35 million persons in 2002. Around 39.3 million job seekers were registered in employment exchanges throughout the country in December 2005 (*The Pioneer* 2006). Against this, only 173 000 found jobs in the government sector. Over 5.2 million persons with graduate or higher qualifications are still waiting for jobs. Every year 5.0 to 5.5 million job seekers are registered. The placement in jobs, which was of the order of 138 000 in 2004, rose to 173 000 in 2005. Over three-quarters of the unemployed are in rural areas and three-fifths of them are educated. In the current scenario of economic development—the tendency to shed excess labour and improved competitiveness—it is important to create job opportunities for all citizens. Access to employment is an essential component of economic choice and in moving ahead towards a better quality of life. This requires continuous monitoring, review and reorientation of national priorities, technology policies, educational infrastructure and the levels of commitment at implementation levels. Most crucial will be the role of formal technical and vocational education for young people in schools and colleges. This alone would not suffice. The infrastructure will need to be extended to other groups, that is, adults, aged, skilled or unskilled willing to learn, those in need of reorientation and upgrading of skills or those who need to acquire new skills. In developing countries like India, the attitudinal rigidity of preference for a government job or a white-collar job has just recently begun to melt. It has to be consolidated. These countries really need intensive programs of adult education, not only in literacy but also in technical and vocational education and training (TVET).

India's long and distinguished tradition in science and technology, scientific thought and innovative ideas is part of its civilisation of over 5000 years. There is enough evidence of the presence of the profound Indian tradition of science and technology: the Indian contribution to the sciences, mathematics, yoga and the medicinal system, *Ayurveda,* is now receiving renewed global attention, far more than ever before. These do indicate the presence of a strong tradition of training in technical and vocational areas and, consequently, of a scientific predisposition. Even in the nineteenth century, India had a reasonably good and functional system of vocational and technical education (Crane 1965). But, foreign rulers and their domination for over 200 years made the Indians believe that they were not scientifically or technologically advanced. Sixty years after independence, India has re-established its place in the scientific and technological world. Developing countries have realised rather late that the skills and competence of the workforce augmented with knowledge and technology determines the extent and magnitude of economic growth and provides opportunities for individuals to become part of the process.

The context

In the mid-1960s Indian educational planners realised the critical importance of vocational training in schools and colleges and also outside the formal sector of education, in non-formal education and adult education initiatives. It is another matter that even now, only around 5–6% of the young people in the age group 20–24 years have undergone formal vocational training in the early stages of schooling. Taking a wider definition and considering the entire technical and vocational segment, it may extend to around 15%. The corresponding figures in Mexico and Korea are 28 and 96%, respectively. Usually this percentage is around 60 to 80 in developing countries. The Indian education system has expanded substantially during the post-independence period. The population, too, has grown three-fold. In a recent survey it was reported that, out of nearly one million schools, 42 000 do not have a building, and 100 000, that is, 10%, are housed in single rooms. Over 140 000 schools have only one teacher. These figures should give a fairly good indication of why we do not have more vocational schools. The literacy rates at present are around 68% and the target to achieve universalisation of elementary education still remains elusive. To achieve the same by 2020, another 75 million or 44% more children will have to be enrolled. That means a proportionate rise in infrastructure support as well as the recruitment of trained teachers. Provision for training and retraining of teachers means more teacher educators and more teacher training institutions. Reducing the teacher–pupil ratio from the present 1:42 to 1:20 would mean an increase of 65% in the number of classrooms in the next 20 years. Quality improvement can certainly not be achieved if the teacher–pupil ratio is brought to an academically acceptable range. The task ahead in education is indeed daunting. Larger enrolments and fewer children per classroom mean increasing demand on secondary and university education. The following is a necessary requirement of TVET in the formal sector and also in the out-of-school non-formal sector. Policies now need to incorporate prominently the significance of work experience, schooling in vocational streams, technical education for middle-level functionaries and TVET in the higher education segment.

Policies in general education have paid attention to sustainability in several areas, particularly ecology, environment, conservation of natural resources and to citizenship education, to enable learners to contribute and create a sustainable future. Policies must be reoriented to reshape TVET to address the emerging concerns of sustainability. Linking TVET to the economic, environmental, and social aspects of sustainability has to become the critical concern of policy-makers and curriculum developers and should be extended to the entirety of general education. It is also now acknowledged that teacher education systems have to be geared to 'a trans-disciplinary, holistic approach, which emphasises the importance of interrelatedness of the environment as a whole and the interdependence of parts' (Maclean 2005).

The 1968 National Policy on Education (Naik 1997) made major recommendations in regard to environment, conservation of natural resources, citizenship education and working with hands and gaining experience. For the first time, it recommended bifurcation of the secondary stage of school education into vocational and academic streams. Emphasising what is currently being included under TVET, the essential concepts of work experience, vocational and technical education were put into the policy.

- The school and the community should be brought closer through suitable programs of mutual service and support. Work experience and national service, including participation in meaningful and challenging programs of community service and national reconstruction, should accordingly become an integral part of education. Emphasis in these programs should be on self-help, character formation and on developing a sense of social commitment.
- Special emphasis should be placed on development of education for agriculture and industry.
- In technical education, practical training in industry should form an integral part of such education. Technical education and research should be related closely to industry, encouraging the flow of personnel both ways and providing for continuous cooperation in the provision,

design and periodical review of training programs and facilities (Indian Government Ministry of Human Resources Development 1968).

At present the major institutional infrastructure in the formal sector of technical education at the initial stage is that of industrial training institutions. Of the total 5068 industrial training institutions, 1883 are in the government sector, with 3185 in the private sector. The total student capacity of 738 000 has 75 000 places reserved for women. Taking into account all the sectors and provisions there for TVET, the number estimated does not reach 1.7 million. The nature of vocational skills, the variety of new skills needed, the paucity of resources, including qualified trainers, have all caused severe stress in the development of these and other similar institutions. As well as industrial training institutions, TVET is provided by the polytechnics established for those who complete full school education. Courses at these institutions last for three years, at the end of which students get a diploma. At higher levels, India has a well-established network of Indian Institutes of Technology, National Institutes of Technology, National Technical Teachers Training and Research Institutions, Agriculture Universities and a couple of Universities of Science and Technology.

The inadequacy of the formal sector has been well realised and several attempts in the non-formal, private sector and through the open and distance learning systems have been made and are contributing effectively. 'The changes in technology and work processes are too rapid for training courses and their instructors to stay up to date. The cost of training is also relatively high, as it often demands full-time enrolment for a prolonged period. Some vocational fields do not lend themselves to classroom or laboratory study at all' (Indian Government Planning Commission 2004). The policy and program formulations have taken note of the experiences gained so far. The private sector has grown significantly in the areas of providing computer training, even in rural, remote and far-flung places. However, training has also to extend beyond computer-related skills. With a majority of Indians engaged in agriculture, attention has been paid to imparting TVET at various levels to those working in this sector. India has achieved self-sufficiency in food provision, rising from a very dismal situation, thanks to its agricultural universities, national research and training institutions and the strategy of extension services. In absolute terms, India's manpower base of scientists and engineers is its 'greatest core competence'. However, India's contribution to global scientific knowledge has now slipped from 10% to 2.5%. Just the reverse has happened in China. The number of scientists per million people in India, China and Japan is 157, 545, and 5095, respectively. This clearly indicates the need to expand the base of TVET much more widely. India has institutions of the highest international standards in science and technology. It is also an acknowledged fact that there is a need for greater and stronger links between these institutions and the 'other' institutions performing teaching and research functions at the same level and the practitioners in agriculture, industry, and other relevant sectors.

There is one more aspect which needs to be examined in order to appreciate India's needs and requirements in relation to TVET. Vocational training for farmers has not received the level of attention it deserved. Whatever has been done is significant but not sufficient.

The sectors with high employment potential include:

- commercial agriculture
- agro industry and agro business
- afforestation for pulp, fuel and power
- retail and wholesale trade
- tourism
- housing
- construction
- garment industry

- other small-scale and medium industries
- information technology and information technology enabled services
- education
- health
- financial services
- transport
- communications
- community services (Indian Government Planning Commission 2004).

The TVET system has to remain ever prepared for unexpected additions to the above list; obviously, those areas which become obsolete in the ever-changing scenario of the job market need to be regularly deleted.

TVET beyond the formal system

A tiny system of vocational stream schools that prepare less than 5% of the senior secondary level vocational courses completions and the products of industrial training institutions and polytechnics does not suffice to meet the needs of the system or the society. Further, these training provisions are grossly inadequate for dealing with the increasing numbers of educated adults with qualifications in liberal education, but without skills in technical or vocational areas. Those coming from rural areas return to these areas with such an education; this neither gives them a job in the much-sought-after urban environment nor leaves them fit to contribute to the traditional professional tasks of the family. These educated people form one of the most significant groups of the adults that need to be brought into the fold of TVET. Care has also to be taken of those who dropped out of schools at various stages and who have spent several years in a frustrating and demoralising environment at an age when they should be contributing happily to the process of enhancing productivity. This group could be prepared for rural, and also urban, locations using recently emerging production processes that do not require highly specialised manpower.

There are also groups of people already in jobs or engaged in business but who are being affected by the new advances in equipment, gadgets, tools and technological variations. They desire to change their area of operation and for that need new skills or renewal of skills. A large number of people who retire from the armed forces at a relatively young age are generally well equipped with technical and vocational skills, which could be gainfully utilised with reorientation and renewal. Their rehabilitation is a major issue. A good percentage of them come from rural areas and their services could be utilised as trainers and resource persons for the TVET system. Adopting practices such as these requires an attitudinal change at policy levels. The changing cultural context and the encouraging performance of women in all sectors of education have opened an entirely new dimension in employment and entrepreneurship in India. Education for women is now supported and appreciated by the community. However, the dropout rates remain considerably higher for girls. As they grow up, they would certainly prefer to acquire skills to add to family income and to give them a sense of equality as contributors to the process of economic growth and development. Various factors continue to contribute to the utility of the traditional vocational skills, which are transferred within the family to the next generation. Such available expertise could also be augmented by the non-formal TVET initiatives, enhancing the relevance of such skills. The percentage of differently abled children who get into schools is still relatively low. TVET for this group also needs to be adequately addressed at the implementation level.

The groups mentioned above would certainly benefit if the formal system in schools were to expand and adequate provisions put in place for the children who are classified as disabled. Further, provision needs to be made for career counselling and guidance for different age groups interested

in a variety of pursuits. Vocational guidance units must be available in all institutions for people of all ages and inclinations. A modular approach, decentralised planning and establishing close coordination between formal and non-formal TVET should be seriously attempted. Linkages to services, crafts and industries must determine the nature of TVET to be imparted.

Experiences gained

Generally, vocational training outside schools and institutions has targeted unemployed and unskilled workers to prepare them for productive engagement. It also targets school leavers to prepare them for the labour market. This is a major concern not only of educational planners but also of communities and society. The critical importance of this issue becomes clear with the realisation that 55% children drop out by the time they reach class VIII, the number increasing to 63% by the class X. Under such conditions, promises of equality of opportunity and social justice remain elusive, despite all good intentions.

The response to this issue comes in the shape of various schemes launched by different ministries of the federal government and the initiatives of non-government voluntary organisations. Many of these have largely achieved their targeted objectives and, consequently, have attracted attention. Upskilling of skilled or unskilled workers already in jobs has also been an important focus. Some of these initiatives are briefly referred to below. Many have reached the 'aged', although not necessarily only those above 60 years of age. They belong to the category that otherwise was not contributing to production activities. These initiatives also enhance understanding and appreciation of the tasks ahead in the context of a defined ageing population. Understanding these experiences would help planning and extending their outreach to those also who are keen to play a 'second innings'. Some of the formal institutional arrangements and also the non-formal and voluntary initiatives could form the basis for extending the outreach of TVET for all age groups, particularly including the aged. Some of these are discussed below.

Community polytechnics

The establishment of community polytechnics was an outcome of recommendations made in 1978 that selected polytechnics should act as focal points to promote community/rural development in scientific areas through technology transfer. The major target is to provide skills training for self- or wage employment and to achieve technology transfer. There are nearly 500 community polytechnics with an annual intake capacity of 65 000. These are mostly serving the needs of the organised sector, which includes middle-level supervisory technical personnel. Selected polytechnics initially prepare their own staff in micro-planning in rural areas, rapport-building with villagers, identification of need-based areas of action and other such inputs that may help in planning and implementing, with community involvement, TVET for rural development and increased productivity. Socioeconomic surveys are conducted to identify target groups, the resource base, job potential, potential for science and technology applications, training needs and other requirements. This leads to the preparation of an operational plan spelling out timelines and targets. The combination of an area-specific strategy and the relationship with other developmental agencies has been found extremely relevant. The scheme launched by the federal government targets areas and communities which are in greater need of support. The scheme has produced encouraging community participation and has proved highly beneficial to socially and economically disadvantaged groups, including women, groups which had, otherwise, no chance of acquiring employable skills. Over 150 courses have been listed, which are being offered, depending upon the factors mentioned earlier. Training is given through short-term courses. An assessment is conducted by assigning a specific job to the trainee and a certificate is also issued. No equivalence is sought through the formal systems. Eighty per cent of the program is practical in nature.

Community colleges

There are over 150 community colleges spread across 17 states. These have so far helped 35 000 students from socially, economically and educationally backward groups by providing them with vocational and technical skills that could lead to gainful employment. These institutions offer open access, flexibility in curriculum and teaching methodology, cost-effectiveness and equality of opportunity in real terms (National Council of Educational Research and Training 2001). Areas of TVET these colleges cover include medical lab technology, automobile mechanics, printing technology, information technology, refrigeration, desktop publishing operations, and several others, depending on the needs and requirements of the area covered by the institution and the interest expressed by the trainees. Initiated as a movement in 1955, these focus on life skills, work skills, hands-on experience and internship. Community colleges provide an assessment and evaluation of the skills acquired and attitudes developed. The system does not impose many restrictions or constraints on applicants in terms of pre-entry qualifications. Acceptance into community colleges essentially follows the philosophy of 'merit being just the availability of opportunity'. These colleges are also known as urban community colleges, rural community colleges, community colleges for women and tribal community colleges. These institutions provide courses both for the school leavers and those who may have completed education decades earlier. Extension activities cover other community members as well. The curricula include life skills, work skills, hands-on experience and preparation for employment. A study conducted on community colleges (National Council of Educational Research 2001) indicated a greater focus on discipline, punctuality, regularity and such other personality characteristics, which was marginally higher than that in institutions in the formal sector at a similar level. The courses offered by the community colleges present a vast array of responses to diverse community needs. These include integrated farming, rural marketing, post-harvest technology, building technology, animal husbandry and fish farming, and others.

The work skills component has generally been found to be satisfactory, although several inadequacies in terms of lack of infrastructure facilities like libraries and workshops were also noted. The community colleges have so far remained only a private initiative and the beneficiaries are also mostly from weaker sections of society with limited resources. Despite the constraints, the managements of these colleges are unwilling to opt for government assistance, as presumably it is invariably coupled with several stipulations which may lead to compromises on flexibility, freedom and accessibility to the desired group. Lack of a coordinating agency often leads to certain deficiencies in the totality of the education and training imparted through these colleges. While uniformity in content and training may not be necessary, comparability is certainly a desirable ingredient of this innovation. Well-designed programs are needed for preparing trainers and educators in the community colleges. Changes in community colleges themselves would also be needed for the higher age groups, which currently do not undertake training or retraining in these institutions.

Community colleges offer insights for the establishment of similar institutions, particularly in remote, far-flung, hilly and tribal areas which seriously deserve opportunities for gaining work skills, and also life skills for practically every age group. The system is being referred to here with the sole objective of indicating that various alternative approaches in TVET are being tried out in India. Some of these may be only elements of other programs and TVET may appear only peripheral. Even then, it could be serving a far bigger purpose helping those at the lowest rungs of society to move a couple of steps higher in the socioeconomic hierarchy.

A voluntary initiative: Banwasi Sewa Ashram

In India a considerable number of voluntary initiatives can be identified that attempt to transfer technology, new knowledge and other relevant inputs in response to local community needs and to

provide vocational and technical competencies at initial levels. This is necessary since a considerable percentage of the rural population in India still lacks access to education, health, and an adequate supply of food. One such initiative which has earned respect and reputation over the years was established in 1954 in Sonbhadra district of the most populous state of India—Uttar Pradesh. Known as Banwasi Sewa Ashram, it caters to the tribal population in a forest area that witnessed the advent of heavy industries. It also witnessed how the original inhabitants were ignored. They lost their traditional dependence on forest resources and were left uncared for by the industry. A dedicated couple moved in, motivated by the Gandhian spirit, with the objective and understanding that none should be ignored or neglected; development must be for the benefit of all, including the last man who was defined by Gandhi:

> I will give you a talisman. Whenever you are in doubt or when the self becomes too much with you, apply the following test:
>
> Recall the face of the poorest and the weakest man whom you may have seen and ask yourself if the step you are contemplating is going to be of any use to him? Will it restore him to a control over his own life and destiny? In other words, will it lead to Swaraj (self-rule) for the hungry and the starving millions?
>
> Then you will find your doubts and your 'self' melting away.

The Banwasi Sewa Ashram envisages a strong, dignified and progress-oriented village community life that incorporates positive values of traditional life and assimilates the benefits of modern knowledge in such a way that people are not denied the benefits of the fruits of development. The organisation has mobilised people for community development, launched programs for the empowerment of women, developed community assets, trained personnel in technical and vocational skills, and achieved qualitative improvement in education, health, sanitation and agricultural activities.

It is a comprehensive program designed to keep the local needs in view and prepared in consultation with the local people. The initiatives include generating community awareness, creating community assets, education, health, developmental activities and training. Skill training is a necessary component and is imparted in a totally non-formal manner. Due to the prevailing conditions and concerns, the focus remains on cottage industries. These include agriculture, animal husbandry, tailoring, electrical fitting and gadget repairs, repair of diesel pumps and hand pumps, basic skills in dealing with the health concerns of humans and animals etc. Improved skills are provided to the traditional carpenters, fitters, turners, blacksmiths and others. Several other voluntary agencies working in and around the area are also taking advantage of the training facilities created by the organisation.

The work is mostly confined to an area of 6819.28 square kilometres, in an area comprising 60% forestland and with a literacy rate of only 50%. The achievements listed by this organisation are seemingly very modest. In their workshop for vehicle maintenance and repairs and also used for 'production' and repair of agricultural tools, they have, up to 2003, trained 2242 people. All of them have contributed locally and have 'made the difference'. This organisation has achieved great community credibility and acceptance, establishing it as an example to emulate by those working in the voluntary sector.

Open learning systems

The National Open School, established in 1989, and in 2002 renamed as the National Institute of Open Schooling, offers vocational courses in broad areas of agriculture, engineering, technology, health, paramedical, business and commerce and others. It operates through a well-knit network of regional centers and accredited institutions/schools. Planned essentially for school dropouts, it also offers vocational courses in combination with academic subjects.

The Indira Gandhi National Open University, established in 1985, has carved out a unique place for itself in open and distance education. It has launched nearly 80 programs of TVET in distance modes in various trades and skills at different levels for persons above 14 years of age. It does not insist on possession of any pre-qualification from the formal system. Most of the provinces in India have an open university, all of which are closely linked to the Indira Gandhi National Open University. A large number of people in the higher age groups and those who are already in jobs take advantage of the vocational and technical courses offered by Indira Gandhi National Open University and other open universities.

India has been struggling with huge programs of adult education. Initially, these were confined to providing literacy, numeracy and a general awareness of the environment around the adult learners. Gradually the need to provide skills and technical know-how has been recognised. Towards this end, nearly 160 people's education centers, known as *Jana Shikshan Sansthan,* have been established. Here a number of skill development programs that provide vocational and technical education and training of varying duration are run. So far around 1.5 million people have benefited. The scheme has visibly contributed to improving the vocational skills and quality of life of the beneficiaries. It is essentially an attempt to achieve the educational, vocational and occupational development of disadvantaged groups, including socially, economically and educationally backward groups of urban and rural populations, particularly neo-literates, semi-literates, women and girls, slum dwellers, migrant workers and others.

Krishi Vigyan Kendras

The agriculture and allied sectors contribute nearly 22% of the gross domestic product of India, while about 65–70% of the population is dependent on agriculture for its livelihood (Indian Government Planning Commission 2004). Sixty per cent of the area cultivated is dependent on monsoon rainfall. India faced the threat of food shortages reaching dangerous proportions in the mid-1960s. These shortages have been successfully overcome and food production now exceeds the needs of population growth. There are however several issues of concern in the agriculture sector. The sector provides enormous scope for accelerating growth through improved soil nutrition, pest management and more efficient use of irrigation and potential rainwater harvesting. Furthermore, there is still a vast scope for developing programs and infrastructure for the agro-processing industries. Scope also exists for further diversification of cropping patterns, from low-value to high-value crops, such as fruits, flowers, spices, vegetables and other horticulture crops for domestic consumption, processing and export. This sector can play a major role in providing more satisfactory levels of employment and entrepreneurship to educated, literate and semi-literate people with different levels of technical and vocational skills.

India has developed vast infrastructure support systems at national, regional, district and at block levels, which have extended their outreach up to the villages. Research and innovation and their dissemination have contributed significantly through the training of personnel at various levels through a variety of programs in different institutions set up with specific objectives. The services of rural educated unemployed men and women could certainly be utilised more effectively by providing them with technical and vocational skills. They could then take advantage of the huge opportunity that the sector offers them.

Of the variety of initiatives launched to extend the outreach of technical and vocational competence of the large number of adults spread over far-flung and remote areas, the *Krishi Vigyan Kendras* or Agriculture Science Centres offer a good example. These represent a typical example of technical and vocational education as continuing education. These centres are a major project of the Indian Council of Agriculture Research for technology assessment, refinement and transfer. At present there are around 500 of these organisations in state agriculture universities, institutions of the Indian Council of Agriculture Research, non-government organisations, state governments and other institutions. Their activities include training programs for farmers and farmwomen. In

addition, these bodies organise training for rural youth. Between April 2005 and March 2006, 680 000 farmers and farmwomen were trained through 25 696 programs conducted by the Krishi Vigyan Kendras. Of those trained, 468 000 were men and 212 000 women. These were conducted in 14 areas of training, which included horticulture, home science, soil fertility management, plant protection, fisheries, agro-forestry, agricultural engineering etc. During the same period, 8243 courses were conducted for rural youth numbering 162 939; of these 98 545 were males and 64 394 females (Indian Council of Agricultural Research 2006). The participation of women was encouraging, considering the social and cultural context still prevalent in rural India. Several innovations were also introduced. One of the Krishi Vigyan Kendras, in the state of Karnataka, identified representatives of self-help groups and progressive farmers who were closely associated with the different programs of the Krishi Vigyan Kendras. They received training in becoming leaders in technology-related organisations as well as in their technical area of expertise. After training, they act as resource persons. The result of the effort was visible in the establishment of 474 units in 72 villages, with an annual production of 3700 tones of vermicompost (Indian Council of Agricultural Research 2006, p.161). A number of the Krishi Vigyan Kendras have attempted to implement the concept of disseminating appropriate need-based technologies through self-help groups.

Craftsman training scheme

This is one of the several schemes launched by the Indian Ministry of Labour with the objective of preparing semi-skilled/skilled workers for industry. It particularly targets school leavers and youth. The industrial training institutes referred to earlier were established to impart skills both in engineering and non-engineering trades to young men and women in the age group 14–40 years. However, these are certainly not sufficient enough in numbers and output. Therefore the need to help those in the informal sector was recognised by launching a scheme of certification of skills attained informally (Indian Government Ministry of Information and Broadcasting 2006). A total of 43 'competency based standards' have been developed and, by May 2005, 5750 workers had been tested and certified. This is obviously too small and inadequate a number in this category. In the 1960s, advanced training institutes were established to train and prepare instructor trainees in the techniques of imparting industrial skills. In 1977, a special scheme of advanced vocational training was launched for the training of highly skilled workers and technicians in a variety of advanced and sophisticated skills not available from other vocational training programs. They were also geared to meet the requirements of the local industry.

TVET and women

The empowerment of women is crucially dependent on economic empowerment. 'Self-help groups' form an effective strategy and work in areas like health, nutrition, agriculture, forestry etc. Organised groups are now interacting with experts through the Direct Receiving System of Indira Gandhi National Open University. There is emphasis on schemes and programs that lead to income-generation activities for women and arrangements for providing the necessary training for the same. A large number of 'training-cum-employment-cum-production' centers have been set up and these provide training in areas like electronics, watch assembly, garment making, weaving and spinning, hotel management and fashion designing. The scheme of condensed courses of education and vocational training for adult women was started as early as 1958. Mostly utilised by school dropouts, nearly a million young girls and adult women have undergone vocational training. A large number of voluntary initiatives have earned great credibility in creating equality of opportunity for women in certain places and situations where previously most of them faced a bleak future.

There has been a more realistic understanding of the implications of TVET for women. The technical training institutions at various levels could not provide a level playing field for the female

entrants whose numbers were too small and the training was not always in response to the employer's requirements. Gradually dedicated organisations have been established, some of which are focused specifically on women. The Self Employed Women's Association has organised women workers for full employment through training in technical and management skills, along with raising awareness of their rights, and also through activism. It has empowered even those women who were illiterate, unable even to sign their names. This is a great success story that motivates and generates confidence in the role of the voluntary sector in providing vocational and technical preparedness amongst women, particularly the most deprived and deficient in the society.

Science and mathematics were made compulsory components of school curriculum in India only after the 1968 National Policy on Education was accepted and implemented. It proved to be a decision of rare foresight in the context of bringing women to science and technology. Within the constraints imposed by socioeconomic and cultural factors, girls have performed better than boys in the technical, scientific and other related areas. The group of aged women is only now emerging. The attention of educational policies, however, still focuses on bringing in all the girls to elementary education and attempting to ensure their further participation in education. India's achievements in the education of women deserve appreciation and attention.

Women constitute a significant part of the workforce in India but continue to lag behind men in terms of the level and quality of employment. The 2001 census registered 25.6% of the female population as workers, representing approximately 127 million in the female population of around 500 million. The majority of these are employed in rural areas and, amongst the rural female workers, 87% work as agriculture laborers and cultivators (Indian Government Ministry of Information and Broadcasting 2006). This group requires maximum attention in the form of short-duration courses in vocational training and in imparting technical know-how suitable to their level and area of work. The Krishi Vigyan Kendras discussed above took note of this requirement and organised programs on crop production, horticulture, home science, livestock production/management etc. over a period of one year, in which nearly 212 000 farm women, and 64 394 rural girls were trained. The employment of women in the organised sector (both public and private sector) as at 31 March 2002 stood at about 4.935 million. This constitutes 17.8% of the total organised sector employment in the country. The distribution of women employees in the major industries reveals that the community, social and personal services sectors continued to absorb the majority of women employees. The lowest employment of women was noticed in the electricity, gas and water sectors. In the factory and plantation sectors women constituted 10% and 5%, respectively.

Vocational training facilities for women are organised through a network of 218 women's industrial training institutes and 582 women's wings in general industrial training institutes and private women's industrial training institutes, with around 47 000 places being under government control. The national Vocational Training Institute for Women has been set up with ten regional centers. All these establishments provide short-term courses for the aged and on-the-job workers.

International context

In an analysis of TVET in the context of the United Nations Educational, Scientific and Cultural Organization (UNESCO) and International Labor Organization recommendations, deliberations were conducted for the Asia region in the year 2002 by the National Institute of Educational Policy Research, Japan. While various aspects of the formal sector of TVET were prominently discussed in the 11 country reports presented, the deliberations did focus on non-formal education in this sector in relation to the informal economy (National Institute of Educational Policy Research 2002). There is no uniform voice for this sector. The following skill needs of the informal economy were identified:

- management/entrepreneurship training for owners–workers
- enterprise development training for owners

- multi-technical skills for owners and workers
- training in appropriate technology
- skills to access and analyse information on products/product design, raw materials and product market, sources of credit/technology support.

Institutional infrastructures were not found adequate enough to respond to these needs, which obviously should not be confined only to the training of young persons; adults needed to be included. Several suggestions emerged in these deliberations, which continue to be relevant even today.

The developing countries in the Asia region have inherited systems of education that generally emphasised general education in a more or less a similar pattern. The vocational and technical education pattern, focus and approaches have been rather diverse as, in most cases, this sector has attracted attention only in recent decades. For young people, work education or vocational education emphasising working with hands is generally a common feature. There are specific provisions for those with eight or ten years of school education as there are for those with ten or twelve years. There are provisions for apprenticeship training and pre-employment training after formal schooling. Polytechnics are common in several countries. Several of the provisions target groups 'after school but before tertiary education'. In some countries employers take responsibility for providing TVET. Practically every country is reviewing its options in TVET in the emerging climate of globalisation and information communication technologies. Most countries now do not wish to leave even those groups outside the formal education network unattended. TVET is considered a strong potential tool that can accelerate development and augment efforts of equity and equality of opportunity. The limitations of the public sector provide a rare opportunity for the entry of the private sector, with the potential for solving some of the chronic problems of the system, such as dropout rates, and for enhancing enrolments. The private sector could also develop a skill culture and a fresh approach and attitude towards manual work (Grubb 1985). The sector could also help achieve true education that draws out the best in body, mind and spirit or in other words, achieves a symphony of head, hand and heart.

In an analysis conducted for the Asia region over the period 1970 to 1990, based on enrolments in vocational education as a percentage of total enrolments in secondary education, those with less than 3% were classified as 'ignored vocational education throughput' (Tilak 2002). This group included Bangladesh, India, Myanmar, Pakistan, Saudi Arabia, Malaysia and Kuwait. Those which maintained reasonably high enrolments throughout, that is, above 10%, were Indonesia, Israel, Japan, South Korea, Papua New Guinea, Thailand and Turkey. Those that had progressed significantly included China, Iraq, Jordan and Syria. This indicates the preparedness or otherwise of these countries to meet the needs of those in the upper age groups and the demands they make on the non-formal sector.

An analysis of social rates of returns is not an easy task. However, attempts made to estimate these have not established much superiority of vocational education over general education. However, earnings alone are not the criterion, since 'workers with vocational education and training may be more productive than those with general education' (Tilak 2002). The fact that investments in TVET are high and it is considered only as a second option makes it imperative on the system to present visible and tangible evidence of the totality of the gains from TVET. Once the aged and elderly are brought into the fold of TVET, this aspect can be handled better at family and community levels.

The most important aspect for consideration is that countries like India, Pakistan, and Bangladesh are hardly in a position to think of TVET for the aged in the way certain European countries have begun to focus on this emerging aspect in their plans and programs of education. In the former, the priorities are likely to remain focused around universalisation of elementary education and its impact on secondary education and higher education. Beyond any doubt, TVET is coming into

greater focus in these countries, particularly in the context of emerging job requirements and conditions of unemployment. Historically, after paying attention to the formal system, the attention shifted to non-formal and open and distance systems, which focused on those outside the schools or beyond formal systems and thus were relevant to the aged—who were to be made eligible to be part of the workforce. If this was the second phase, the third is yet to emerge—one that caters to those above 60 years of age. Some changes are visible. Old age homes are increasing in numbers. In the Indian social context this is a recent phenomenon. In such places, attention is paid to keeping the inmates busy. Not much beyond that has been conducted and actually implemented. The rural and far-flung areas are still practically untouched in the context of providing training to the aged for productive outputs. Provisions like a nominal old-age pension to the weakest in the socioeconomic ladder serve only a limited purpose and may not remain of much use after a couple of years.

Conclusions

The ministry of education continues to treat vocational education as an addendum to the mainstream education in schools and also in universities. This, in combination with the traditional societal preference for white-collar jobs, retards the expansion of vocational education. Resource constraint is of course a major hurdle, common to most of the developing countries. There is also a lack of coordination and comprehensive planning due to separate ministries dealing with vocational education and technical education. In India, this is the case not only at the federal level; it becomes more acute in several states due to the multiplicity of ministries in the education sector.

Industries have not discharged their responsibility in assisting governments by establishing training institutions and creating facilities in the existing institutions. Considerable groundwork has yet to be undertaken to convince people that TVET is one alternative with the potential to lead to upward mobility. Further, people would like to know about and see for themselves the outcomes of TVET in their own area. A leap ahead in TVET, although essential and necessary, would not be possible unless the credibility of the system is well established. A major factor that retards the transition to TVET is an almost total neglect of the experience of working with the hands in the process of teaching and learning in schools. Several attempts, like work experience, socially useful productive work and work education made in this direction at various periods, were largely converted into an unavoidable ritual by the system. A much needed attitudinal transformation was thus lost. The stagnant system of examinations generally persuades parents to focus all their attention on their child getting 'the highest percentage of marks' at the year-end examination, which eventually makes all the difference in marching 'ahead'!

TVET in India is a distributed responsibility. The major players are the central government, state governments and the private entrepreneurs. In the government, both at the state and central levels, it is again distributed between the ministry of education and the ministry of labour. Then again, the ministry of education may itself be divided, under separate ministers, into several ministries. Coordination occurs more on paper than in practice and there is no spirit of healthy competition to be target-oriented and to excel in quality. Industries show considerable indifference in supporting structural arrangements for TVET at different levels. From the private sector, the top-class avenues being created for TVET are generally confined to the lucrative sector of computer-related job opportunities. These are often highly commercialised and thus deprive entry to the weaker sections of the society. This also creates imbalances in the availability of adequate trained manpower in certain sectors like, for example, agriculture-related vocations. While generally these are open to all age groups, the target group remains the 'young of the affluent'.

It is indeed very interesting to observe that the elderly in India continue to treat skill orientation and technical competency acquisition as the 'other education' for 'them', not for themselves! The traditional dominance of white-collar work continues, particularly amongst aged and retiring employees who may be an appropriate group for acquiring new skills and technical competence. It will take years before the second-class education tag will be removed from the TVET sector. Poor

career prospects and salary are also responsible for the continuation of this social segregation. The other factor appears to be the general condition of deficiency and deprivation of the institutions that are responsible for imparting TVET. The scheme of bifurcating secondary education into vocational and academic streams had the potential for converting parents and the society positively towards vocational education. It did not happen as, probably, even those responsible for its proper implementation themselves had the same, 'second grade', approach to the entire issue.

- Policy formulations now need to incorporate comprehensive programs for the aged. Considerable measures of initial preparation would be necessary in terms of preparing people and also in ensuring a comprehensive and coordinated approach.
- A review of national needs, international experiences and an overview of the impact of urbanisation and also of the extension of information communications technology to non-urban groups and areas would be necessary before a comprehensive understanding of managing various aspects of the aged, and particularly in relation to TVET, can be achieved.
- The provision of mobile training teams, part of a large-scale network, which can move in the villages to give practical demonstrations on the usefulness of TVET and generate awareness of its value in school education, is necessary. A demand has to be generated and an attitudinal transformation achieved in people's perception of TVET.
- The management of TVET systems, as also of science, technology and information communications technology, requires new management skills and competencies and not much can be achieved under traditional bureaucratic control, which still persists as a legacy of the past.
- The system of certification for those who acquire TVET in informal or in the private enterprise sector has to be popularised, extended and expanded. Informal and other private training establishments also deserve encouragement and recognition.
- Career counselling and vocational/technical guidance units in schools and other institutions need to expand their canvas to respond to individuals of every age group. They need to be trained in dealing with the elderly.
- Gerontology, the scientific study of ageing, needs to become an area of study in universities and colleges. Further, competency-based vocational programs need to be started by various institutions dealing with TVET. The open learning systems need to come forward and take the lead.
- Success stories like Banwasi Sewa Ashram, the Self Employed Women's Association and others deserve greater policy support and encouragement in policies and at implementation levels. Training of government personnel in dealing with the voluntary sector is essential for an attitudinal change towards the preparation of the aged for creativity, productivity and self-sustainability.

A well-balanced, diversified and dynamic system of technical and vocational education can certainly emerge from the existing infrastructure that most of the developing countries have created. Policy changes have not only to be more responsive, these have to be swift and needs-based in real terms. The fast-changing global scenario projects several challenges and, simultaneously, offers alternatives to convert these into opportunities. This requires the participation of every adult, irrespective of being 'aged' or otherwise, to be prepared to contribute in the endeavours towards progress and peace.

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Discussant's comments

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I found Professor Rajput's paper enormously interesting, useful and suggestive. For me, knowing little about Indian technical and vocational education and training (TVET), it reminded me of the size and complexity of Indian society and the challenges that necessarily go with any attempt to develop national strategies in India. To dwell on the issue of size and complexity: for an Australian, it is salutary to be reminded that India's population would have encompassed over 50 Australias in 2001, and that it will grow by about 16 times the total Australian population in the 20 years between 2000 and 2020. At the same time, Prof. Rajput points out, India has embarked on a growth path reminiscent of the East Asian 'tiger economies' from the 1960s to the 1990s. Yet India still has a huge problem of unemployment and underemployment, with over half of the potentially employed population being without jobs. Although India certainly has an ageing population, its demographic profile is young compared with developed societies. Low employment rates amongst the prime-aged population and a relatively young population mean that providing TVET to improve the labour force participation of older people is unlikely to be a major policy focus in the short term.

Instead, India faces a range of challenges in simply developing an effective TVET system that will ensure an adequate supply of skilled labour and serve the equity goal of improving job opportunities for the unemployed. The key issues described by Prof. Rajput sound rather familiar for analysts of the Australian TVET system (and other similar western ones), albeit with a very different cultural flavour. First, Indian TVET clearly suffers from prestige problems. With a special sharpness arising from the effects of the imposition of British traditions during the colonial period, there is clearly a view that more abstract, often less practical, education is more valuable. As Prof. Rajput notes, overcoming this view and emphasising the social and individual value associated with TVET will be essential if the system is to be as effective as it can be. It will require imagination and diligence to overcome the deeply entrenched cultures, both Indian and colonial, that place TVET at the lower end of the prestige hierarchy. Perhaps, however, the new pattern of rapid growth and the associated demand for technically skilled workers will support the necessary shifts.

India also appears to face related problems of integrating TVET into other forms of education. On the one hand, integrating TVET with school education, either through incorporation of vocational learning in schools or creating appropriate pathways from school to TVET, is problematic. On the other, there is a 'missing link' between vocationally useful skills in the technological areas and the highly scientific and abstract forms of training provided by the prestigious, international standard universities. To realise TVET's potential to supply this link requires overcoming another problem—the indifference or resistance of employers to TVET training and qualifications. Again, it is to be hoped that the simple pressure of demand for skilled workers will help to overcome some of these problems.

Prof. Rajput's paper provides a very concrete sense of the complexity and variety of TVET providers in India and the different dynamics that have generated these different institutions. Besides describing the industrial training institutions, the major existing formal TVET providers, he outlines a range of other providers outside the formal system. Some of these are highly successful, although tiny in the context of India's population. They tend to be aimed at distinct groups of clients: community polytechnics focus on technology transfer into rural settings; community colleges are focused on providing vocational skills to disadvantaged groups; and so on. A particularly striking example is the Banwasi Sewa Ashram, which seems to integrate TVET into a complete community development process. Developed in a rural area that was the site of sharp modernisation confronting a tribal community, it apparently seeks to provide a bridge between a traditional culture and values and modern developments. Prof. Rajput's account of the large variety of TVET institutions emphasises the variety of needs and demands to which TVET in India might respond. Perhaps one implication of his paper is that Indian policy needs to be designed to bring out the best in each of these institutional forms by focusing on which need each serves best.

In such a view, finding a place for older workers in TVET is likely to continue to take a back seat for some time, given the Indian problems of unemployment and the country's demographic structure. However, India is likely to face some of the problems of an ageing workforce now so starkly apparent in some European countries. If it is able to develop its TVET system in the directions Prof. Rajput's paper implies, with the aim of satisfying the diverse range of contemporary needs and goals his analysis outlines, then India may have the luxury of having both time and the lessons of the developed countries to develop its response.