Sri Lanka Institute of Advanced Technological Studies
Ministry of Higher Education
Sri Lanka

The Changing Times: General Education And The Vocational Training System in Sri Lanka

By

Dr. Upali M. Sedere
Director General,
National Institute of Education, Sri Lanka

Convocational Address
Bandaranayake Memorial International Conference Hall, Colombo, Sri Lanka

November 16, 2010

The Changing Times: General Education And The Vocational Training System in Sri Lanka

Dr. Upali M. Sedere

Director General, National Institute of Education, Sri Lanka

The Distinguish Guests, Invitees and the Graduating Young Technologists and their parents, ….

I consider the invitation for me to address this graduation ceremony is a privilege, particularly at a time that Sri Lanka is heading for a massive development drive. The Graduates of the Vocational Institutes, when compared with the University Graduates are a different set of youth because you are trained and skilled and ready to join the world of work. Whereas many of the University Graduates, particularly graduating from the Liberal Arts and Science streams poses only knowledge or academic education and do not have employable skills to join the changing and demanding work force in Sri Lanka. Many of them remain either unemployed or under employed for several years before finding full-employment.

The New Sri Lanka:

Today, we as citizens of Sri Lanka we witness a rapid change. This change is not only in Sri Lanka also is in the global society. Sri Lanka's biggest bottleneck for development was the terrorism that went on for well over 30 years. Today we have a generation of youth in the age group of 20 – 30, they have seen only war and terror in Sri Lanka and this is the first time that these youth experience peace, freedom and hope for a better life. This situation is worst amongst the youth in the North and the East as they either lived in the war-tone areas and were running the risk of either LTTE drafting them by force or getting killed in the cross fires of the war. I frequently visit the North and the East to educate the children and provide facilities; I witness the change in the North and the East. The physical development in the infrastructure such as roads, electricity, water etc; and the supply of services such as health, education, banks and commercial services not only are impressive but also have brought new hopes to the generation of youth who only have witnessed war. The children in schools today have more hopes for their lives than ever before. Yet there are many developing countries those do not have such hopes due to terrorism or war situations and Sri Lanka is the only nation today who has managed to defeat and eradicate terrorists and have entered a new era of sustainable rapid development. Friends we have a new Sri Lanka, a hopeful Sri Lanka.

It is important for all of us, particularly for the graduating youth to understand several noteworthy global trends. We all live today at a time of 'Change'. The World is becoming smaller and smaller due to information technology; access to information and services has become unbelievable easy for all due to the world-wide-web (WWW). The Information Technology and media are governing the lives of many in the world. It was not too long ago, just two decades back perhaps a 'Letter' was the most common mode of communication. Today the mobile phone, the internet, telecommunication, the media has made it possible for everyone to reach out to others and to the opportunities, services and information so easily. The graduating youth should know that your job market is globally open for you due to the 'Changing-Times' in the glob. You are a skilled worker in the global society, not just in the Sri Lankan job market.

Emerging Demands and Vocational Training:

The war free, peaceful new Sri Lanka has set very high political aspirations to bring all progressive political forces together to provide the political stability and the strategies to ensure rapid and sustainable development in Sri Lanka. The political aspirations are set and geared to transform Sri Lanka: the emerging "Wonder of Asia". The political vision today is to transform Sri Lanka to a Naval, Aviation, Commercial, Energy and Knowledge hub in Asia. These transformations create new demand for the technical personnel than for the academic professionals.

The Mahinda Chinthana has identified that Sri Lank should be transformed as a naval hub. Massive investments are made along these lines a new habour in Hambantota is to be commissioned on November 18, just in two days. The Colombo habour has expanded. The South port completed a new terminal claiming six acres of the sea and the another new terminal is on the way claiming another three acres of the sea. At a time when the whole world is facing an economic down turn, the report 'Top 30 Container Ports in the World in 2008' published in the magazine 'Containerization International' recently, has placed Colombo Port in the 27th place out of 125 rated ports among the best container ports of the world in the year 2008[1].

Such economic growth will create new demands and create new job opportunities oppose to the traditional jobs. This is an area that Vocational Training Authority and the Commission should look into. When I go through the 171 listed courses, I see there are many new courses in the area of IT and Media and Languages being added. However, there is almost nothing on the potential naval job markets. Sri Lanka is aspiring to build ships, do better fishing, explore under-water mineral resources, generate energy from the sea waves, and attract tourists by making the beaches and the sea more tourists friendly and joyful. These are emerging jobs and academic education cannot reach such emerging markets.

[1] http://aapa.files.cms-plus.com/Statistics/WORLD%20PORT%20RANKINGS%2020081.pdf

The Knowledge Economy And Emerging Trends:
Moreover, Sri Lanka becoming a knowledge hub means Sri Lanka establishing a 'Knowledge Based Economy'. The back bone of knowledge economy is the well developed human capital. The human capital is not the same as the traditional labor market that we used to know. A decade ago, it was the cheap labor, but today the demand is for 'skilled labor'. A school graduate with GCE OL or GCE AL, for that matter even university graduate with a Bachelors degree with no employable skills is not considered as 'skilled labor' or a 'potential employee' who has a ready job market. The Knowledge Economy will flourish only on 'Creative Ideas', new ideas those increases efficiency and effectiveness in all socio-economic activities of people and system, at the domestic, national and international levels.

The value of patent licenses depends on its monetary value, and the economic and social impact on patents, particularly the share of patents used for commercial and industrial purposes. A decade ago, the Americans, Germans and Japanese claimed over 90% of the issued patents in the world and in the last decade this has changed. Their share has dropped. The investment in 'Research and Development' (R&D) has a strong correlation with patents. Patents bring new establishments, new business firms and new revenue and R&D is the backbone of this.

I wish to iterate an important point of this patents issue to the graduating youth. Many inventions were not done by the most educated PhD degree holders in the world. The inventions were mostly done by the technicians, foramens and mid-rank skilled personnel who had a constantly sparking thoughts and the endurance to pursue practical research and keep working on new ides. Will this invention of the hydrogen car the motoring industry will revolutionize. Billions of dollars will be generated on the new technology. This was not invented by a college professor. It was invented by foremen.

I wish to narrate two invention stories to you at your graduation just to stimulate you on these lines:

Hydrogen Generator:

In 1939, in Bolivia, Francisco Pacheco, became interested in electrical phenomena and especially in batteries. While in his early twenties he had heard a story about a Bolivian priest who had invented a battery that would give 3 volts instead of the normal 1.5 volts. The battery was called the Pila Bolivia but when Francisco tried to track it down and the priest, he was told that the priest had gone to Germany and neither he nor the battery was ever heard from again.

'In the mountains of Bolivia, there are many minerals (tin, titanium, etc) most of which are mined and exported. It was believed that the priest used one of the rivers near a mine where the minerals were washed by women workers. But no one seemed to know which stream, from which mine, or

which minerals created the electrolyte water that was used to make the Pila Bolivia.'

"Francisco's dream was to reproduce the 'super battery' and he experimented with many metals until he finally came close to 2 volts from the battery. One evening, while working alone in his laboratory with his array of glass jars and electrodes, he noticed bubbles of gas forming. Because pressure was building in one of the glass vessels, he vented the jar. But, it wasn't until he lit a cigarette and there was an explosion which dented the ceiling that he knew that the bubbles that were emerging from the water were filled with hydrogen gas. After that, Francisco dropped his battery experiments and concentrated on improving the efficiency of the process he had discovered; that of extracting the hydrogen from salt water to use as fuel on demand. His first experiment involved a small unit which produced enough fuel to boil water. From there, he took his hydrogen fuel generator and used it to run a motorcycle.

In 1942, U.S. Vice President, Henry Wallace came to know about this and he brought Francisco and his technology to USA. Since then the hydrogen engines and generators have generated trillions of dollars to the US economy. Francisco worked untiringly on his experiments and obtained a rare patent from US, Germany and all world bodies for his improved inventions, after 30 years in 1972.

When Francisco tried to interest the automobile industry in his invention, he was again confronted with skepticism or ignored. He contacted energy companies and one such company, Consolidated Edison, sent a research chemist to see the generator in action. The chemist was enthusiastic about the invention but when he took it back to his company, he told Mr. Pacheco later, his company had no interest. He sent details of his invention to all the major oil companies. The response was either cool or nonexistent. One oil company returned all papers to him in an unmarked envelope and then after a two hour meeting with him, a representative told him, "We are in the oil business. Your invention, if we were to develop it, would be against our interests."

Today, at a time world is drying on fuel energy, Fancisco's the hydrogen cell is the hope that we have to save our future generations from energy crisis.

Let me also relate a more recent incidence. You have heard of cars running of water. In fact there are 300 automobiles including busses now running in the East and the West costs of USA with water based energy.

A Water Powered Car:

Stanley Meyer's water powered car was invented in the recent years. Mayer was not a PhD, not a University Professor, he was just a technician, a foremen. Eye-witness accounts suggest that US inventor Stanley Meyer has

developed an electric cell which will split ordinary tap water into hydrogen and oxygen with far less energy than that required by a normal electrolytic cell. He demonstrated it before Professor Michael Laughton, Dean of Engineering at Mary College, London, Admiral Sir Anthony Griffin, a former controller of the British Navy, and Dr Keith Hindley, a UK research chemist. Meyer's cell, developed at the inventor's home in Grove City, Ohio, produced far more hydrogen/oxygen mixture than could have been expected by simple electrolysis.

According to the witnesses, the most startling aspect of the Meyer cell was that it remained cold, even after hours of gas production. Meyer's experiments, which he seems to be able to perform to order, have earned him a series of US patents granted under Section 101. The granting of a patent under this section is dependent on a successful demonstration of the invention to a Patent Review Board. Meyer's secured funding for a $50 million research center near Grove City with his invention. He was apparently eating dinner at a Grove City OH restaurant, when it is reported that he got $50million, suddenly he jumped up from the table, yelled that he'd been poisoned", and rushed out into the parking lot, where he collapsed and died.

The breaking news on January 21, 2010 was that more efficient water based car is now produced on Mayer's formula[2]

My message to you is that you have just received basic training. This is only a beginning for you. You can be a Francisco or Mayer. It all depends in your hands and your endurance to keep interests alive, work on it untiringly and one day one of you can become a Mayer or a Francisco. The world is so open today. Access to information is at you door step and whether you wish to explore it or no, depends on you. If you know that you are creative, you have new ideas; never fear to work on those. Ideas multiply when your head and hand works together. Unfortunately, our education has not been able to cultivate creativity. We only pass basic skills to you. But you are your own architect of your wisdom. Believe in it. I wish to cite what Francisco said one day closer to his final days, to make one of you a believer of endurance to pursue your own research. After a lifetime of efforts to gain recognition for his work, which he offers to America as a tribute to liberty and as an instrument of peace, he remains firm in his convictions. He humbly but strongly believes in the words of an old wise man who once told him, *'SON, God put on your shoulders something very big. Do not ask yourself, why me? Think why not me.'*

The New Challenges:

This is the new challenge that vocational training has to take up. Simply training the youth in the traditional mode may not elicit such creative ideas to take the due share of creativity in the economic world. Simply supplying

[2] http://fuel-efficient-vehicles.org/energy-news/?page_id=927

trained personnel to the job market alone may not take Sri Lanka to the expected 'Hub of Knowledge' to form an attractive human capital in a globally competitive commercial world. Just to illustrate my point I cite 'Nanotechnology'. The potential of 'Nanotechnology' is explored and Sri Lanka is making good progress on these lines. The school curriculum has also introduced Nanotechnology to young children. Nano-technicians are emerging demands.

These unbelievable technological advancements and changes are positive developments and have brought about plausible solutions and hopes towards economic empowerment of nations by eradicating isolation, ignorance, illiteracy and ill-health, unemployment, discriminations and by and large the poverty of the marginal populations. Each and every person in society has the challenge of acquiring the much needed IT skills. If one wishes to be a true beneficiary of these developments you need to acquire these skills

In the last 10 years, China has managed to attract over 70% of the global direct investments. The new graduates need to understand that it is the 'International Direct Investments' by the leading investors in industry and services brings the much needed capital and opens up the global markets. These investors invest only in places where they have a better 'Investment Climate'. It is in this context that Sri Lankans have to understand the realities of the 'Changing Times'.

Sri Lanka is highly fortunate that we could join this beneficial wave of change because Sri Lanka ended the 30year war that for the last 30 years pushed Sri Lanka's development agenda to the backseat.

The high degree of political stability, the freedom of free movement, freedom in civil life for all, satisfactory level of infrastructure -- the road and transport networks, communication networks, stable power supply -- and moreover the availability of a highly skilled workforce are some of the conditions of the investment climate hose attracts international investors. They assess and evaluate the situation of a country before they bring investments. Sri Lanka today is one of the most promising nations for investment. Today Sri Lanka is rated amongst all other developing nations as one of the best countries to invest because of the newly achieved peace and political stability. No sooner the rapid infrastructural development projects would become another attraction to those International Director Investors. Those are difficult to have in many of the developing countries. These conditions bring more and more direct and indirect investments to Sri Lanka and set an attractive investment climate that promotes rapid economic growth, full-employment and a higher quality of life for all.

Amongst all these factors the **quality of the human resource** is an important factor that attracts direct investments. Sri Lanka is known as a literate nation for several decades. Sri Lanka has over 94% adult literacy rate and in the younger population the actual literacy level is over 98%.

Over 65% of our population of 20million people has had secondary education. These are unparallel achievements that only a few countries in the world could claim. Yet, we are very much behind in two aspects of human resource development:

- Sri Lanka has an educated work force, yet without employable kills;
- Sri Lanka's access to tertiary education opportunities, including higher education, is around 21% when compared with the middle income countries it is significantly a lower level.

The fulfillment of the human resource requirements would certainly create a better 'Investment Climate'. To achieve this Sri Lanka needs to bring about major reforms in the domain of education and training.

Though the current system of education and training in Sri Lanka has long established traditions the general education produces a stereotype graduate. The time has come for the Sri Lankans to revamp or reconstitute the system to bring the expected effectiveness and the external efficiency to relate the education to the world of work. Even at a time of socio-economic transformation of Sri Lanka, the education system intends to continue in the same conventional paths paved with the establishment of the Royal College of Colombo in 1836, the first vocational school, the College of Technology at Maradna, Colombo in 1893; and the first Ceylon University College, Colombo in 1921.

Today the 13 years of general education offered through the schools system successfully enroll over 330,000 students or 98.5% of the five-year old population to grade one in schools. The number enroll successfully completes the five year primary education and the number drops out of the system is very small. However, nearly 18% of the primary school graduates do not achieve the expected competencies to the expected levels. Those who enter Grade six without achieving the basic skills continue to be the backward children in the secondary school as well. Of those under-achieving students, the students who come from weaker homes and are in poverty, tend to leave the secondary school system without completing the 14 year compulsory education or grade nine. About 30,000 students drops out by the time they reach Grade nine. Almost 290,000 reach Grade eleven or the GCE Ordinary Level and they sit for GCE OL as fresh or the first-time candidates. Of the fresh candidates about 175,000 successfully complete GCE OL and over 115,000 of the first time candidates are unsuccessful in completion of the certificate and either sits again as repeat candidates or drops out of the system. The number entering the GCE AL classes is about 210,000 and this includes the GCE OL repeat candidates as well who qualify for admission to GCE AL at subsequent sittings. In a given year about 245,000 sit for the GCE AL examination and about 120,000 pass the exam and about 22,000 find admission to State Universities in Sri Lanka. Approximately another 30,000 enters university education through private

avenues in country and overseas. About 70,000 of the qualified candidates to enter the universities are left behind. About another 100,000 are unsuccessful in the completion of GCE AL and repeat the examination or look for alternatives.

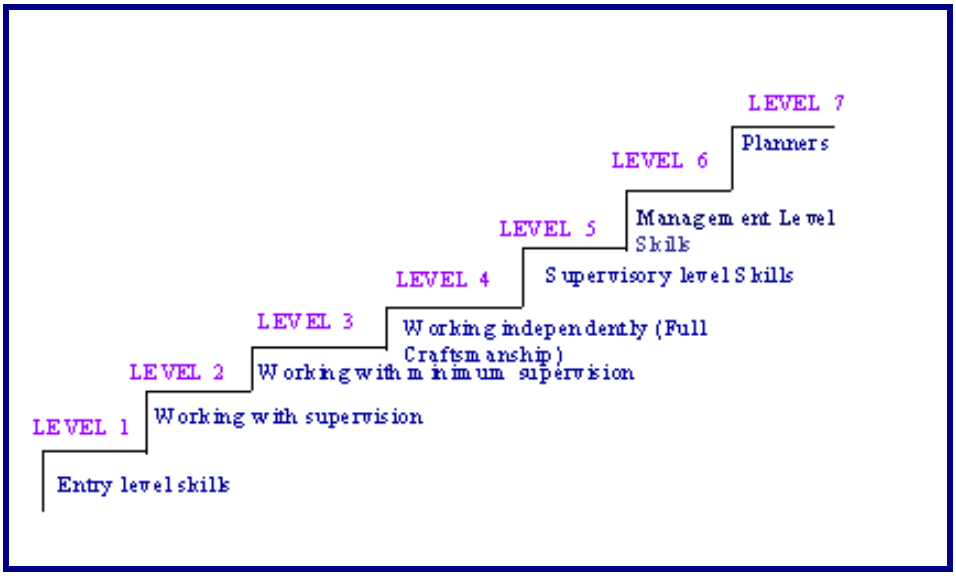
Though, this story sounds a much better situation than in many developing countries and all our immediate SAARC neighboring countries, the inability to provide continued education and training to these youth adds to a high degree of economic wastage. Some of these youth enter the Vocational Institutions in Sri Lanka. Unfortunately this looks like a step taken by them as an act of the last resort as they have no other way to pursue studies or enter the world of work. This was the case of vocational education and training system in Sri Lanka in the last few decades.

However, today the time has come for all of us to readdress these issues and concerns because there is a renewed interest in vocational education and training. In the Changing Times of Sri Lanka and in the global settings, the academic education that always pushed the vocational education to a side is now faced with a crisis. The academic graduates of the universities are finding it difficult to join the world of work as they do not posses employable skills. In the case of Sri Lanka, the university graduates, particularly the liberal arts graduates could only find jobs through various political agitations and on political sympathy at the election times. In Sri Lanka many of such graduates becomes teachers in secondary schools. Teaching perhaps is the only job that they could fit-in, not because they were qualified teachers, but they have the knowledge to teach a school subject. Even the area of teaching is no longer open for untrained persons to enter. Today, Sri Lanka has 18 National Colleges of Education providing different specialized professional training for over 3,500 trainee teachers and these pre-trained teachers are recruited immediately after their graduations.

In 2005, the Ministry of Vocational and Technical Training (MVTT) introduced the National Vocational Qualifications (NVQ) framework which was an important milestone for the education, economic and social development of Sri Lanka. This NVQ framework has brought new hopes as the vocational education has the laddering that was much needed for a long time. The Diagram 1 presents this framework. Today a trainee who enters level one (L1) with entry level skills, if successfully complete the course and the Trades Tests could enter the next higher level, the Level 2 (L-2) of the ladder and could continue on the ladder.

The NVQ system seeks to resolve the perceived mismatch between training offered and the requirements of the labor market, the duplication of training provided by institutions and the lack of consistent training standards and delivery. Under the NVQ framework, all institutions providing vocational training courses must be registered with TVEC and acquire accreditation of individual training courses in order to conduct nationally recognized VT training and provide NVQ certificates.

Diagram 1: National Vocational Qualifications (NVQ) Framework
(Source: Ministry of Vocational & Technical Training 2010)



Merger of General Education With the Vocational System:

However, yet there is no convincing evidence to indicate that the system has attracted the potential youth with a real willingness to achieve mastery in a vocational area with an intension of entering the world of work or find ready employment. This is one of the challenges that the vocational education and training is faced with. Because when compared with the number leaves the general education system and the number enters the vocational education system, the number entering is far too short to claim any attraction to vocational training. It was stated earlier that 115,000 leaves at GCE OL and 100,000 leaves at GCE AL and the number enters the vocation system on full-time basis for a one or two year courses is around only 12,500 in a given year. This means only 06% of the number leaving the General Education system is attracted to vocational training.

This issue has to be addressed as a education sector issue than an isolating the issue as a issue on vocational training. A reasonable sound strategy of

mainstreaming vocational education with general education is a key issue to be addressed by all of us.

In year 2008-09 academic year there were 22,804 students registered to follow 173 courses, of various durations ranging from 03 day courses to 3 year courses. Except a few full-time courses, most of the 3 year courses are part-time courses. There are 20 courses offered on 02 year full-time basis. There are 22 courses offered with one year on full-time basis and 48 courses of 6month duration full-time.

The courses ranged from Level 1 to Level 6, in the 09 Colleges of Technology and the 30 Technical Colleges across country. Of the number registered 34% are females

Only 3,277 candidates registered for the 22 courses on 2 year full-time basis and of which 1,200 were for Accountancy courses. The number actually receiving actual technology training at a 2 year full-time level is around 2,000 candidates. In the one year full-time courses 9,318 students are enrolled in 29 courses of one year duration on full-time basis and of this number over 2,200 are registered for English Language courses. There are another 50 courses of 6month duration on full-time basis. Many are soft technology courses such as short-hand, typing, secretarial services etc. However in year 2008/09 there was 101 full-time courses and 72 part-time courses offered.

In 2007/08 examination conducted for 29 courses and 4,603 candidates appeared the examinations, of which 2243 candidates or 48% passed the full-time courses. In the nine part-time courses 1339 candidates appeared and 579 or 43% passed the examination. The annual recurrent unit cost of a passing graduate, excluding capital investments, is approximately Rs 274,000/ or the approximate average unit cost of a candidate who sat the examination is Rs 129,651/.

Today there are 13 courses under the vocational education system that needs GCE AL, there are 19 courses those require GCE O/L for admission. There are another 16 courses those require up to GCE O/L, not necessary to pass the exam. All the other courses enlisted do not have such specific entry qualifications (TVET Guide 2010). Many of these courses are free of charge and some requires a small annual payment.

The Sri Lanka Institute for Advanced Technical Education (SLIATE) aims to become the centre of excellence in technological education in Sri Lanka and expect to set up ATI in each district at the end of 2010 and produce 25,000 graduates from SLIATE The Tertiary Vocational Education Commission (TVEC) has prepared a cooperate plan for 2010 – 2014 and intend to develop stronger partnerships with industry, professional associations both national and international to achieve its goals. The cooperate plan indicates of many affiliations and there are nearly 800 private sector institutions providing

training under TVEC and 518 courses are enlisted. The TVEC also develops and maintain Labor Market Information System.

The General Education system in Sri Lanka is too academic. The system offers a basket subjects on technology at GCE OL and there are three soft technology subjects and three hard technology subjects at GCE AL. Students who do these subjects find no avenue of entry to universities. These have become the bottlenecks for children who are keen to go into the technical stream. Unless and otherwise a technical stream is created at GCE OL and GCE AL the expectation of technical education would be difficult to materialized.

Let me conclude, stating that the graduating mid rank technologist, you are the backbone of industry and innovations. Do not get to routine work cultures. Employers should facilitate technologist to do inventions. The technical colleges should allow them to come back and use your facilities to do small developmental research and experiments. The government needs to revamp and reform the general education system to open up an avenue foe technical education to be mainstreamed.

Dear graduates, I wish you all success in your future endeavors in your vocations, and keep my hopes very much alive to see at least a few of you becoming a Francisco or a Mayer when your head and hands work together to resolve critical technological issues for the betterment of humanity.

Thank you very much.

MMMMMMMMMMM