SKILLS TRAINING AND DEVELOPMENT

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EXECUTIVE SUMMARY

In this report, the Sub-Committee for Skills Development and Training wishes to highlight the fact that there are a number of fundamental issues which confront the country and which need to be addressed in a holistic manner. These issues include a noticeable decline at the societal level in a number of areas, including standards of governance, respect for the Rule of Law (including white collar crime), integrity in public life, the quality of the judicial system and service to country before self.

These issues have impacted upon the level of resources made available to finance national projects, the distribution of wealth, the level of crime, poverty and the overall rate of national development. In this regard, major reform of our constitution, legislation, and other systems that guide public life may be required. If these issues are not addressed, the development of Trinidad and Tobago may be stymied, as has been the case with several Caribbean, Central and South American nations.

Canada, Germany, Australia, Singapore and the United Kingdom serve as examples of countries that have successfully implemented systems to protect against most of these pitfalls. The question that arises is, "What are the characteristics of such a desired nation?" Social planners have identified the following indicators that can be used to evaluate the extent to which a nation can be classified as "first class" or a "total quality nation." These include:

- Easy access to quality education and/or training for all.
- The provision of sustainable employment for all within employable age and ability, and thereby a reduction in the rate of unemployment.
- A better quality of life for all, in particular, the provision of the basic necessities of life, for example, health care.
- Healthy citizens, in particular by the removal of threat of common communicable diseases.
- A reduced crime rate.

These goals cannot be achieved if we continue to prescribe short-term measures that provide temporary relief for the ills that plague our society. We need long-term strategies that will permanently address these maladies and position

us on the road to development. We must recognise that we cannot continue to employ "quick-fix" approaches, such as initiating programmes to "take people off the streets", without providing the necessary infrastructure to create sustainable work in the occupational areas that these programmes address. Additionally, the curriculum for these programmes should have components for entrepreneurial training and small business development. However, saying we are training to create entrepreneurs is not enough. We need to also provide the necessary support systems to facilitate the development of indigenous entrepreneurial capability.

Skills development and training programmes must create or build the capacity to produce goods and services of a high quality and quantity not only for local use but also for export purposes. Activities to create employment in a society employing more and more advanced technology must not be seen as substituting people for the needed technology. Skills development and training must instead promote the use of modern and relevant technology to facilitate the production of high quality products and services. This calls for mechanisms to ensure that skills development and training programmes are flexible enough to embrace the changes taking place in society locally and globally. Employees must also be prepared and willing to undergo re-training or re-tooling when these changes take place on the work-sites and thereby render certain skills obsolete.

In the present situation, the provision of skilled workers to the labour market assumes a supply–oriented approach. This is mainly due to an absence of reliable labour-market information and the absence of a far-reaching needs-assessment, both of which provide the scientific basis for determining the occupational areas in which to train, the quantities needed, as well as for ascertaining when to shift the focus of training. In this regard, many training initiatives have been misdirected relative to industry needs. This has resulted in an oversupply of some skills and a deficiency of others on the labour market.

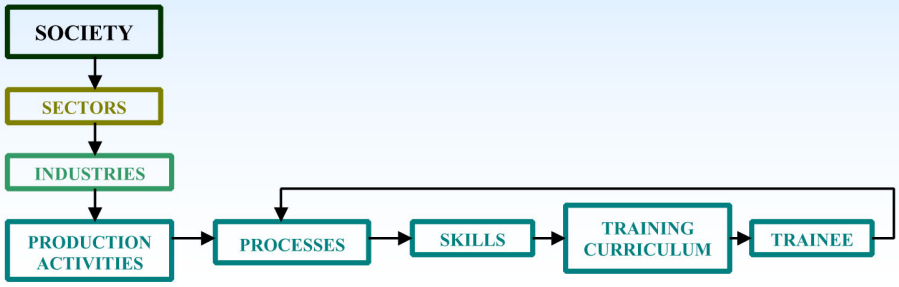
Because of this mismatch in the demand and supply of labour, many graduates of skills development and training programmes cannot find the kind of jobs they were trained to do and employers cannot find the skills they require to produce the goods and services that are in demand. This often leads to the importation of labour, migration, the pursuit of alternative routes to employment (including a life of crime), and increasing cost of goods and services due to increasing labour costs arising from manpower limitations.

Mokhtar, Zaky and El-Faham (2002) contend that in any rapidly developing society, there is always a need for highly trained personnel in the context of:

- Increasingly sophisticated and rapidly changing technological advancement which alters the methods and processes involved in the production of goods and services.
- The demand for high quality products and standards of professional services as a result of increasing competition from developed nations within the context of globalisation and trade liberalization.
- Widening of the market (otherwise known as "shrinking of the global economy") due to improvements in communication and transport services.
- Shifts in the demand by consumers for new products and services.
- The need to align skills development and training to the needs of industry.

In this regard, there is a need for a demand driven approach to skills development and training. That is to say, the introduction of any skills development and training programmes must be informed by in-depth research and/or a state wide needs assessment, which involves an "audit" of each sector of the economy, each industry, and each production activity. Such an audit would then identify the processes and subsequently the skills required in order to produce a quality product or service. The steps in conducting such a skills-audit is graphically represented below:

Diagram 1: Steps in conducting a skills audit in an economic sector



The skills identified should then be used to formulate skills development and training programmes as these would be scientifically based on sector/industry needs. Further, our system of skills development and training in conjunction with our education system must also produce the kind of individuals with the necessary intelligence, skills and attitudes required to become innovators [ideas people] who would have the capacity to create or invent products and services for which there is a demand in both local and international markets.

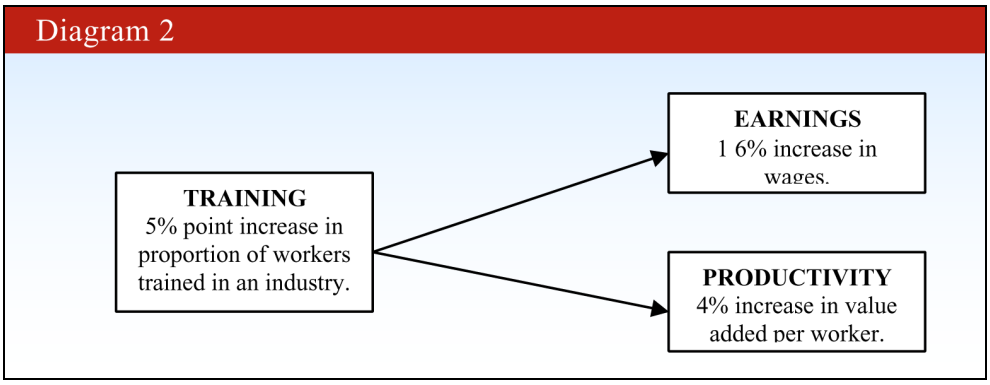
SOCIO-ECONOMIC IMPACT OF EDUCATION, TRAINING AND SKILLS DEVELOPMENT

Historically, education and skills development policies have had a tremendous impact on both economic well-being and social inclusion. Such policies help governments to achieve their economic and social objectives and assist employers in increasing their productivity and maximising profits. The result is greater investments, job creation and a better quality of life for all. Quality learning, skills development and training are also considered to be strongly linked with higher earnings, greater chances of staying employed, better health, and a reduced crime rate.

Research shows that obtaining high quality education and training is generally a good investment for an individual, as people with "higher qualifications" are more likely to get jobs, earn higher wages, and have an increased chance of remaining employed. Although there is inadequate data to support the link between education and training, and productivity,

there is a general understanding that highly educated and skilled individuals produce more. Further, there is a close link between education and training, and earnings. Educated and skilled individuals generally earn more than their counterparts. Employers normally would not pay employees more than the value of their productive outputs and equally, adequately educated and trained employees would not usually accept less, as they can seek higher wages from other employers who demand them.

Diagram 2: Estimated effect of training on earnings and productivity (adapted from Dearden, Reed and Van-Reenan, 2000)



As education and training can lead to higher productivity and improved quality of goods and services, they should be considered crucial factors in enhancing international competitiveness and fostering a climate conducive to strong and sustained economic growth. Trinidad and Tobago, although considered as having a competitive edge over its Caribbean counterparts in terms of labour output, may be found lacking when measured against international competitors. We face the problem of our economy falling into non-skills or low-skills equilibrium unless there is an adequate supply of skilled workers - a situation that would restrict the country's potential for growth and wealth creation. Mokhtar, Zaky and El-Faham (2002) contend that although higher-level qualifications (at university level) are desirable to all countries to produce creators/innovators,

intermediate-level qualifications (skilled/ multi-skilled personnel) are crucial to developing nations like Trinidad and Tobago in order to make use of the technology "imported" in their societies.

One of the drawbacks of not having an adequately skilled workforce is that organisations are forced to either import labour (contributing to the local unemployment problem) or down-grade their business objectives and cease to demand the higher skills necessary to be internationally competitive in higher value added sectors, which has far greater implications for national economic development.

One school of thought argues that the government is playing an important role in breaking the cycle of deprivation and addressing social inequalities, by ensuring that people have the requisite skills for work and helping them to make the right educational choices and overcome any barriers to them doing so. Although few studies have been conducted in Trinidad and Tobago to illustrate the relationship between education and training and social issues such as health and crime, studies carried out in the United Kingdom reveal that there is enough evidence to support the existence of a direct link between them.

One study in the UK reveals that 17% of people reporting good health had no qualifications, in comparison to 35% for those with higher qualifications. The lack of education and training has also been linked with high incidence of suicide, depression, obesity, respiratory problems and inertia. Further, higher mortality rates were more pronounced among unemployed and low-skilled workers than among higher skilled workers. In fact, there seems to be an increase in life expectancy among those who are more educated or trained.

The research also reveals that apart from them being "ready" to learn, those who are healthier tend to have children who possess better numeric and literacy skills. Further, poor behaviour at school, truancy and exclusion were more pronounced among children who came from families who were less skilled. There is enough data to support the hypothesis that there is a strong correlation between qualifications (as well as performance in

school) and offender rates (proportions who have offended), and between truancy and offender rates.

Studies carried out in the US reveal that there is a relationship between education and training and crime. It shows that higher rates of high school graduation significantly reduce criminal activities. However, this is an area where continuing research is necessary, although initial findings support this thesis. The Deosaran Report (2002) on crime in Trinidad and Tobago reflects that there is some correlation between class, educational attainment and crime in our society.

Education, skills development and training are considered key factors that governments must address to narrow the productivity gap with competitor countries and to treat with some social issues. However, because of the perceived deferred benefits accruing from investments in education and training, insufficient emphasis tends to be placed on investments in these areas.

FINDINGS OF THE SITUATIONAL ANALYSIS

The Education System and the Technical-Vocational Education & Training ("TVET") System:

Based on the information gleaned when carrying out an analysis of the present education and TVET systems, it was seen that apart from the weaknesses identified, both have certain strengths. Some of the functions involved in the education and TVET systems are in principle, systematic and rational: developing and delivering curricula, assessing and evaluating performance, and certification. The Sub-Committee is of the opinion that if the education and TVET systems were given greater support in terms of preparedness, infrastructure and resources (adequate manpower and funding and provision of the requisite plant, equipment and material) to discharge their functions, they would have achieved greater success.

Notwithstanding the limitations, Trinidad and Tobago has a high level of literacy (adult literacy in 2000 was 93.8% and youth literacy rate was 97.5% in that same year[1]) and it is currently ranked 54th on the

[1] Human Development Index 2000

Human Development Index in terms of literacy and enrolment, and commitment to public spending on education. Despite these successes, when compared regionally and internationally, the country needs to improve its performance with regard to skills development and training. Comparator countries like Barbados, the Bahamas and Singapore, for example, ranked in the first twenty on the Human Development Index with respect to the same indicators for the year 2000. In addition, in 2000, only 6% of the population of Trinidad and Tobago entered the labour force with tertiary education and training.[2] The rate in Barbados for that same year was 21%, the Bahamas 13.7%, Mexico 16%, Venezuela 26.4% and Singapore 60%.[3]

An examination of the country's economic performance reveals several weaknesses. The unemployment rate, for example, stood at 10.2%[4] out of a total labour force of approximately 587, 000 in 2003. In addition, approximately 25,000 students exit the formal secondary school system each year. However, more than 45% of them did not achieve a full GCE/CXC Ordinary level certificate (which comprises of 5 GCE/ CXC subjects including English Language) in 2002. Hamilton (2000) projected the annual training distribution for the 15,000 – 21,000 new entrants to the labour market to be 63% pre-technicians, 1.8% corporate and institutional managers, 4% professionals, 16.4% associate professionals and technicians, 8.1% small enterprises and farm management, 4.8% middle management and 1.9% entrepreneurship.

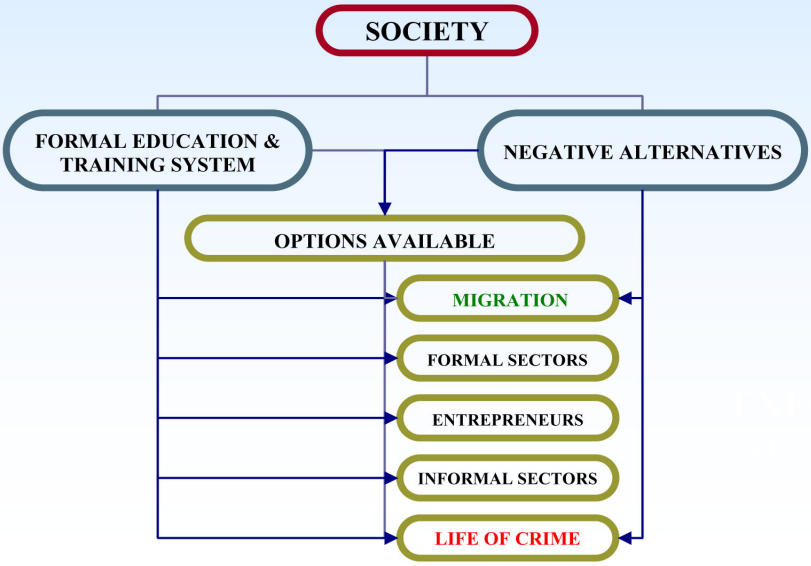
Perhaps a more fundamental concern is the type of individuals our education, skills development and training sectors are producing. That is to say, what are the options available for the graduates of the various educational, skills development and training programmes existing in our country? Diagram 3 attempts to give a picture of the present options available to individuals in our society with respect to the "world of work."

[2] Trevor Hamilton and Associates, The Caribbean Development Bank, 'Institutional Study of the Post Secondary/Tertiary Education and Training in Trinidad and Tobago' Sept. 2000

[3] Government of Trinidad and Tobago, Report of the Committee on National Training 1998

[4] Central Statistical Office.

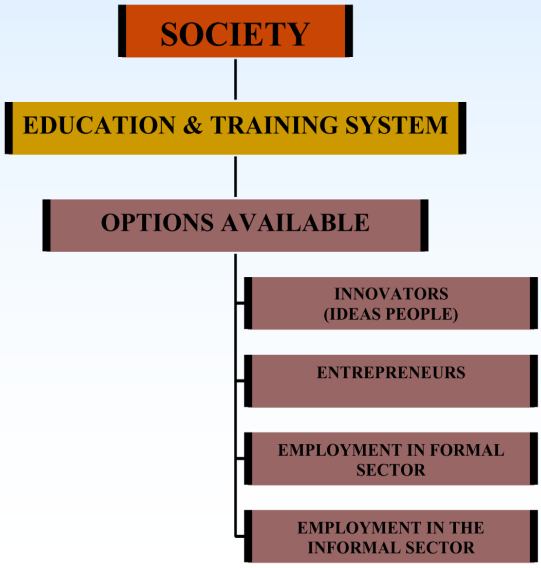
Diagram 3 : Current situation



The diagram shows that included among the options are two negatives – migration (brain drain) and a life of crime. The prevalence of these two options demonstrates the severity of the deficiencies in the education and training systems. We must ever be mindful that survival is the ultimate goal and that people would do anything to survive including turning to a life of crime. Our education and training systems must contribute to the holistic development of people to ensure that they do not take this route as their option to survive. Further, our education and training sector must not only aim to develop in people the type of skills necessary to facilitate production activities, but also to develop the mechanisms to create sustainable employment if we are to achieve developed-nation status.

The system depicted in Diagram 4 has no dropouts, non-achievers or unschooled and there is a possibility for full employment in all sectors of society.

Diagram 4: Ideal situation



This final report seeks to justify the need for the development of a Skills Development Strategy for Trinidad and Tobago. It encompasses the deliberations and findings of the Vision 2020 Skills Development and Training Sub-Committee. In this regard, the members of the Sub-Committee have arrived at the following conclusions, which must be carefully considered in any programme related to skills development and training in Trinidad & Tobago:

- The skills of our people are vital to our national development. Vocational education and training constitute the foundation for industrial and economic development in this technological environment in which we exist. Investors and employers are constantly seeking skilled human capital to drive their productivity and enlarge the return on their investments, maximise their productivity and hence their investments which spiral into economic development. Therefore, there is need for establishing and sustaining a national system for skills development and training that will provide the

highly competent and flexible human capital that will steer the nation to the objectives of Vision 2020 and beyond.

- Currently there are many public and private "institutions/organisations" involved in the governance, administration and/or delivery of training in Trinidad and Tobago with no sense of a systematic or organised structure or co-ordination. There is need for a well-articulated mechanism/system for the identification of skills need, the development, delivery and accreditation of training providers and training programmes.

- The Ministry of Science, Technology and Tertiary Education (MSTTE) is charged with the responsibility of regularising and establishing the systems to ensure that the citizens of our nation are well prepared to take advantage of the opportunities that will be available in our developing country. The National Training Agency (NTA), an agency of MSTTE, has been given the mandate since its inception to rationalise and standardise the national providers but has had limited success to date to establish the national system (listed in 2 above).

- The scope of the Sub-Committee appears to be limited in respect of the sectors. If the benefits of the formulation of a strategy for Skills Development are to be useful to the nation as a whole then careful consideration must be given to the scope of the Sub-Committee or the existence of a well-articulated, relevant and symbiotic relationship with similar sub-committees.

- It must be recognised that education and training is not a panacea that can be prescribed for fixing all ills in society. However, education and training are a well ordered thought processes, which will determine the future of the people of Trinidad and Tobago as it equates to national/ social and economic development and sustainable growth.

A summary listing of the critical issues identified by

the Sub-Committee is presented hereunder:

- The existing education system produces students that lack basic skills required for accessing employment, i.e. employability skills.
- There is a need for appropriate institutional infrastructure that would integrate skills development and training with sustainable job creation.
- In the absence of a clearly articulated policy and institutional arrangements for a seamless tertiary system, there continues to be fragmentation among, and proliferation of, training providers, as well as duplication of training programmes, in the public and private sectors.
- There is an absence of a national approval system for training providers/centres both in public and private training sectors.
- There is an absence of an established National Qualifications Framework characterised by international standards.
- There is a lack of synergy between education, national training/skills needs and employment/world of work.
- The existing training curricula are deficient and in many respects do not fully meet industries' requirements.
- There are very limited established industrial occupational standards that would support a competency based certification and licensure regime for TVET occupations.
- There are persistent vacancies in some occupations and surpluses in others, which is indicative of the fact that there is little correlation between training and manpower needs (i.e. inadequate manpower planning).
- There is minimal interfacing between industries and training institutions that would ensure that there is a continuous upgrading of the skills of instructors necessary to keep abreast of the changing technologies in the industrial sector. Concomitantly, there is a need to upgrade the facilities in the training institutions to reflect the use of advanced technologies.
- There is limited acceptance by industry of

skills qualifications acquired by trainees from some training institutions.

- There are limited alternative routes to tertiary (especially university) education.
- There are inadequacies in the preparation of TVET teachers in terms of delivering the TVET curriculum and facilitating the holistic development of trainees/students.
- There is an absence of "Centres of Excellence" that would cater for development of select activity areas that are of strategic importance to the country's development.
- The current system does not provide opportunities for individuals without the minimum matriculation requirements to enter into tertiary level programmes through alternative means (flexible entry).
- Many secondary and post-secondary training institutions are not purpose-built.
- There are deficiencies in the administration of the TVET system, especially a lack of adequate, competent, human resources in the administrative/management area.
- There are insufficient national scholarships awarded to TVET educators/trainers and administrators to meet the demands of the training and education sector.
- There is an over emphasis on trainer/teacher-centred approaches in the delivery of TVET programmes as opposed to learner-centred methodologies which are designed to more effectively meet the needs of the trainees.
- There is need for a more proactive approach to the use of relevant, state of the art training media in classrooms, laboratories and workshops.

SUMMARY OF THE FRAMEWORK FOR A REFORMED SKILLS DEVELOPMENT AND TRAINING AGENDA

In addressing the aforementioned issues, the Sub-Committee has elaborated a framework for a reformed Skills Development and Training Agenda which gives primacy to linking skills development and training to a sustained, formalised and institutionalised job creation thrust within a collaborative

framework involving inputs from key stakeholders. This is reflected in the major guiding principles of the new Skills Development and Training System being proposed, namely:

- The primary intent and focus of the new system must be to adequately prepare students and trainees for the world of work.

Training and Skills Development must be concerned primarily with FITTING PEOPLE TO JOBS in the world of work. Whereas education provides people with fundamental life-long capabilities, training and skills development are more job-specific. They provide a set of skills, attitudes and habits that will allow the individual to function in a specific work environment with effectiveness and efficiency. This training must be superimposed on a SOUND EDUCATIONAL FOOTING.

The system must be closely aligned to the labour market and must therefore be informed on an on-going basis by the country's skills/human resource development requirements based on current and projected economic and social developmental activities, including government's development plans and priorities, private sector plans for new capacity building/expansion and identified investment/revenue opportunities.
In essence, this alignment must take cognisance of technological trends, the ascendance of knowledge as the driving force in the achievement of economic sustainability in the globalised environment of the 21st century, and the imperative, for the country's survival, of transformation of the onshore economy into high, value-added skill and knowledge intensive industrial activity.

- Enabling infrastructure for effective co-ordination and sustainable job creation must be an integral part of the system, given the focus on preparation for the world of work, and should involve the establishment of:

– A centralised and institutionalised co-ordinating body with responsibility for:

  - Overall co-ordination of the system; and

- Informing the future direction of Skills Development and Training by fulfilling the role of a clearing house for research aimed at identifying new areas of productive activity/employment opportunities.

– Centres of Excellence in all of the activity areas that are of strategic importance to the country's development over the long term.

The success of the system is contingent on effective co-ordination, within the framework of stakeholder collaboration and employment opportunities being continuously generated in sufficient numbers to absorb the mainstay of its output. This is needed to ensure that there is a sufficiently large enough pool of available, trained/skilled human resources to cater for the country's developmental needs, failing which there would be little likelihood of Vision 2020 ever materialising.

One of the things that sets developed and developing countries apart is the inability of the developing country to achieve sustainable job creation, which is linked primarily to innovation and R&D capacity building.

Other guiding principles of the new, proposed Skills Development and Training System are as follows:

- Priority attention must be given to the holistic development of the student/trainee.
- Thinking skills, innovation and creativity, as well as entrepreneurial skills, must be nurtured at every stage of the system.
- Equal importance and emphasis must be placed on the Academic and Technical (Tech-Voc) Streams at all levels of the system and all students at the secondary and primary levels must be exposed to technology (tech-voc) education.
- The system must cater for coherence in terms of all public sector post-secondary training being conducted, affording articulation among secondary schools, non-degree post-secondary providers and tertiary institutions;
- Appropriate teacher/instructor development infrastructure must be a

central part of the foundation of the system.

- The ratio of instructor/ teacher to trainee/ student should not exceed one to twenty;
- Provision must be made for enhancement of capacity and capability in educational administration;
- Appropriate support mechanisms must be instituted at every level of the system, particularly at the primary and secondary levels to ensure accessibility of the system to all, i.e. that no one is disadvantaged because of social circumstances, including gender, poverty, disability and even incarceration;
- Given the large sums of money being expended on Skills Development and Training, there must be a stronger focus on financial accountability and transparency.
- Pertinent information must be disseminated in a systematic manner to the public at large.
- A national culture of lifelong learning must be developed, with the primary objective being the achievement of lifelong employability.

The key pillars of the suggested new Skills Development and Training System are as follows:

Institutional

- Establishment of a National Education and Training Collaborative, that is, Trinidad and Tobago Education, Training and Employment Committee (TTETEC).

This body would serve to address the deficiencies in the co-ordination of the National Training and Education System and thereby help to minimise/eliminate wastage of scarce resources. TTETEC would also assume the role of a Centralised Co-ordinating and Planning Body/Task Force, which with support from specialist staff in key areas of importance to national economic development, would help to chart the course for future economic activity in Trinidad and Tobago.

- Establishment of Centres of Excellence.

These constitute the bridge that would facilitate access to technological innovation and entrepreneurship, which form the basis for the achievement of sustainable economic development.

- Establishment of a Professional Development Institute for Instructor Training.

This constitutes, in essence, a Centre of Excellence for Instructor Training. It would cater for such training for all levels of the Skills Development and Training System on a full-time basis.

- Establishment of a National Accreditation Council (NAC).
- Establishment of a National Awarding Body.

Legislative

This entails primarily the introduction of legislation to govern national training and to address issues pertaining to the legislative framework governing the establishment of COSTAATT.

Funding

This encompasses:

- Revamping of the operations of the National Training Fund, with responsibility for administration of the fund to be given to the NTA
- Provision of funding for Research and Development, including postgraduate and postdoctoral training, particularly within the context of the Centres of Excellence.

Policy

This entails the development of a sound Human Resource Development Policy framework.

Other

If Trinidad and Tobago is to enhance its competitive stature in the international marketplace, a national framework of competence-based qualifications must underpin the development of its human resource base. Such a framework would cater for Vocational Qualifications, i.e. National Vocational Qualifications (NVQ).

Whilst the NTA has laid the foundation for the TTNVQ framework, priority attention must be accorded to the further development and full implementation of this system.

This framework will:

- Allow people at any stage in their lives to have access to training which is at the right level for them.
- Cater for the use of work-based assessment and prior learning assessment (PLA), which will facilitate both vertical and

horizontal career movement.
- Help to rationalise the training system.

VISION STATEMENT, KEY FOCUS, GOALS AND ACTIONS

Vision Statement

"The creation and maintenance of a coherent, flexible, skills development and training system, accessible to all citizens and tailored to meet the human development needs of a modern, progressive, technologically advancing society."

Key Focus

- Establishment of infrastructure to more effectively manage the skills development and training systems and integrate skills development and training with sustainable job creation.
- Creation of synergy between skills development and training programmes and industry needs.
- Establishment of Centres of Excellence in areas that are of strategic importance to the country's development over the long term, including the area of instructor training;
- Curriculum re-engineering.
- Establishment of a seamless system of education, skills development and training.
- Strengthening and building of capacity of the training resource base.
- Creating easy access and equity in skills development and training programmes.
- Development of appropriate supporting policies and strategies for skills development and training.

Goals

- Foster more effective co-ordination and management of the Skills Development and Training System.
- Make sustainable job creation a more integral part of the Skills Development and Training System.
- Establish coherent and seamless Skills Development and Training, and Professional Development Systems.
- Facilitate institutional strengthening and capacity building of the training resource base.

- Increase accessibility to skills development and training programmes.

Actions

- Develop a National Skills Development and Training Policy and Strategy.
- Draft a National Training Bill.
- Establish a National Education and Training Collaborative, that is, The Trinidad and Tobago Education, Training and Employment Committee (TTETEC).
- Institute standardised accounting and procurement practices.
- Rationalise all skills development and training programmes to ensure synergy exists between them and the needs of industry.
- Establish Centres of Excellence in the areas of strategic importance to the country's long- term development.
- Develop a culture of innovation and entrepreneurship.
- Carry out a countrywide Needs Analysis including a separate one for Tobago.
- Re-engineer curriculum to reflect the needs of society and industry.
- Develop and institute a competency based National Vocational Qualifications Framework.
- Introduce mandatory registration and approval systems for all training providers.
- Expedite the operational development of the Accreditation Council of Trinidad and Tobago.
- Introduce a mechanism for the continuous monitoring and evaluation of all skills development and training programmes, whether public or private.
- Introduce alternative routes for entry into training programmes offered by training institutions.
- Adequately equip all training centres (including secondary schools) that offer Skills Development and Training programmes on behalf of the GOTT.
- Establish a Technical-Vocational Teacher Training Centre (as a Centre of Excellence), which would cater for the ongoing professional development instructors.
- Review all existing training programmes – HYPE, MUST, CEPEP, YDAC, YTEPP, Re-training, NAP etc. with a view to ensuring that

training can lead to sustainable employment or sustainable work for the graduates, i.e. it meets occupational standards and caters for entrepreneurship development.

- Provide information on career opportunities including career guidance in the tech-voc areas;
- Enhance capacity for Distance Learning in the tech-voc areas.
- Provide incentives for employers who assist in the development of Occupational Standards and in the development of site-based training.

ACTION PLAN

Based on the analysis conducted and the conclusions arrived at, the Sub-Committee proposes the following action plan for consideration:

Goal 1: Foster more effective co-ordination and management of the Skills Development and Training System.

Objectives	Strategies	Measures	Time Frames
Establish a National Education and Training Collaborative, viz. Trinidad & Tobago Education, Training and Employment Committee (TTETEC).	Assign responsibilities to the Ministry of Science, Technology and Tertiary Education to develop a proposal for the establishment of TTETEC. Assign responsibilities to the Office of the Attorney General to draft appropriate legislation to establish TTETEC. Assign responsibilities to the Ministry of Science, Technology and Tertiary Education (STTE) and the Ministry of Education (MOE) to jointly invite representatives of key stakeholders from different economic sectors to constitute the Board of Management of TTETEC. Involve private sector inputs in the funding of TTETEC activities.	Prepare draft proposal for the establishment of TTETEC. Identify stakeholders to participate on this committee. Prepare scope and deliverables for the committee. Identify legal powers of committee. Inaugurate committee. Establish a budget for the operations of the committee.	31 January 2005 February 2005 30 April 2005 15 May 2005 30 April 2005

Objectives	Strategies	Measures	Time Frames
Develop a National Skills Development and Training Policy and Strategy including a policy statement and strategies to address individuals with special needs.	Assign responsibilities to TTETEC to develop a National Skills Development and Training Policy and Strategy.	Conduct a literature review. Establish an ad hoc Committee within TTETEC to address policy and strategy formulation.	March 2005
Develop an appropriate Legal Framework for a cohesive National Skills Development and Training System.	Assign responsibilities to the Office of the Attorney General to draft a National Training Bill. Expedite passage of the Draft Bill entitled "The National Training Agency (NTA) (Vesting) Act 2000" which seeks to vest the assets of the Board of Industrial Training (BIT) in the National Training Agency and to repeal the Industrial Training Act, Ch. 39.56 under which the BIT was established and to provide for related matters.	Review existing legislation pertaining to skills development and training. Prioritise the passage of the Draft Bill on the legislative agenda. Clearly define the *raison d'etre* of all organisations that govern the education and training systems.	February 2005 March 2005

Objectives	Strategies	Measures	Time Frames
Ensure that returns on investments in the skills development and training systems are maximised and that there is value for money expended, viz. greater accountability and transparency.	Institute standardised accounting and procurement practices in all training institutions. Institute a system of bi-annual audit to monitor spending patterns. Establish equity within the skills development and training system with regard to the remuneration of instructors and introduce an incentive system based on performance.	Enlist the services of qualified accounting personnel in all training institutions. Undertake Tracer Studies every 2-3 years to ensure that training programmes are meeting the needs of individuals and industry.	
Develop human capital to ensure effective co-ordination and management of the skills development and training system.	Implement appropriate programmes to enhance managerial capacity and capability in the skills development and training system. Develop/enhance capacity and capability in the following areas: - research, infrastructure planning and development, human resource planning, policy formulation, and evaluation and assessment of training programmes and personnel.	Provide national scholarships for TVET educators/trainers and administrators.	

Goal 2: Make sustainable job creation a more integral part of the Skills Development and Training System.

Objectives	Strategies	Measures	Time Frame
Establish appropriate infrastructure within TTETEC to facilitate a national job creation thrust.	Establish a management structure and system to facilitate the undertaking of research activities aimed at new enterprise creation. Enlist staff resources for TTETEC, including specialist staff in key areas that are strategic to national economic development. Institute appropriate mechanisms to ensure synergy between national skills development and training needs and employment, which would include the establishment of a national manpower information system viz. a national training database.		

Objectives	Strategies	Measures	Time Frame
Establish **"Centres of Excellence"** in activity areas that are of strategic importance to the nation's development over the long term, viz. innovation, manufacturing and technology development; petro-chemicals; agri-business; building construction; hospitality and tourism; marine; info-tech; culture and entertainment.	Transform the MIC and CARIRI into **"Centres of Excellence"** in the areas of innovation, manufacturing and technology development by equipping these institutions with the requisite resources to effectively fulfil this role. Such Centres should provide mechanisms that will facilitate greater interface between training and the world of work. Collaborate with key stakeholders, including UWI and UTT to identify, develop and implement "Centres of Excellence" in the other targeted areas and build R&D capacity and capability.	Introduce pilot programmes integrating training and industry within the framework of the Centres of Excellence. Re-engineer curricula to accommodate integration and industry.	

Objectives	Strategies	Measures	Time Frame
Within the UTT Framework, develop the capability of the MIC in the areas of Manufacturing Technology and Product design.	Enhance/Expand the operational base of the MIC to cater for the following activity Centres: **Manufacturing Technology Centre** (MTC) – responsible for manufacturing, education and training, as well as, networking with other tertiary training and educational institutions. **Product and Process Innovation Centre** (PPIC) – responsible for the design and fabrication of all new products. **Internal Manufacturing Unit** (IMU) – responsible for providing "real world" training of engineers and technicians under the Training Factory Concept (TFC).		

Objectives	Strategies	Measures	Time Frame
Develop a culture of innovation and entrepreneurship nationally.	Develop and implement a national policy for innovation and entrepreneurship. Develop and implement, via collaboration with key stakeholders, appropriate innovation and entrepreneurship building. Develop and implement programmes targeted at all levels of the education and training systems. Enhance the current incentive regime to cater for the provision of incentives for enterprise-level creativity and innovation (e.g. Tax write-offs for expenses incurred on implementation of creativity and innovation programmes).		
Increase the availability of information on new areas of economic activities to all stakeholders and citizens.	Collate information on areas of new productive endeavour in both the manufacturing and services sectors. Institute appropriate mechanisms to make information available to all stakeholders utilising all available media.		

Goal 3: Establish coherent and seamless Skills Development and Training, and Professional Development Systems.

Objectives	Strategies	Measures	Time Frame
Develop a coherent and seamless model for National Skills Development and Training, and Professional Development.	TTETEC to review the current existing skills development and training system. TTETEC to establish the information base, viz. information, education and communication materials to facilitate the development of an appropriate model for the seamless systems.	Identify and review existing documents.	
Ensure synergy between skills development and training, and employment/world of work.	TTETEC to collaborate with the MSTTE and MOE to ensure that training curricula is closely aligned to skills needed. The NTA to evaluate the functioning of the ITOs to date with a view to effecting the necessary improvements to ensure that they play the desired role with regard to the development of occupational standards.		

Objectives	Strategies	Measures	Time Frame
Institute a National Qualifications Framework (NQF).	Develop the framework for the competency based National Vocational Qualifications structure (TTNVQs). Introduce a mandatory registration and approval system for all training institutions – private or public- prior to them conducting training. Mandate all providers to align their training programmes in accordance with the competency- based TTNVQs. Expedite the establishment of the National Accreditation Council of Trinidad & Tobago (NACTT), and ensure that its operation is free from political interference and is guided by best practice.		
Effect reform of the curricula to include key subject areas – critical thinking, problem solving, innovation, inventiveness, entrepreneurial	Develop content material for all the areas mentioned, for inclusion in the curricula. Develop the human resource base to effectively deliver the new areas.		

Objectives	Strategies	Measures	Time Frame
skills, technological literacy, as well as ethics and values, spirituality, family life education, interpersonal skills, and education for sustainable development.	Put in place mechanisms for continuous evaluation and improvement of the curricula.		

Goal 4: To facilitate institutional strengthening and capacity building of the training resource base.

Objectives	Strategies	Measures	Time Frame
Ensure that all training plants and facilities are purpose-built.	Develop standards/criteria for approving training centres – equipment, facilities, space, and training/teaching aids. Ensure that standards include providing for the differently-abled in training centres.		

Objectives	Strategies	Measures	Time Frame
Ensure adequacy of plant and equipment to effectively deliver skills development and training programmes.	Ensure that all training centres including secondary schools are adequately equipped to effectively support the delivery of tech-voc curricula.		
Cater for the continuous professional development of both administrators and instructors involved in the skill development and training system.	Assess existing programmes in educational administration with a view to determining their appropriateness to meet the needs of administrators in a reformed tech-voc system. Increase exposure of administrators in the tech-voc system to training in educational administration. Design and implement, where appropriate, new programmes for administrators in the tech-voc system. Establish a Professional Development Institute (PDI) or an Advanced Instructors Training Institute (AITI) within MIC to cater for the ongoing professional development of ALL Tech-voc instructors in the system to ensure that they hold qualifications at least one step above the programme in which they teach.		

Objectives	Strategies	Measures	Time Frame
Expand the range of skills development and training programmes currently offered to meet identified deficiencies, and establish a platform for the transformation of Trinidad & Tobago into a skills and knowledge-based society.	Conduct a nationwide needs-assessment to determine the skills necessary to deal with the changes taking place in industry. Review and modify existing training and skills development programmes (HYPE, MUST, YTEPP, CCC, CEPEP, YDAC etc.) with a view to creating sustainable employment. Develop skills development and training programmes for non-traditional craft – shoemaking, woodcarving, leather-craft, glass-etching, glass-blowing, and boat-building - and for the entertainment, cultural and sporting industries. Ensure that programmes are structured and implemented in accordance with the TTNVQs. Offer scholarships based on national skills needs. Increase mentoring and internship programmes. Provide information on career opportunities, including career guidance. Introduce a permanent mechanism to cater for the retraining of displaced workers.		

Goal 5: Increase accessibility to skills development and training programmes.

Objectives	Strategies	Measures	Time Frame
Provide greater equity of access to skills development and training by expanding the delivery methods including modalities such as Distance Learning and Internet Based Learning.	Enhance technological literacy to facilitate different modalities of learning with particular focus on the adult population. Provide increased access to all through strategically placed Distance Learning Centres. Enhance institutional, technical capacity for Distance Learning and Internet Based Learning. Provide incentives for citizens' participation in Distance and Internet-based Learning.		
Geographically disperse skills development and training programmes to ensure that remote areas are included.	Ensure that remote areas are equipped with different types of training Centres including Distance Education Centres. Provide transportation for trainees living in remote areas.		

Objectives	Strategies	Measures	Time Frame
Extend financial assistance to trainees of skills development and training programmes at all levels.	Extend financial assistance under the GATE programme to trainees in all registered and approved skills development and training Centres.		
Afford opportunities to the adult population for re-training/re-tooling to enhance their employability.	Expand the Re-training/ Re-tooling programmes. Introduce flexible entry requirements including the use of Prior Learning Assessment Recognition (PLAR) to facilitate greater access to skills development and training by the adult population.		
Develop and promote a culture of life-long learning.	Mount public awareness campaigns to promote the need for continuous educational and professional development among all workers to ensure responsiveness to rapid technological changes.		
Increase training opportunities in Tobago.	Conduct a training, needs-assessment specifically for Tobago.		

Objectives	Strategies	Measures	Time Frame
	Expand skills development and training infrastructure in Tobago. Increase the number of scholarships available to citizens of Tobago. Provide incentives to employers and contractors in Tobago to take on trainees as part of skills development and training programmes – Apprenticeship, OJT, Retraining, HYPE, MUST.		

INTRODUCTION

"Education matters to people. It is more than just a public service and provides the very basis for a fulfilled life and a civilised society. Not only does education bring personal fulfilment, but in a rapidly expanding global economy the value of education and skills cannot be underestimated. The future prosperity of the country depends on our collective knowledge and skills base and our constant drive to push the boundaries of knowledge further……" (Charles Clarke, Secretary of State, Dfes, UK)

OVERVIEW OF THE SECTOR

In approaching this exercise, the Sub-Committee recognised that it had to be mindful of some basic realities, the fundamental one being that we cannot solve existing problems with the same mindset that created them. In other words, what is required is a radical transformation in our thinking, our worldview and ways of doing things, combined with the will and commitment to implement the necessary changes and to steer the course.

Education and training are akin to the country's lifeblood and are critical to its continued survival in an environment that is increasingly competitive, complex, volatile and even hostile. Our ability to think, innovate and create will be our only saving grace in the liberalised, globalised and technology driven world of the 21st century. In fact, these are at the core, the defining characteristics of developed nation status and are the very attributes that will guarantee us success in our quest to join the ranks of the developed nations.

The end result, therefore, must be the transformation of Trinidad and Tobago into an innovation driven economy, characterised by the presence of sustainable, skilled and knowledge driven industries. With this as the bigger picture, we therefore need to address what we need to do at the level of skills development and training to bring this about.

A review of the Human Resource Development and Training/ Skills needs in Trinidad and Tobago is

needed in order to develop a National Skills Development and Training Policy and Action Plan that would enable this country to attain the goal of "First World" status by the year 2020. This is the main objective of the Vision 2020 initiative.

The Vision 2020 Sub-Committee for Skills Development and Training has been mandated to, inter alia:

- Conduct a situational analysis of the Skills Development and Training sector in Trinidad and Tobago.
- Identify the problems and critical issues that are to be addressed. and
- Recommend strategies, policies, legislative and institutional requirements to address the critical issues and problems.

These recommendations are to be supported by an Action Plan and are to be prioritised and classified into quantifiable targets to be accomplished within specified timeframes.

This final report presents a situational analysis of the country's education and training systems, and a prescription for a reformed skills development and training agenda. In this context, it highlights the existing critical skills development and training issues that will inform a national skills development and training policy, and identifies training needs in key economic sectors. The report also outlines an action plan with major goals, objectives and strategies.

The Sub-Committee's vision for the skills development and training sector is encapsulated in the following mission statement:
"To achieve the creation and maintenance of a coherent, flexible skills development and training system, accessible to all citizens and tailored to meet the human development needs of a modern, progressive, technologically advancing society."

The Sub-Committee is of the view that synergy among skills development and training, the education system and industrial requirements/needs is critical to the advancement of Trinidad and Tobago to

"First World" status by 2020. An educated and skilled workforce is needed to seek and create opportunities for development. Our existing and future human resources must also be harnessed and developed in order to solve and eradicate problems particular to Trinidad and Tobago. Some of these problems include, inter alia:

- Universal access to basic social services such as housing, utilities and infrastructure;
- Unemployment;
- Poverty;
- Access to quality health care services; and
- Crime and delinquency.

In addition, it must be acknowledged that current and possible future changes in the economy of Trinidad and Tobago in consonance with the rapid changes globally would require new skills development, training and re-training.

"Current trends in the global economy illustrate that the competitive advantage of countries depends increasingly on the deliberate and continuous development and utilisation of 'intelligent labour', based in knowledge, practical skills and innovation technology."[5]

Such environmental changes include the implementation of trade agreements such as the Caribbean Single Market and Economy (CSME) and the Free Trade Areas of the Americas (FTAA). These changes would increase the competitive nature of the trade and labour environment in Trinidad and Tobago, which in turn would impact on the survival of local industries and ultimately the job market.

MAJOR CHALLENGES IN THE SECTOR

The Sub-Committee has recognised several challenges, which it wishes to note. These challenges must be addressed if Trinidad and Tobago is to achieve developed country status by 2020. These challenges include:

[5] Dr. Bhoendranath Tewarie/ Mrs. Alexa Khan, "Critical Thinking Needs in Trinidad and Tobago: A Sectoral Perspective", UWI/IOB 1997

- To obtain synergy among all stakeholders in a traditionally incoherent, demarcated environment;
- Implementation – this phase requires significant human resources in order to constantly monitor progress and make revisions necessary;
- To put systems in place to address the issue of white-collar crime which threatens the development of Trinidad and Tobago and the Vision 2020 initiative;
- To instill a sense of ethics and patriotism in citizens to enable them to choose national interest ahead of self-interest.
- To create jobs to enable students to obtain employment after they graduate.

METHODOLOGY

The use of secondary data provided by members of the Sub-Committee was mostly employed in compiling this report. Some resources were obtained through the Worldwide Web as well as from previous studies conducted on behalf of the Government of Trinidad & Tobago.

The following methodologies were also employed:

- Use of administrative data/document analysis – research, position papers, histories and other data provided by major stakeholders – MIC, STTE, COSTATT, UTT, NEC, TTHTI.
- Structured and unstructured interviews with representatives of some major stakeholders.
- Analysis of best practices from international organisations from the USA, United Kingdom, Australia, Singapore, Japan, India and Canada.

The full listing of documents/ reports/ studies is presented in the Bibliography.

INTRODUCTION

"Today technological and industrial achievements are measures of the extent of development of nations and are the main criteria by which nations are categorised. It could be said that technology is the true basis of the ascendancy of western civilisation." (Mokhtar, Zaky and El-Faham, 2002).

After acquiring independence, many developing nations subscribed to the Human Capital Theory of using education, especially vocational and technical education, mainly for the purpose of providing general employment, with the hope that it would provide a better quality of life for their people. The main objective then was to provide a workforce of people possessing a high level of manual skills.

However, in view of the enormous technological advancements that have taken place in the latter half of the 20th century, it is now understood that manual skills alone are not enough and that vocational and technical programmes must be re-engineered in order to meet the needs of today's rapidly changing technologies. This signifies that curricula must be re-engineered to provide broad-based, transferable skills. However, according to Mokthar et al (2002) although developing countries are aware of the critical importance of developing technical skills within the framework of their overall education system, in ensuring economic success in a fiercely competitive world, the major concern is that of university education.

Mokthar et al contend that the level of competence of a country's skilled workers and technicians is centrally important to the flexibility and productivity of its labour force. Further, that the skills required by developing nations would be different from those required by highly developed countries since the once skilled and labour-intensive jobs are now increasingly being carried out by robots and unmanned machines.

New technical skills are required to meet the demands of the emerging new technologies - information technology, biotechnology, nanotechnology and cross-disciplinary technologies - rather than the skills once required for the traditional

specialist fields. It is implied then that developing countries like ours should not attempt to re-invent the wheel but rather to subscribe to a philosophy of embracing the new.

The "new" technologies, along with issues related to globalisation (world politics and trade) and the changing face of the Trinidad and Tobago society, are having an impact on our education system. These changes affect our decisions about how we view education, skills development and training. They pose serious questions about the human resources required to create and sustain a vibrant and effective education and training system for all Trinidadians and Tobagonians.

Since the advent of independence in the 1960s, efforts have been made to revolutionise the education system to meet the demands of the "young colonials" as well as to address the issue of economic development, the ultimate goal of developing nations. Attempts had been made to educate and train the people to manage and utilise both the human and natural resources available at that time.

However, it was not until the "oil boom" of the 1970s that any significant attempt was made to revolutionise the education system to include the development of those skills necessary to deal with the high technologies and related products that were being introduced (through importation) into the country due to an increase in both producers and consumers' spending.

The 1970s heralded the introduction of the "new sector" type schools - Junior Secondary and Comprehensive Schools - which sought to provide some forms of preparatory training leading to enrolment in the Technical-Vocational Colleges that provided skills development, or to an apprenticeship programme in one of the emerging new sectors - energy, manufacturing, construction, hospitality etc.

Critics of this form of the education system concur that it only produced individuals who were capable of managing and operating at the expense of those who were needed to design and create in order to develop. Regardless of what was the purpose for this type of education and training system then, it is now imperative to

understand that in light of a globally competitive knowledge-based economy, Trinidad and Tobago cannot afford to let the skills of its work-force go unrecognised or limit the opportunities of those wishing to improve or upgrade their knowledge. Trinidad and Tobago is facing a looming shortage of skilled labour.

Yet many workers in Trinidad and Tobago are under-employed or exploited because they do not have their credentials or these are not recognised. Therefore, there is an urgent need for an efficient system to govern and manage training and the development of skills. This is not to say that nothing exists.

THE FORMAL EDUCATION AND TRAINING (TVET) SYSTEMS IN TRINIDAD AND TOBAGO

It is a widespread belief that the education system in a country is a microcosm of the society as a whole and that systems of training and skills development "faithfully" reflect the characteristics of the society (Mokthar et al, 2002). If this is true of Trinidad and Tobago, then we must realise that we are truly in a position that requires revolutionary changes in our education system to deal with those societal ills - unemployment, drug abuse, HIV, crime - that have been plaguing our society in recent times.

Although universal primary education has existed for almost forty years, it is only now being realised that there is need to examine the other levels - pre-primary, secondary, tertiary - as important contributors to the development of people as citizens of a total quality nation.

The education and training system in Trinidad and Tobago (Figure 1) cannot be described as seamless at the present time. It consists of a formal education pathway from pre-school through primary and secondary to university with no real sense of articulation between the levels. It also caters for an alternate route from the secondary level to fields in the technical-vocational areas. No exit requirements (levels of competencies/minimum standards) exist to ensure that

the learner is ready for the next stage of learning.

LEVELS IN THE FORMAL EDUCATION SYSTEM

Pre-Primary

These institutions cater for learners between the ages of 2 ½ - 5 years. Religious organisations, community groups or private individuals mainly run the institutions at this level. In some instances there exists an arrangement between government and one or more of those stated above. Prior to 2004, the curricula/programmes of activities for pre-primary institutions were not standardised and were usually left up to the "owners" of these institutions. There was no stipulated set of (competencies) skills that were required to be taught (acquired) at pre-primary level to prepare students for entry into primary level. However, the Government of Trinidad & Tobago, through its Ministry of Education, has now put certain measures in place to ensure that there is some measure of standardisation and quality in the programmes offered in pre-primary institutions.

Primary Level

Institutions at this level cater for students between the ages of 5 – 11. There are three categories of "ownership" in this level. Denominational (staff paid by government but the school is managed by religious organisations), state (Government) and private. However, all primary schools have the ultimate goal to prepare learners for the Secondary Education Assessment (SEA) Programme and all primary schools are guided by a standardised curriculum prepared by the Ministry of Education, Curriculum Division, which includes a wide range of core subject areas - Mathematics, English, General Science, Art & Craft, Physical Education, Music, Social Studies and Values Education.

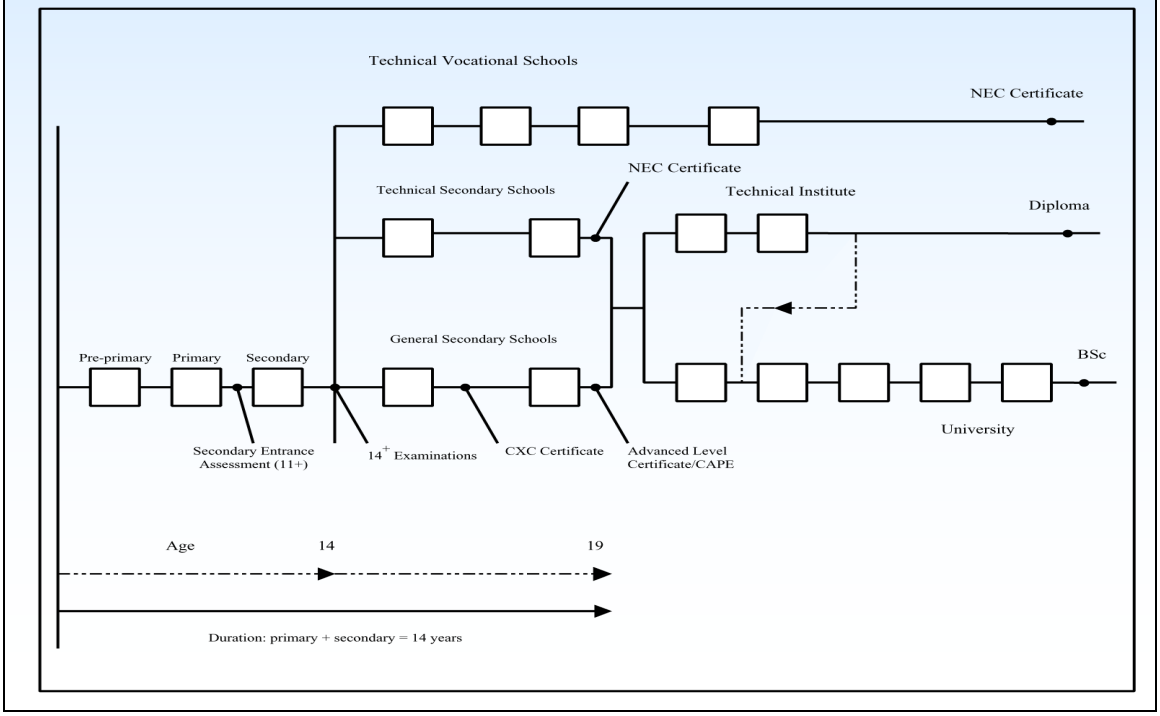
According to information gleaned from interviews with some major stakeholders in the education system, there are three important issues that characterise governance and instruction in primary schools:

- The SEA Examination only tests numeric and literacy skills and although no scientific research has been attempted, there is widespread belief that emphasis is placed only

on those subject areas at the expense of the others.

- There is no evidence of any form of pre-technical or technology education existing in the Primary Schools' curriculum.
- The Secondary Education Assessment (SEA), at the end of primary schooling, responding to the advent of "universal secondary education" (USE), has now become more of a selection/placement mechanism. Most, if not all, students are provided a space in a secondary school or college. Therefore, the worth of the SEA as a mechanism to measure readiness for the secondary level in the education system has been devalued and serves mainly as a mechanism for selecting and placing primary school students in what may be perceived as a highly competitive secondary education system.

Diagram 5: Broad outline of the formal education system of Trinidad and Tobago



Secondary Level

The secondary school education system consists of three different types of schools:

- **Traditional Sector Schools -** which consist mainly of the Government Assisted (Denominational), seven-years, secondary schools that usually subscribe to a rigid curriculum related to the academic/grammar type subject areas with no presence of skills development or training in technical-vocational areas, perhaps with the exception of some that are now embracing the "new technologies" related to Information Communication Technologies.

- **Modern Secondary Schools -** (built by the state mainly in the 1960's) offer a similar type of curriculum to the traditional sector schools. However, the pre-technical and technical-vocational areas are present on their curriculum.

It is important to note that the schools in this sector cater for merely 20% of the students eligible for secondary education and who may have scored in the top 20% in the SEA examination. These schools also account for the largest share of students who usually graduate from secondary school with a "full certificate" (5 or more CXC/ GCE O'Level subjects and 3 or more GCE/ CAPE A'level subjects).

However, it is a rather paradoxical situation that those from the top 5 – 7 % who enter university mainly come from this type of school. Some enter the Faculty of Engineering because they possess the requisite matriculation – three GCE A'levels – and pursue courses of study in the different engineering fields available at the UWI.

- **New Sector Schools** – these include the following type of schools that offer a general education comprising a mixture of the traditional grammar type subjects and pre-technical and technical-vocational subject areas. Schools in this sector offer approximately 60% of the available secondary school places in the secondary education system. Generally, most of the students who access technical and technical-vocational education and training come from these schools.

- **Junior Secondary Schools** – These

institutions operate from Forms 1 to Forms III and offer a general education curriculum with pre-technical subject areas that focus mostly on the Industrial Arts. Graduates of these schools usually enrol in Senior Comprehensive and Senior Secondary schools. Less than ½ % find places in the traditional sector schools. "Fall outs" from these schools may attend Skill Development Centres like SERVOL.

- **Senior Comprehensive Schools** – These institutions accept Form IV students (from Junior Secondary Schools) and take them through Form VI. Students can pursue three categories of studies – academic, pre-technical and technical-vocational. Students have the opportunity to write CXC or NEC or a combination of both. Students may exit at Form V or continue on to Form VI. However, the latter category usually comprises mainly students pursuing academic subject areas.

- **Senior Secondary Schools** – These schools accept graduates from the Junior Secondary schools at the Form IV level. The main focus of these schools is on academics and specialised craft areas.

- **Secondary Comprehensive Schools** – These institutions accept students from Forms I to Forms VI and follow the same course of instruction as Senior Secondary Schools.

- **Composite Schools** – These institutions accept students from Forms I to Form V and offer a combination of subject areas similar to the Junior Secondary and Senior Comprehensive Schools – academic, pre-technical and technical-vocational courses.

- **Secondary Education Modernisation Programme (SEMP) Schools** – The introduction of these schools started in 1999 and was in response to the secondary education reform initiatives, which started in 1998 and heralded the advent of Universal Secondary Education (USE). These twenty-one (including the

controversial Biche High School) new-sector schools, were constructed in communities where secondary school places were not available or were insufficient or not easily accessed, to meet the needs of the demand for placement of all students under the USE programme.

Apart from the construction of these SEMP schools under the Secondary Education Modernisation Programme, an entire revamping of the secondary education system was attempted. The secondary school curriculum and accompanying Assessment, Testing and Evaluation reform initiatives were put in place. A revised (SEMP) curriculum comprising of eight core subject areas – Mathematics, English, Science, Spanish, Physical Education, Creative & Performing Arts, Social Studies and Technology Education was developed. Further, a massive professional development programme was put in place to prepare both school administrators and subject teachers to effectively deal with the changes taking place in the secondary education system.

To meet the expectations of the growing demands for all students to be exposed to pre-technical and technology education, these SEMP schools were expected to be equipped with the necessary infrastructure to facilitate the development of skills in a wide variety of component subject areas of the Information Technology and Technology Education Programmes. Up to this time, this standard has not been realised. Many of these schools were not constructed with appropriate and adequate space as well as equipped with the necessary equipment to teach Information Technology and the new SEMP Technology Education Programme. By and large, the same holds for the already existing secondary schools – both Traditional and New Sector.

- **Private Secondary Schools** – These institutions mainly owned by religious organisations and private individuals offer a course of study similar to that of the traditional sector schools (Grammar Schools). Many of these institutions were in existence since pre-independence time and have made significant contributions in providing an academic education to

many who were unable to access free secondary education offered by the state. However, with the introduction of the Modern Traditional Secondary schools in the 1960s and the New Sector Schools in the 1970s, many of them faded into oblivion. At the time of the introduction of the Universal Secondary Education, not enough places were available in existing public schools and the Government sought to "purchase" places in some of these private secondary schools to fill the void. However, because of the very nature of these institutions and the urgency with which they were engaged, little or no attention was paid to putting mechanisms in place to ensure that a quality education would be made available to students placed in these private institutions.

Further, it is important to note that many of these private secondary schools offered little or no pre-technical or technology education except for subject areas in the information technology field.

OBSERVATIONS

Pre-primary education is not presently governed by the state. In this regard, there is no standardised curriculum or programme of activities. Except for those pre-primary schools governed by SERVOL, separate schools plan and implement their own programmes. Some are resourcefully informed by theories in early childhood education in terms of content and methodology such as the Montessori method; however, the majority are operated without any influence of theory or pedagogy in early childhood education. Some are influenced by the "un-official" primary entrance examination demanded by the "prestige" primary school existing in the primary education system. As a result, there is little or no relation between the programmes offered at the pre-primary and primary levels.

There is no real evidence to show that the type of education or skills developed at the primary level are pre-requisites for continuing education and skills development and training at the secondary level. That is to say, there are no structured programmes existing at the primary level to adequately prepare learners to move on

to the next level (secondary) in the education system. The SEA Examination is written at the end of the primary level.

There is an absence of programmes at both the pre-primary and primary levels that introduce pre-requisite skills to engage in pre-technical, technical and technology education in the secondary education system.

Instructions at the pre-primary, primary and secondary levels are heavily skewed to a passive form of transfer of knowledge. Students are asked to learn and regurgitate a wide body of knowledge. The very existence of these types of assessments – SEA, CXC and GCE – may very well contribute to this passive type of transfer of knowledge.

The varying characteristics (curricula of the various categories) of the different types of institutions that constitute the secondary school level reveal that there is a non-equitable system of distribution of opportunities for all students to engage or become aware of pre-technical and technology education at the secondary education level.

This could be interpreted that there is a problem of equality of opportunity and that all students do not have the opportunity to choose or have a second or third option.

Technical-Vocational Education & Training (TVET) in Trinidad and Tobago

Opportunities that exist for Technical and Vocational Education and Training (TVET) in the formal education system are mainly concentrated in the New Sector schools - Junior Secondary schools (focus on industrial arts) and Senior Secondary and Senior Comprehensive schools (focus on specialised crafts), and most often cater for students up to 18 years.

Students at this level pursuing TVET at most times write the National Examinations Council Exam (NEC). It is important to note that most of the students who are placed in these New Sector Schools come from the lower portion of the curve in terms of performance in the SEA at the primary level. The data reveals that many of these students are functionally illiterate and are unable to successfully complete the NEC. Therefore, there is a large

percentage of students who leave the New Sector Secondary schools each year with some skills in one of the technical-vocational area, but without the required certification to enter a post-secondary institution or the world of work. Education in secondary schools falls under the purview of the Ministry of Education (MOE).

In addition to the "formal" education system, an "alternative" education system exists. This structure caters for individuals who leave the formal education system as early as at the primary level. However, it is important to note that most of the people who go on to pursue TVET have had a foundational education in the primary or New Sector Secondary Schools.

Alternative Education and Technical Vocational Education and Training Opportunities

While both the Ministry of Science, Technology and Tertiary Education (MSTTE) and the Ministry of Education (MOE) have responsibility for the administration of technical-vocational education and training (TVET) in Trinidad and Tobago, it is important to note that there is a large number of other government ministries, state agencies/enterprises and statutory boards as well as non-governmental, professional and private organisations and individuals that provide some form of TVET. The technical-vocational schools, technical institutes and tertiary level institutions recruit most of their students from the secondary education level.

ENTITIES INVOLVED IN TECHNICAL-VOCATIONAL EDUCATION AND TRAINING

Government Sector

The Ministry of Science, Technology and Tertiary Education (MSTTE) and the Ministry of Education (MOE) have responsibility for the governance and administration of skills development and training offered on behalf of the Government of Trinidad and Tobago. The major providers fall under the purview of the MSTTE. These include the College of Science Technology and Applied Arts of Trinidad and Tobago (COSTAATT), which provide technical, skills development and middle-management programmes up to an Associate Degree; the University of Trinidad and

Tobago (UTT), which provides certificate, diploma, degree and postgraduate programmes up to the masters level; and, the University of the West Indies (UWI), St. Augustine, which provides programmes up to the doctoratal level.

The MSTTE is also a major provider of Technical and Skills Development Programmes. Its programmes include the following:

- **On-the-Job Training (OJT)** – a specialised youth programme (for persons between the ages of 18-25) providing a wide range of site-based (on-the-job) training in a wide variety of technical, clerical and administrative work areas. Participants are placed in companies and institutions over a six-month to one-year period of time where they are given hands-on experience.

- **Re-training Programme** – specifically geared towards re-entry into the world of work for displaced workers between the ages of 30–45. Trainees are provided with both technical-vocational skills and life skills over a three-month period. Training is linked to the Trinidad and Tobago National Vocational Qualifications (TTNVQ) scheme at Levels 1 and 2, which was developed by the National Training Agency through Industry Training Organisations (ITOs). Some trainees will have the option to go on to the Mentorship or Internship programmes soon to be established.

- **Multi-Sector Skills Training Programme (MUST)** – a six-month, site-based training programme for the unemployed between the ages of 18 – 50. A life skill component is attached to the site-based training. Training is also linked to the Trinidad and Tobago National Vocational Qualifications scheme at Levels 1 and 2, which was developed by the National Training Agency through Industry Training Organisations (ITOs).

- **Helping Youth Prepare for Employment (HYPE)** – a three-month programme, administered by the MIC, is specifically geared at young people between the

ages of 18–30 years. The programme includes classroom training, site-based training and life-skills development.

- **Youth Training Employment and Partnership Programme (YTEPP)** – the oldest skills development programme, established since 1988. It involves a wide range of skills development and training programmes for young people between the ages of 18 – 30. The programmes run over a period of one year and like the other programmes, aims to develop both tech-voc and life skills.
- **National Apprenticeship Programme (NAP)** – administered through the National Training Agency (NTA).

The College of Science, Technology and Applied Arts of Trinidad and Tobago (COSTAATT)

The College of Science, Technology and Applied Arts of Trinidad and Tobago (COSTAATT), which falls under the ambit of the Ministry of Science, Technology and Tertiary Education (MSTTE) is a major player in the TVET system. COSTAATT is an incorporation of several training providers, which include the following:

- **John Donaldson Technical Institute** – offers National Examination Council Certificate in tech-voc areas.
- **San Fernando Technical Institute** – offers National Examination Council Certificate in tech-voc areas.
- **Eastern Caribbean Institute of Agriculture and Forestry** – offers training to both nationals and students from the region, in extension agriculture education and forest development as well as teacher training. The institute offers a Diploma Certificate.
- **Joint Services Staff College** – offers training up to an Associate Degree level in police/ security science.
- **Government Vocational Centre** - offers National Examination Council Certificate in tech-voc areas.

- **Business Management and Information Technology Division** – offers training in business related programmes, computer studies and Information Communication Technology up to the Associate Degree Level.

- **College of Health Sciences** – offers training in radiological science and laboratory technology up to an Associate Degree.

- **College of Nursing** – offers training for nurses (Registered Nurses, Dental Nurses and Psychiatric Nurses) up to an Associate Degree level.

- **General Education Division** - School of Languages - offers foreign language training.

Other State Institutions (Providing Technical and Skills Development Programmes) governed by the MSTTE

- Metal Industries Company Limited (MIC) - (National Skills Development Programme (NSDP) and National Energy Skills Centre (NESC)
- Trinidad and Tobago Hospitality and Tourism Institute (TTHTI)

Tertiary Institutions (Providing Under-graduate and Post-Graduate Programmes) under the purview of the MSTTE

- The University of the West Indies (UWI) and the School of Continuing Studies (UWISOCS).
- University of Trinidad and Tobago (UTT) (formerly the Trinidad and Tobago Institute of Technology).

Enrolment in Training Institutions affiliated to the State

Other Government Ministries and State Enterprises providing Skills Development and Training

Many other Government Ministries as well as State Enterprises offer some form of Skills Development and Training. These include:

- Ministry of Community Development & Gender Affairs;
- Ministry of Sports and Youth Affairs;
- Ministry of Labour and Small and Micro Enterprise Development;

- Ministry of Health;
- Ministry of Agriculture and Forestry;
- Ministry of Public Utilities and the Environment;
- Ministry of Housing;
- Ministry of Consumer Affairs;
- Ministry of Energy;
- Ministry of Works and Transport – CEPEP; and
- Ministry of National Security – CCC.

Major State Enterprises include:

- T&TEC;
- WASA;
- PETROTRIN;
- NGC;
- NEDCO; and
- TSTT.

Private Institutions Offering Technical-Vocational Training and Education

A number of private and non-governmental organisations also provide Technical and Skills Development and Training Programmes. These programmes range from non-certificated to graduate programmes. Among these, SERVOL plays a very important role because they offer a range of transition programmes for trainees who do not possess the normal matriculation to enter programmes offered by many state institutions.

Many of the private organisations offer programmes accredited by City & Guilds. The Caribbean Union College (affiliated with Andrews University, Michigan, USA), the School of Business and Computer Studies (SBCS) and the Institute of Tertiary Training (ITT) offer undergraduate programmes in Technical and Technology Education Programmes.

Distance Education and Lifelong Learning

There are a few trainees who access TVET via distance education programmes. The International Correspondence School (ICS), California, USA is a major provider of this service in Trinidad and Tobago.

TVET Teacher Education

Local training for TVET teachers is mostly offered by the John Donaldson Technical Institute, at which a Technical Vocational Teacher Training Diploma is offered. This is usually supplemented by a Training the Trainer Certificate offered by the MIC. Further, some TVET teachers and instructors, to a lesser extent, are also graduates of the

UWI, Faculty of Engineering, or graduates of foreign universities and institutions, mainly in North America.

Technical-Vocational Qualifications, Certification and Accreditation of TVET Programmes

Prior to 1999, no standardised system of technical-vocational qualifications existed, that is to say, the positioning of technical-vocational training at levels based on similarities in the complexities of skills required to perform a particular job, except for those offered by the National Examinations Council (NEC) on behalf of the GOTT. Many providers, both public and private, offered a mixture of programmes including some from foreign institutions and associations like City and Guilds, American Welding Society, as well as programmes developed by the training providers.

Occasionally, the programmes developed by training providers were on request from employers. However, in the main, technical-vocational programmes, even those offered by public institutions, were not informed by Research Needs/Gap Analyses or Labour Market Surveys) or otherwise not industry driven or led. This resulted in a total mismatch of the skills and training offered by training providers and those required by industry. Further, it created a shortage of skills desired by employers and a void in the human resource capability of the country. Employers were forced to import labour at exorbitant costs which, (coupled with other economic and social factors), had a rippling effect on the price of goods and services offered to the citizens of Trinidad and Tobago.

Another observation is that many training providers were offering programmes similar in content material under different names. This indicated that there was not a clear understanding of the names of occupations and the type of skills necessary to function in the particular occupational field. This resulted in the duplication of training efforts, sometimes at great costs to those who wished to access the training. With the advent of the National Training Agency (NTA) in 1999, some efforts were made to rationalise the technical-vocational education and training system and situate programmes at national vocational

qualification levels (NVQs). However, it is important to note that in the attempt to situate training programmes at NVQ levels, the NTA failed to make a comparison with other forms of training in occupations other than in the technical-vocational areas.

The aforementioned issues will be explored in greater depth in ensuing sections.

Certification:

Most of the technical-vocational Certificate and Diploma programmes offered by public institutions are certified by the Ministry of Education, COSTAATT or the National Training Agency. Some public institutions like the MIC also offer programmes certified by foreign institutions, associations and societies, for example, the American Welding Society (AWS), Fritz Werner (of Germany) as well as City and Guilds. Most private providers' programmes are certified by foreign institutions or are not certified at all.

Many of the Associate and Degree programmes offered by UTT are certified and accredited by the University of Texas and Southern Alberta Institute of Technology (SAIT). The UWI certifies and accredits their programmes.

Accreditation:

At present, there are no local institutions/councils/bodies offering accreditation for any local skills development and training programmes. The Accreditation Council of Trinidad and Tobago (ACTT) is in the process of finalising its operations and will have two major objectives:

- Approval of training centres/ providers, and
- Accreditation of all programmes offered by both public and private training providers.

POPULATION DYNAMICS AND THE LABOUR MARKET

Based on data sourced form the Central Statistical Office (CSO), the population of Trinidad and Tobago in 2003 was estimated at 1,282,447, a marginal increase of 0.5% over the 2002 figure of 1,275,705. The adult population totalled 967,600, approximately 61% of which (estimated at 587,000 in 2003) comprised the labour force. Based on provisional figures, some 527,200 representing 54.5% of the adult population and 89.8% of the labour-force were employed in the formal sector.

Based on the foregoing, the unemployment figure for the formal sector in 2003 was estimated at 59,800, representing an unemployment rate of 10.27%, a decrease over the 2002 figure of 10.6%. An additional 3,900 new jobs were created in 2003 and the number of unemployed persons declined by 5,200; which could indicate that some of the unemployed persons were able to find employment in the informal sector or were no longer actively seeking employment and hence were not picked up in the statistics. The informal sector encompasses a wide variety of economic activities, which tend to be unrecognised, unrecorded and unregulated. It is estimated that the informal sector contributes between 3% and 4% to employment.

In 2003, the Services sector constituted the largest share of employment in Trinidad and Tobago (66.8%), employing some 343,300 persons. Within the Services sector, the largest contributors to employment were Community, Social and Personal Services (which accounted for 47.5% of employment) and Wholesale/ Retail Trade, Restaurants and Hotels (which accounted for 27.8% of employment).

The population projections to the year 2020 show a steady increase in the population. The projected change from 2005 to 2020 amounts to an increase of 190,130. However, there is a fluctuation in the age group between 15-24, the target group for training.

The population data is shown in the Table below.

Table 1: Projected Population for Trinidad and Tobago from 2005 – 2020

Year	Population	Age Group 15 - 24
2005	1,396,810	262,600
2010	1,463,870	229,720
2015	1,530,610	217,850
2020	1,586,940	227,460

Source: Central Statistical Office, Trinidad and Tobago

Key data pertaining to the Labour Market, viz. Labour Market Indicators, and Employment and GDP per worker by sector follow.

Table 2: Data Pertaining to Labour Market Indicators For 2002 and 2003

Labour Market Indicators	2002	2003	(%) Change
Total Population	1,275,705	1,282,447	0.5
Adult Population	964,400	967,600	0.3
Labour Force	592,500	587,000	(0.9)
Total Employment in the Formal Sector	529,500	527,200	(0.4)
Employment/Adult Population Ratio (%)	54.9	60.6	5.7
Unemployment in the Formal Sector	63,100	59,800	5.2
Unemployment Rate (%) in the Formal Sector	10.6	10.2	0.4
GDP per capita (TT$)	11,235	12,842	14.3

Source: Central Statistical Office, Trinidad and Tobago

Population figures used are mid-year estimates.

Table 3: Employment and GDP per worker by Sector, 2003

Sector	Employment	(%) Of Total Employment	GDP Per Worker ($)
Petroleum	15,800	2.9	134,413
Agriculture	37,300	6.9	20,595
Manufacturing	61,000	10.2	75,977
Construction	69,700	13.2	76,792
Services	343,300	66.8	10,613
Total	527,150	100.00	

Source: Central Statistical Office, Trinidad and Tobago

CONTEXT

Notwithstanding the considerable sums of money invested by government over the years in education and training, a striking feature of the Trinidad and Tobago economy has been the co-existence of a large labour surplus and shortages of skilled workers.

This economic paradox has long plagued the domestic economy and has become more acute with the intensification of the diversification efforts, economic expansion and increasing technological sophistication. The increase in demand for new skills and workers with a higher level of skills has shown up the inadequate supply of trained and skilled workers in the economy, which infers that the education and training system is unable to adequately meet the skill needs of the economy. This is borne out in the Labour Market Surveys and Studies in which employers overwhelmingly identify skill shortages and inappropriately trained workers as among labour market matters of greatest concern to them. Among the deficiencies identified in the Studies

undertaken[6] are the following:

- Inadequate technical competencies;
- Lack of substantive skills, which manifests in the lack of academic competency regarding core subjects such as English and Math. Employers associated with various service sector industries are of the view that Spanish should be a mandatory core subject, at least in secondary schools;
- Lack of problem solving skills;
- Inadequate exposure to occupational safety training; and
- Poor work ethic, viz. the need for professional ethics instruction.

[6] Particular reference to IADB Labour Market Study (1998) and IADB Study on Bottlenecks in Technical Training Programmes (2003)

The impact of the skills gap on the domestic economy is far reaching. It encompasses productivity shortfalls, increases in the cost of labour (with concomitant implications for enterprise and country competitiveness as well as country attractiveness to foreign investors) and increases in the cost of training for firms.

The mismatch between training provided and industry needs underscores two major related deficiencies in the developmental planning process, viz. inadequate national manpower planning and insufficient involvement of key stakeholders in the planning process, particularly business/ industry.

At the macro level, insufficient attention has been paid to manpower planning, with education and skills training being primarily supply driven. The prevailing mindset seemingly is that once the education and training opportunities are provided, the beneficiaries will automatically find employment. This, however, does not foster optimal utilisation of limited resources.

With adequate national manpower planning, the current skills of the workforce would be profiled, emerging trends and the current situation would be examined, and the skills required over the medium term would be forecast. This would inform decision-making regarding the measures that need to be put into place to ensure that there is a match between labour supply and industry demand.

Contributory factors to the gaps in the demand and supply side of skills development and training, stemming mainly from the aforementioned major deficiencies, include the following:

- Inadequacy of labour market information;
- Weakness in labour market co-ordination;
- Ineffective training systems and programmes in the private sector; and
- Inadequacy of the current education and training systems.

The current system does not adequately cater for the development of the technical skills of individuals beyond the secondary level. This is reflected in the high youth unemployment level of recent years, with many young people who are not academically inclined or who do not make it through A'Levels choosing to opt out of the system.

THE ROLE OF THE NTA IN CONDUCTING LABOUR MARKET RESEARCH AND THE ROLE AND OPERATIONS OF THE LABOUR MARKET COUNCIL

It is important to acknowledge that efforts are being made to address the aforementioned shortcomings, with the National Training Agency (NTA) playing the lead role. A key strategic objective of the Agency is to work in partnership with the major stakeholders, particularly the training providers and industry, to ensure that the needs of the labour market are met. Towards this end, the NTA was mandated to evaluate the labour market environment and provide on-going labour market information to the country. To date, the Agency has completed six (6) Labour Market Reports (Employers' Survey). Of these, four (4) have been completed for Trinidad and two (2) for Tobago.

These surveys have highlighted the demand side of the labour market, providing information on key skills required by employers, job vacancies that existed and emerging labour trends. They have also signalled those skills currently available, highlighting training needs of the workforce and enabling labour market projections to be made in various sectors of the economy. In this regard,

the surveys covered employers in some sixteen (16) economic sectors.

Some of the issues that arise in relation to the labour market data are as follows:

Sector Coverage and Response Rate

It is unclear whether the sector coverage is wide enough and the response rate sufficiently adequate to provide an accurate, reliable and relevant guide.

Private Sector Bias

Given the bias towards private sector enterprises in the survey, the question arises as to whether the state sector should be better represented, in view of the fact that the state is, and will likely remain, a large-scale employer.

Further, Government's development plans and projects need to be taken into consideration in determining projected training needs.

Coverage of the Informal Sector

Consideration could possibly be given to inclusion of the informal sector in the survey. The IDB Labour Market Study (1998), undertaken by ABT Associates Limited of the USA, points out the following in relation to this sector:

- It is a significant source of employment;
- Very little is known about the sector - type of activities, size of businesses, problems encountered;
- Given the importance of the sector and its tendency for continued growth, the Government should collect more information on the sector; and
- Informal sector activities need to be examined with an eye to developing strategies to encourage their movement into the more formal economy.

Use of the Information

It is unclear whether the information is being channelled to the right sources and whether appropriate use is being made of it, that is, whether it is serving to inform decision-making and influence policy.

The conclusion can be drawn that notwithstanding the number of training providers, at some level there appears to be a dissonance between the findings of the labour market surveys and the intended use of the data. It is imperative that labour market data be used to ensure the relevance/

currency of education and training, i.e. that such education and training relate to employment opportunities in the economy.

Cognisant of the need for effective co-ordination and oversight of the labour market support mechanisms being instituted at the time, to ensure impact maximisation through Labour Market Information System (LMIS), Labour Exchange, National Human Resource Management Information System (NHRMIS) and Regional LMIS, Government agreed in 2002 to the appointment of a Labour Market Council (LMC) for a period of three (3) years.

The LMC is intended to be a multipartite standing council comprising representation from various government agencies, the private sector, labour and the UWI, with multi-faceted functions, as follows:

Consultative Function

- To act as a consultative group and partner with the Government to improve the dissemination and utilisation of labour market information. The information generated by the Labour Market Information System will be capable of informing policy makers, for example, in the field of education, on the needs for education and training in specific areas to ensure that training is consistent with the demands of industry;
- To act in an advisory capacity to the Government on the scope and elements of the Labour Market Information System and Labour Exchanges (National Employment Service);
- To develop in collaboration with key agencies, a three-year action programme for the national Labour Market Information System; and
- Establish national standards for Labour Market Information concepts, methodologies and classifications, giving due consideration to international standards.

Training

To advise on the development of training programmes for the inter-agency personnel who are responsible for the operations of the Labour Market Information System and Labour Exchanges.

Public Information Campaign

To create and institute with key agencies, national information campaigns to raise public awareness and educate workers, employers and key government institutions in relation to the benefits of Labour Market Information Systems and Labour Exchange, such campaigns to be carried out through various media outlets including:

- Television;
- Posters and pamphlets to employers, trade unions, community centres and educational institutions; and
- Press Conferences and Public Statements.

Evaluation

To institute mechanisms for evaluating the efficiency and effectiveness of the Labour Market Information System and the Automated Labour Exchanges.

Collaboration

To collaborate with the United States Department of Labour, the International Labour Organisation and other international organisations working in the areas of Labour Market Information System and Labour Exchanges so as to ensure their participation and co-operation in all activities.

Notwithstanding its importance to the overall functioning of the labour market infrastructure and although over two (2) years have elapsed since the Cabinet decision, the LMC is, however, still not functional.

THE ROLE OF THE INDUSTRY TRAINING ORGANISATIONS (ITOS)

The ITOs are industry-led representative bodies that have been charged with the responsibility of addressing issues related to human resource development in their respective industries/sectors. The ITOs are patterned after the now disbanded UK National Training Organizations (NTOs). The NTOs have been replaced by the Sector Skills Councils (SSCs). A primary function of the ITOs is the development of occupational standards, which should ideally inform vocational qualifications.

The ITOs have been given the mandate to define the current and future skills requirements and training needs of their respective

sectors or industries. As independent, employer-led bodies, they are committed to enhancing company performance and individual career prospects through a systematic progression of training and development. They comprise employers, trainers, labour organisations, professional bodies and employee associations.

The NTA, in its 2004-2006 Strategic Plan, outlines the goals of the ITOs as follows:

- To develop, implement and monitor occupational standards for the sector;
- To improve linkages between qualifications and progression routes from education and training programmes into employment;
- To identify current and future competencies needed in order to ensure that the training provided meets the sector's needs;
- To promote increased investment in human resource development as pivotal to improved business performance and increased competitiveness at home and abroad; and
- To provide a forum for the exchange of views between sector and government, and to influence and inform the national education and training policies and programmes.

Seven (7) ITOs have been established to date, namely, Air Conditioning and Refrigeration (December 1999), Tourism and Hospitality (December 1999), Energy (May 2000), Food and Beverage Manufacturing (October 2000), Construction (March 2001), Information Technology (June 2001 and Agriculture (August 2002).

The NTA works in collaboration with the ITOs to facilitate the development and maintenance of national occupational standards of competence.

These standards set out the skills and competencies, which training programmes and qualifications should cover in order to guarantee that trainees have the skills needed for successful employment.

It should be noted that a number of occupational standards in the aforementioned industries/ sectors are under review.

Although a critical component of the skills development and training infrastructure, it must be

acknowledged that the ITOs have not functioned as effectively as was envisaged. The arrangement governing their establishment appears to be rather loose and some of them have been non functional for extended periods of time.

Given the importance of this type of alliance to the success of any skills development thrust, it is imperative that an evaluation be undertaken of the functioning to date of the ITOs with a view to effecting the improvements necessary to ensure that they play the desired role. Such improvements could include the periodic publication of Progress Reports on the work of the ITOs and third party monitoring of their performance.

Further, the relationship of the ITO with the Labour Market Council needs to be clearly defined.

BOARD OF INDUSTRIAL TRAINING (BIT), NATIONAL TRAINING BOARD (NTB) AND NATIONAL TRAINING AGENCY (NTA)

Governance and administration of technical and vocational education and training in Trinidad and Tobago have evolved over a period of almost 100 years, commencing with the colonial Board of Industrial Training (BIT) (1906), followed by the post-independence National Training Board (NTB) (1970) and eventually shifting to the current National Training Agency (NTA) (1999).

The BIT was established by the Colonial Government (Ordinance No 14 of 1906) to register masters (skilled craftsmen/ trainers), fix periods of apprenticeship for various trades, organise and supervise continuing education classes, monitor the progress of apprentices and trainees in their acquisition of skills, and test and certify apprentices and artisans.

The BIT was generally unsuccessful in effectively co-ordinating the system of vocational training in Trinidad and Tobago. Among the major weaknesses/ problems identified in its operations were the following:

- Employers were freely entering into arrangements with apprentices without reference to the BIT;
- Standards of work (skill levels) were falling off;
- The number of apprentices registered by masters was decreasing progressively on an annual basis;
- The Board was unwilling or unable to register and supervise the vast majority of apprentices who worked in the very small firms and owner operated businesses;
- The Board's supervision of the work and progress of artisans was lacking;
- A substantial number of students graduating from the training institutions entered the world of work without proper certification from the BIT.

Recognition of the aforementioned shortcomings resulted in a call for a regulatory body with responsibility for the co-ordination of all technical and vocational education and training on a national level. As a consequence, the

National Training Board (NTB) was established (Cabinet Minute No 552 dated March 1, 1970) and entrusted with the responsibility to advise the Minister of Education on matters relating to TVET and to co-ordinate and standardise the craft training carried out in various public and private institutions in Trinidad and Tobago. To discharge its responsibility, the membership of the NTB comprised representatives of government, labour, employers and professional associations.

A decade later (1980), a major shift in the administrative framework occurred with the Secretariat of the NTB being designated as the nucleus of the Technical and Vocational Education and Training Division (DTVET) of the Ministry of Education and Culture.

A Joint Select Committee established to advise on the future role of the NEC, in its Report dated May 1st, 2004, assessed the NTB as having impacted positively on the domestic TVET landscape. The report points out that the NTB was able to forge a vigorous interchange between the employment sector and education, and in so doing provided much needed skilled craftsmen and technicians for expansion and industrialisation.

It is significant to note that at the time of the establishment of the NTB, it was intended that the BIT would have been disbanded and that the appropriate legislation would have been enacted so that the powers and functions of the BIT would have been transferred to the NTB. However, no decision in this regard was taken at the time.

Notwithstanding the generally positive impact of the NTB, Government, recognising the changing national and international dynamics, and the imperative of enhancing the national training infrastructure to more effectively cater to the country's developmental needs, agreed to the establishment of the National Training Agency (NTA) in 1994, to serve as the single national training agency with full responsibility and legal authority for planning, co-ordinating and administering the National Training System.

Subsequently (January, 1995), Government agreed that:

- The Board of Industrial Training be disestablished and that all assets of the BIT be transferred to the NTA;
- The Ministry of Education take the necessary steps to effect the disestablishment of the NTB;
- The NTA would be responsible for the development and implementation of a National Training Policy. As a result, the functions of the BIT and the NTB would be absorbed into those of the NTA.

It is indicative Government bureaucracy that five years had elapsed before Government agreed (April 2000) to submit the Draft Bill entitled "*The National Training Agency (Vesting) Act, 2000*" for the consideration of the Legislation and Parliamentary Committee. The Draft Bill seeks to vest the assets of the BIT in the NTA (1997) Ltd., to repeal the Industrial Training Act, Ch. 39.56 under which the Board was established and to provide for related matters. To date, however, the status of the Draft Bill remains unchanged.

In the interim, in consideration of the fact that the BIT had a number of outstanding matters to be finalised, Government agreed (May 2000) to the appointment of persons to the BIT for a period of three (3) years.

This legislative scenario does not make for efficient and effective administration. It can only be described as untidy and should be regularised expeditiously.

MINISTERIAL LEVEL

At the Ministerial level, governance of the TVET System has shifted over the years from the Ministry of Education to the Ministry of Information, Communication, Training and Distance Learning, to the Ministry of Training and Distance Learning, to the Ministry of Human Development, Youth and Culture, and currently to the Ministry of Science, Technology and Tertiary Education. The latter is responsible for tertiary education, including post secondary education and TVET.

National Examinations Council (NEC):

As far as TVET is concerned, Cabinet, by Minute No. 744 dated March 18th, 2004, agreed that:

- The NEC Craft and Technician programmes be recommenced at the John S. Donaldson Technical Institute (JSDTI); and
- The Ministry of Science, Technology and Tertiary Education (MSTTE) and the Ministry of Education (MOE) jointly advise Cabinet on the role of the NEC in the future administration of the programmes.

Subsequent to this Cabinet decision, a Joint Select Committee (previously referred to) was established by the Deputy Permanent Secretary of the MSTTE. This Committee was established to develop proposals to address the aforementioned. The Committee, in its report, also considered the issue of the transfer of the NEC from the MOE to the MSTTE and its subsequent transformation into the proposed National (TVET) Certification Council and thence to a National Awarding Body (NAB).

The key issues identified by the Committee included the following:

- MOE & MSTTE – the future role and function of NEC;
- In reference to the NEC – continued relationship with MOE, staffing and accommodation, organisational restructuring, curriculum re-engineering, increased budgetary allocation;
- Multiple certifying bodies – duplication and conflict of interest;
- Plethora of TVET qualifications and the need for rationalisation;
- Recognition and articulation of COSTAATT's qualifications;
- Occupational skills testing, certification and licensing; and
- The legality of the National Apprenticeship Training.

Among the key recommendations were the following:

- The MSTTE should assume responsibility for the NEC.
- The NEC should be virtually imported from the MOE to the MSTTE in order to address the immediate needs of the Craft and Technicians Programmes at the Technical Institutes and the PFVC.
- The NEC should be transformed into the

proposed National (TVET) Certification Council of the MSTTE in the first instance and thence to a National Awarding Body (NAB), on a phased basis. The ultimate aim of establishing a NAB will be to complement other national bodies, namely the NTA and the Accreditation Council of Trinidad and Tobago (ACTT) in effecting rationalisation and governance of the tertiary education and TVET sectors.

- The NEC should be remodelled and re-engineered into a contemporary organisation with a renewed vision and purpose to complement the role, function and responsibility of the MSTTE while addressing the needs of the tertiary education and TVET sectors.
- Occupational Skills Advisory Committees should be established to be engaged in the curriculum development, implementation, monitoring and quality assurance process in keeping with industrial standards.
- Determination of the recognition of COSTAATT's Associate Degree qualifications by UWI, UOTT and employers.

The NEC will need to collaborate closely with the Accreditation Council of Trinidad and Tobago (ACTT) when established in order to accredit TVET programmes and qualifications.

The Report of the Joint Select Committee indicates that the long term vision of the Government in effecting governance of the education and training systems should be to establish a National Qualification Authority (NQA), as in the case of the developed countries such as the United Kingdom, which has established the Qualifications and Curriculum Authority (QCA) in England and the Scottish Qualifications Authority (SQA) in Scotland.

Issues Highlighted by the Draft National Policy on the Development of Tertiary Education and Training, and the IADB Study on Trinidad and Tobago's Post-Secondary Education System

Whilst the MSTTE has overall responsibility for tertiary education and

training, it is by no means the only Ministry involved in human resource development. A review of the Draft National Policy on the Development of Tertiary Education and Training in Trinidad and Tobago (prepared by the Steering Committee to Review Draft Policies on Tertiary Education, Training, and Distance and Lifelong Learning) and the Final Report of the IDB Study on "Trinidad and Tobago's Post-Secondary Education System: Bottlenecks in Technical Training Programmes" (prepared by Dr. Regina E. Werum of Emory University, Atlanta, Georgia) highlight the following issues:

- Multiple school-to-work programmes exist within a wide variety of Ministries. These include the MSTTE, Ministry of Education, Ministry of Community Development and Gender Affairs, Ministry of Social Development and Ministry of Sport and Youth Affairs. The programmes' overall goals and target populations are similar, but virtually no co-ordination exists across Ministries. The training is mainly funded directly by the Government.

This situation creates unnecessary duplication, both regarding programme content and programme implementation costs. This translates into wastage of limited State resources. Further, lack of articulation between these programmes (some of which are degree-granting, some are not) and lack of accreditation create general mistrust among co-providers as well as potential employers concerning the value of such training programmes. Many are perceived as merely "warehousing", unemployed youth for a short period of time.

- There also exist many non-governmental organisations and community groups providing training and existing side by side with hundreds of registered and unregistered private providers. Some of the NGOs also receive state funds. There are also private institutions offering training at both the semi-professional and professional levels that receive their accreditation through affiliation with foreign training agencies.

Again, the duplication of training and training providers has led to a variety of certification and qualifications, some of which are of doubtful value and often confusing to employers.

- The need for rationalisation has been clearly identified in the local scenario and is currently being addressed by the NTA via the implementation of the Trinidad and Tobago National Vocational Qualifications (TTNVQ) framework, which was developed by the NTA for the MSTTE. The TTNVQ configures the tertiary education and TVET sector into a coherent TVET qualifications system.

Other key elements of the infrastructure required for effective governance of the national tertiary education and training system, are the Accreditation Council of Trinidad and Tobago (ACTT), which is currently in the process of being established via an Act of Parliament, and the proposed National Awarding Body (NAB).

- Ministerial responsibility for specific institutions appears unstable. It is common for election cycles to influence shifts of providers from one Ministry to another. This is not conducive to efficient programme operations, nor does it facilitate fiscal transparency. There is a need to decide which Ministry is in charge of tertiary providers.

- Hiring and budgeting issues need to be addressed in regard to COSTAATT, since its institutions are under the purview of the MSTTE. However, existing teaching staff remains tied to the Ministry of Education. The latter and the MSTTE need to collaborate to address these issues. Staff related matters should ideally lie with the MSTTE.

- The levels of accountability and transparency are not up to the required standard, given the considerable sums of money being expended on education and training (TT$3.1 billion was allocated to the Ministry of Education in the 2004-2005 Budget).

All public institutions should be subject to regular financial audits, similar to the way in which private (for profit and non-profit) providers are audited. The Ministry of Finance, in co-operation with the MSTTE, should be able to provide consistent and systematic data on all revenue and expenditure sources of public tertiary providers.

ENTITIES INVOLVED IN CURRICULUM DESIGN

Curriculum design, development and testing for the primary and secondary levels are centralised activities within the National Education and Training System and are carried out by the Curriculum Development Division of the Ministry of Education. With specific reference to TVET, entities involved in Curriculum Development include the following:

- National Examinations Council (NEC), with specific reference to John Donaldson Technical Institute (JDTI), San Fernando Technical Institute (SFTI) and Point Fortin Vocational Centre, as well as the Senior Comprehensive Schools;
- Metal Industries Company (MIC), in reference to the National Skills Development Programme (NSDP);
- Trinidad and Tobago Institute of Technology (TTIT) (which is now the Point Lisas Campus of the University of Trinidad and Tobago), in reference to the National Energy Skills Centre (NESC);
- YTEPP (implements the NEC's pre-craft - Level 1 - vocational skills curricula);
- HYPE (implements the curriculum developed by MIC/ NSDP);
- UWI School of Continuing Studies;
- Cipriani Labour College;
- Servol; and
- TTHTI.

With regard to the aforementioned providers, it is important to point out that curricula in respect of the MIC/ NSDP and UOTT/ NESC are largely industry driven, being based on the following:

- Close alignment to industry;
- In the case of UOTT/ NESC, strategic alliances and partnership agreements with reputable local and foreign institutions, with a view to meeting international standards and requirements, which ensures that local students are provided with internationally recognised training and qualifications; and
- In the case of the MIC/ NSDP, adoption of the German curriculum framework, and guidelines and standards of internationally recognised bodies such as

the American Welding Society (AWS) (used as a foundation to build curriculum for welding training), the American Petroleum Institute (API), the American Society for Mechanical Engineers (ASME) and the American Society for Testing Metals (ASTM).

The incorporation of codes and standards of the aforementioned bodies ensures that the training provided meets internationally accepted standards.

In this regard, it is important to stress that industry-ready certification must be competency based, embracing Performance, Standards and Assimilation.

The involvement of multiple entities in curriculum design, combined with a general lack of transparency regarding programme content within the tertiary system present a number of challenges relating primarily to the quality and standards of training outcomes, vertical and lateral articulation, and credibility of qualifications.

PROBLEMS WITH CURRICULUM DESIGN

Various studies in the Education and Training sector, as well as Government's Developmental Planning Framework, have alluded to deficiencies in the curriculum at the primary, secondary and tertiary levels and the consequent need for reform. Among the pertinent observations are the following:

- Curriculum design is, by and large, not informed by industrial standards or by the needs of employers;
- Further, the curriculum of private TVET providers is not competency-based;
- The labour force's familiarity with and use of information technology needs to be enhanced;
- Particular attention must be paid to increasing the number of science and technology graduates to address skill imbalances in the labour market;
- Curriculum and teaching methods place greater emphasis on rote learning rather than problem solving skills. Further, there is need for co-curricula activities, which would assist with building values such as teamwork, leadership and discipline; and

- An appropriate mechanism should be instituted to monitor workplace competencies and skills and thereby facilitate curricula review and upgrade (where necessary) on an on-going basis, as well as the flow of information to Tertiary Learning Institutions (TLIs) to ensure responsiveness.

Further, appropriate quality control measures need to be put in place.

- Adequate provision needs to be made for Remediation or Transition programmes for prospective students in Mathematics, Science and English. These programmes should also be available via the distance mode to allow those who do not meet basic matriculation requirements to gain access to pre-college level courses to obtain the required qualifications for full-time tertiary level programmes. It is noteworthy that close to 50% of students sitting the CXC Examinations fail Mathematics and English.
- Teacher training programmes must be strengthened to support curricula reform. New teaching and learning strategies must be put in place, particularly with a view to strengthening teaching of Mathematics and English at primary and secondary levels, which are an integral part of the foundation necessary for progression to higher education.
- Minimum co-ordination existed within the secondary school system to effect a holistic delivery of the NEC's craft curriculum, with TVT teachers delivering the craft theory (and workshop practice) and technical drawing, and university graduates delivering the communications, applied science and mathematics. In the latter two areas, the graduate teachers were unable to apply the theoretical contents to the practical requirements. The ineffective co-ordination impacted adversely on the curriculum delivery, which resulted in poor student performance in the NEC examinations.
- All TVET providers should incorporate internships and other forms of practical

experience in their programmes;

- Curriculum development should cater for the pursuit of careers in the creative sectors, that is, the cultural industries; and

- Skills Training Institutions must be purpose built, that is, the construction of these institutions must be informed by the Curriculum.

Further, an enabling environment for teaching and learning must be provided, with the availability of State-of-the-Art aides and technology in the classrooms.

The aforementioned shortcomings serve to stymie the country's development, adversely impacting employability and impeding the optimal development of the country's human resource base.

It is noteworthy that in addressing the issue of curriculum reform, a draft document prepared by the Ministry of Science, Technology and Tertiary Education entitled "A Strategy for Tertiary Education and Training in Trinidad and Tobago" alluded to the need to:

- Strengthen the general education component of all programmes to promote mastery in core areas such as literacy, mathematics, technology, science, communication, conflict resolution, critical thinking, problem solving and ethics;
- Redesign curricula and programmes to include Education for Sustainable Development (ESD). ESD enables people to develop the knowledge, values and skills to participate in decisions about the way we do things individually and collectively, both locally and globally that will improve the quality of life now without damaging the planet for the future. The seven (7) interrelated concepts of ESD are: interdependence; citizenship and stewardship; needs and rights of future generations; diversity; quality of life; sustainable change; uncertainty and precaution.
- Restructure learning experiences to remove barriers to learning for those challenged in a variety of ways, particularly the physically and mentally challenged;

- Re-organise programme offerings to recognise and reward work-based learning; and
- Place emphasis on the pursuit of service and research goals by all public tertiary level institutes to support the development of cultures of volunteerism and innovation.

Notwithstanding the general consensus of the need for curriculum reform, cognisance must be taken of the following key factors:

- Curriculum development begins with training needs analysis. The identification of training programmes must take into consideration the national manpower development and training system plan. This would entail review of the demand and supply of professional and technical manpower based on economic growth, projection of demographic change, quantity and quality of existing workforce and the like.
- There are a number of challenges inherent in curriculum development, including the following:

– The imperative of quickly meeting changes in technological developments and keeping training relevant to the needs of industry;
– The centralised approach to curriculum development (which has many advantages) may not have the flexibility to respond to changes quickly.

If Trinidad and Tobago is to achieve developed country status by 2020 however, it must focus on creating a highly educated and qualified workforce with a culture of lifelong learning, at the core of which is curricula reform. The experience of Singapore is particularly instructive in this regard.

Singapore recognised that as it transformed into a knowledge-based economy, people and their know-how were increasingly becoming the country's strategic competitive advantage. It therefore embarked in the late 1990s on a concerted drive to develop a thinking workforce as an integral part of the development of a world-class workforce. Towards this end, a Critical Enabling Skills Training (CREST) Programme was launched as a strategic response to the

knowledge-based economy. CREST provides seven core skills, which transcend all occupations and empower all levels of staff to constantly learn, think and innovate. These seven skills are:

- **Learning to Learn**: to independently acquire and apply the new knowledge and skills required for meeting constantly changing needs;
- **Literacy**: to raise proficiency in reading, writing and computation for interpreting, analysing and using more complex information and data;
- **Listening and Oral Communication**: to learn from co-workers and customers, understand needs and explore new opportunities;
- **Problem-solving and Creativity**: to go beyond conventional approaches, offer novel solutions and make the leap to innovation;
- **Personal Effectiveness**: to take personal responsibility for self-development and meeting the changing needs of the organisation;
- **Group Effectiveness**: to achieve synergy among team members for achieving higher performance;
- **Organisational Effectiveness and Leadership**: to understand values and systems, take the lead and make decisions which support the organisation's goals.

In the case of the UK 21st Century Skills Agenda, emphasis was placed in regard to curriculum and examinations reform, on equipping trainees with the skills, knowledge and understanding needed for employability.

It is important to acknowledge however, that steps are being taken to address the issue of curricula reform. Among these are the following key initiatives:

- Development of a new curriculum for forms 4 and 5 of the Secondary School system, which would cater for mandatory technology education. As part of the Technology Education programme, Level 1 Craft Training will be introduced. A Pilot Programme was scheduled to commence in September 2004 in twenty-three (23) schools.

In this regard, all secondary schools will be equipped with Technology Education Labs, and trained teachers to deliver the curriculum Diploma in Technology Education from Mt. St. Vincent University, Canada, has already been initiated.

It is significant to note that the new curriculum will cater for Visual and Performing Arts.

- Introduction of a Specialised Programme of Craft at Sixth Form level. A sandwich programme is proposed catering for theoretical skills and practical exposure in industry. It is expected that this two (2) year programme would lead to TTNVQ Level 2 qualifications.
- Establishment of a National Curriculum Council (NCC). The NCC is designed to ensure relevance of the curriculum and to assist in upgrading the standard of the curriculum.

The NCC is comprised of the major stakeholders in education (principals, parents, religious bodies, industry/ business) and will play a monitoring and advisory role in regard to matters related to curriculum.

- Establishment of a Teacher Development Unit to address issues related to Teacher Development, including the formulation of a Teacher Development Policy, and a Centre of Excellence for Teacher Training (initiative of President Bush).
- Introduction by the Ministry of Education of a programme of remedial assistance and tuition to students with special education needs, particularly in the areas of basic literacy and numeracy; and the introduction of a Transition Programme by the UTT to assist potential students in meeting entry requirements.
- Re-establishment of the National Examinations Council as the examining body for Level 1 and 2 Craft training.

RECOMMENDED METHODOLOGIES FOR DELIVERING CURRICULUM:

The Design Model

Design Challenge is signature pedagogy where students engage in the design process

to solve a relevant, authentic, real-world problem. Students apply and reinforce their content knowledge, especially in the science areas – Physics, Chemistry, Biology etc. - as well as in Social Studies and Language Arts, through an open-ended design process that results in an original solution. Students take responsibility for assessing their own progress and incorporate peer feedback.

Design Challenges are student-centered and collaborative, forcing students to utilise personal experiences, interests, and abilities to enhance the learning of the team. They allow each and every student to leverage his or her potential. The design challenge creates powerful, intrinsic inspiration to learn and pride in achieving a goal.

What is Design Challenge Learning?

Design Challenge Learning represents an essential aspect of TVET in "Mind Learning" pedagogy where students engage in the design process to solve a relevant, authentic, real-world problem. Student teams apply and reinforce their science as well as Mathematics, Social Studies and Language Arts content knowledge, through an open-ended design process that results in an original solution. Students take responsibility for assessing their own progress and incorporate peer feedback as they conceptualize and redesign their projects. The following are the three main phases of Design Challenge Learning:

- **Conceptualise**
  - Identify problems, material and constraints;
  - Brainstorm ideas and possible solutions.
- **Construct and Test**
  - Select a solution;
  - Design and construct;
  - Prototype;
  - Redesign or modify;
  - Retest.
- **Acquire Knowledge**
  - Research;
  - Share solutions;
  - Reflect and discuss.
- **Engineering and/or Design Process.**

In the design process outlined above, teams do not follow a linear path from problem to solution, but rather weave in and out of conceptualising, constructing and testing, and acquiring knowledge, all the while applying multiple skills and habits of mind innovators. Through the Design Challenge process, students have the opportunity to build broad skills useful throughout their lives,

regardless of the specifics of the challenge. In using this open-ended approach that leads to the creation of numerous designs, students are challenged to apply their domain knowledge, personal experiences, interests and talents to the process of creating an inventive, team driven solution. This approach creates a powerful learning experience, where students are intrinsically inspired to learn and have pride in achieving a goal as a team.

DACUM

DACUM (Developing a Curriculum) is a method of occupational analysis orientated toward attaining results of immediate application in the development of technical-vocational education and training (TVET) curricula. It has been especially promoted and developed in the Centre of Education and Vocational Training for Employment of Ohio State University in the USA.

It is defined as a rapid method of carrying out occupational analysis at a low cost. It uses the technique of work in groups formed by workers experienced in the occupation being analysed. When holding a workshop using DACUM, groups of 5 to 12 people are formed. Oriented by a facilitator, they describe what a person should know and know how to do in the job position, in a clear and precise manner.

The result of DACUM tends to be expressed in the so-called "DACUM letter" or "DACUM map" in which the job position is described, beginning with the competencies and sub-competencies that make it up.

In this context, a considerable difference can exist between the concept of competence undertaken by functional analysis and that used by DACUM. In relation to DACUM, a competency is the description of important tasks, and is at the same time, the sum of small tasks called sub-competencies. The totality of competencies is the total description of the tasks of a job position. In relation to functional analysis, one does not describe the tasks to be done but rather, the outcomes necessary to achieve the key purpose are identified.

The available examples of DACUM letters usually show competencies described as operations or tasks. The rules

to describe units and elements of competence in the English or Mexican system are not explicitly applied in DACUM.

A typical example of a statement contained in a DACUM letter is as follows:

- Competency A: Prepare meals;
- Sub-competency A1: Purchase the food;
- Sub-competency A2: Wash the food;
- Sub-competency A3: Cut the food;
- Sub-competency A4: Cook the food; and
- Etc.

The DACUM letter also includes the necessary knowledge, behaviours, conduct, equipment, tools, materials to use and, optionally, the future development of a job position.

DACUM is a widely used, unique, innovative, and effective method to conduct occupational analyses and labour analyses. It is developed beginning with a work group that, in a period usually of two days, produces a detailed matrix with the tasks and responsibilities developed by workers in a job position.
DACUM is based on three premises:

- The expert workers can describe and define their work or occupation with greater precision than anyone else.
- An effective way of describing a job or occupation consists in outlining the tasks that expert workers conduct.
- All tasks, in order to be correctly developed, demand the use of knowledge, abilities, tools and positive behaviours from the worker.

DACUM has been used to analyse occupations in the professional, directive, technical and operational levels. Its use as a methodology to analyse processes and systems in industry has made it more popular in the United States, Canada and some countries of Latin America (Nicaragua, Venezuela, Chile) and the Caribbean, including Trinidad and Tobago.

Its utilisation is particularly promoted to orient the elaboration of technical-vocational education and training programmes and dissolve the "gap" between the offer of the technical-

vocational education training programmes and what really occurs in labour. DACUM also turns out to be useful for technical-vocational education and training institutions that wish to implement competence-based programmes where a careful identification of tasks is required, which at the same time are directly related to the competencies to be attained.

Systematic Curricular Instructional Development (SCID)

SCID is a detailed analysis of the tasks carried out in order to facilitate the identification and realisation of vocational training actions that are highly relevant to workers' needs. SCID can be done as a deepening of the DACUM or beginning with specified productive processes based on other methodologies (for example, gathering the opinions of experts or conducting interviews with workers) that produce an ordering of the tasks that compose a job position.

SCID facilitates the production of didactic guides centered on self-learning. To produce the guides, it is necessary to formulate criteria and gather evidence of performance that will later facilitate evaluation. The guides would identify the steps necessary to carry out the job, execution standards, equipment, tools and materials needed, safety norms to be observed, decisions that the worker must make, information that the worker must know use to make decisions and the likely consequence of errors made as a result of inappropriate decision making.

The contents of didactic guides adjusted to individualised TVET and self- training begin with a description for its usage. It continues with instructional sheets dedicated to crucial aspects the worker must dominate, not the way in which he or she should do their work. It comments on the decisions to be made. It includes a self-evaluation format and ends with a prescription of the way in which the supervisor should conduct the performance test.

AMOD

AMOD is a variation of DACUM, characterised by establishing a strong relation between the competencies and sub-competencies defined in the DACUM map, the learning process and the evaluation of the learning.

To carry out AMOD, once the DACUM is made, one proceeds with the committee of experts to identify important areas of competence. The areas of competence are organised sequentially in the most recommendable way possible so that its order facilitates the worker's dominion during the TVET. For each of these areas of competence, the sub-competencies or abilities are assigned in order of descending complexity, according to the experts' opinion.

The AMOD map is a species of DACUM map sequentially ordered with a pedagogical meaning to aid in the worker's TVET and guide the instructor. It is often used for workers to self-evaluate themselves and to define in an autonomous manner their vocational training needs asking themselves, “How would I fare in an evaluation in this competency?”

As with DACUM, AMOD is known as an agile and rapid method of establishing competencies and technical-vocational education and training programmes.

REVENUE OPPORTUNITIES

Any strategic plan for Skills Development and Training must be informed by the future direction of the country's economic activity base. This section outlines the industries that are expected to drive the country's development over the next ten (10) to fifteen (15) years. This is based on current and projected industrial/ business activity stemming from public and private sector developmental plans and projects, including industries earmarked by TIDCO for investment promotion and development. These revenue opportunities are as follows:

ENERGY

The energy-based sector is expected to remain the main driver of economic growth in Trinidad and Tobago over horizon 2020.

Expansion is projected in oil and gas based activity in the short to medium term based on the coming on stream of new oil production capacity.

Oil Production

Crude oil production is expected to increase significantly by mid-2005 (to approximately 200,000 barrels per day) with the addition of some 70,000 barrels per day as a result of additional oil reserves newly discovered by the Australian firm BHP Billiton. Based on projected new exploration activity, increased production is also expected from BP and Petrotrin.

In addition, Government has approved in principle a multi-million dollar plan to upgrade the Pointe-a-Pierre refinery in order to improve the quality of gasoline that is exported to the US market. As a result, by the second quarter of 2005, Pointe-a-Pierre will have an isomerisation plant and an alkylation unit. An acid plant will also be built which, along with a de-bottlenecking of the catcracker, will increase the refinery's throughput to about 35,000 barrels per day.

Gas Production and Expansion of Gas-Based Downstream Activity

There has recently been a shift in Government's policy in this sub-sector, reflected in the NGC's decision to favour gas-based projects that afford opportunities for further downstream activity. There is now a greater focus on the manufacture of new gas-based, downstream products with a higher level of processing (and hence value-added). This is expected to

pave the way for the diversification of the downstream gas sector. In this regard, it is important to point out that there are a number of new technologies currently being developed which, if commercialised, would transform the gas industry. These include Gas to Liquids (GTL) and Gas to Olefins via methanol (GTO).

Investment projects currently in the pipeline include a major ammonia plant to be established at Union Estate in La Brea producing 600,000 tonnes per year of ammonia. Associated with this plant is a urea plant conducting the downstream manufacture of Urea Ammonium Nitrate (UAN) (a direct application fertiliser).

Other developmental possibilities include:

- Another similar ammonia plant that will also have a production capacity of some 600,000 tonnes a year;
- Two (2) Hot Briquetted Iron (HBI) plants; one producing 1½ million tonnes per year, the other with a production capacity of some 315,000 tonnes per year; and
- Two (2) plants to manufacture steel. One plant is to have a production capacity of 500,000 tonnes per year (with potential for expansion to 1.5 million tonnes per year) and is to be set up at the former Cliffs and Associates Ltd. Facility at Point Lisas. The other plant is a mega module facility, which is to be set up at the site of the defunct Union Carbide plant at Point Lisas.
- Spin off, downstream Steel and HBI industries, including:

  - An Iron Pellet plant;
  - Iron casting;
  - Foundry operations;
  - A world-scale ethylene cracker with a derivative plant. This plant will facilitate the development of a local polyethylene-based plastics sector;
  - An aluminium smelter plant with a production capacity of approximately 320,000 tonnes a year, to be constructed at Union Estate;
  - Possible expansion of LNG capacity to include Trains 5, 6 and 7;
  - Syn-gas manufacture, to be established at Union Estate. This will lower gas costs to the basic methanol and ammonia industries and consequently enhance the

cost competitiveness of the planned downstream plants; and
- Specialty chemicals manufacture, e.g. intermediate inputs for paints and cosmetics.

NON-OIL SECTOR

Developmental possibilities include:

Manufacturing

- Metals, viz. manufacture of a wide range of downstream products from the iron and steel, and aluminium smelter plants, including precision engineering products (tools, dies, moulds, jigs, fixtures, parts, components) and metallurgical products;
- Steel fabrication, viz. manufacture of offshore oil/ gas production structures;
- Plastics, viz. manufacture of a wide-range of plastic products (for the packaging, construction/ building, automotive and electrical industries) based on the establishment of an ethylene complex;
- Chemicals, viz. manufacture of value-added specialty chemicals;
- Non-metallic minerals, viz. manufacture of glass, clay and ceramic-based products;
- Electrical/ electronics, viz. manufacture of computer and office equipment, electronic components, electrical machinery and apparatus, medical devices; and
- Recycling.

Expansion of the country's manufacturing base will be facilitated by the establishment of the Wallerfield Business and Industrial Park, and new Industrial Estates at Harmony Hall, Point Fortin, Debe, Caroni (lands formerly owned by the now defunct Caroni (1975) Ltd.) and in Tobago.

Agro-based

- Expansion of the production base in the fresh produce area, viz. fruits, vegetables and root crops, including organic products, medicinal and aromatic herbs and spices;
- Expansion of the harvesting of seafood;
- Agro-processing, viz. expansion of the range of agro-processed products, with particular focus on snack foods, specialty and ethnic foods, natural foods/ processing of

organic produce, high value fish products, nutriceuticals and healthy pre-cooked options (prepared meals/ frozen foods with low fat content); and

- Floriculture.

Services

- Technology and knowledge-based activity, including software development, networking systems, data base management, Internet development, E-commerce applications, telemarketing and tele-servicing, call centres and shared services, and telecommunications services;
- Finance, Banking and Insurance;
- Tourism and Hospitality, including leisure marine and development of holistic resorts/ healing retreats;
- Engineering and Construction services;
- Environmental services; and
- Logistics and Distribution

SKILLS FOR EMPLOYERS; SUPPORT FOR EMPLOYEES

In researching this critical aspect of the subject matter, the Sub-Committee took cognisance of the Skills and Training Agenda elaborated by the British Government in its landmark document entitled "21st Century Skills, Realising Our Potential, Individuals, Employers, Nation". The Secretary of State presented this document to the British Parliament for Education and Skills, in July 2003.

What is striking about the British agenda is the Government's wholesale commitment to support all levels of business (small, medium and large). A holistic approach has been adopted in relation to skills development. There is a myriad of forms of assistance available and a mix of infrastructure arrangements, including leadership and management training, innovative schemes and generally, integration of skills development into the pursuit of business excellence.

Among the more notable initiatives are the following:

The introduction of a demand-led approach to support employer training, in the form of Employer Training Pilot Schemes. These were introduced in September, 2002 in six (6) local Learning and Skills Council (LSC) areas to increase demand for training by reducing the barriers which prevent people, particularly those with lower skills, from training.

These Pilot Schemes explore the impact on demand for training up to level 2 of the NVQ by providing a package of support, which includes:

- Free training programmes;
- Support for employers to meet the costs of giving staff paid time off to train;
- Help to broker the sourcing of training and ensure that training is provided in the way that suits the needs of learners and employers; and
- Information and advice for learners and employers, including identifying their skill needs.

Whilst helping low skilled employees to attain level 2 skills, which will increase their productivity in the workplace and establish a

platform for further progression, the Pilot Schemes are giving employers more choice and control over training.

The response at the end of the first year was quite positive, with participation by over 2000 employers and 10,000 learners. It is noteworthy that a high proportion of participating firms employ fewer than fifty (50) workers.

The Pilot Schemes have spurred more colleges and training providers to deliver training on employers' premises, at a time and in a manner suited to their shift patterns. They have encouraged tailoring of training to meet only the skills gaps identified in initial needs assessments by:

- The provision of more effective support for medium and larger companies in improving workforce skills by encouraging the transfer of new ideas from universities and colleges to business, including the creation of 20 new Knowledge Exchanges to help businesses make the most of new innovations (Department of Trade and Industry Innovation Review and Business Support Transformation Programme);
- Establishment of a new network, via the Skills for Business Network (the network of Sector Skills Councils), for employers of all sizes to secure the skills they need and to encourage all employers within a sector to work together to improve training and productivity; and
- The provision of a more flexible, unitised qualifications system, greater responsiveness by colleges and training providers, greater accreditation for existing skills, and the establishment of Foundation Degrees.

Foundation degrees are employer-focused degrees that offer specific job-related skills. This is an avenue via which Government intends to focus the expansion of higher education by:

- Reform of the Modern Apprenticeship Programme to make the integration of key skills more flexible, lift the age limit and bring in a wider range of employers;
- Development by the Management Standards Centre of new world class

occupational standards for leadership and management, designed to underpin management learning and qualifications at all levels, act as a competence benchmark and be a UK resource for employers and learning institutions;

- Establishment of New Technology Institutes and Knowledge Exchanges for the technology-driven sector with the aim of speeding the adoption of modern management practices by improving technology transfer and making links between companies in the same cluster or industry;
- Introduction in each region of joint arrangements to co-ordinate skills and business support services through regional skills partnership, involving the bringing together of the key impacting agencies, namely, the Regional Development Agencies (RDAs), Small Business Council (SBC), local LSCs and Jobcentre Plus (a recruitment agency).
- Fostering greater involvement by Trade Unions in promoting skills development and training via various mechanisms including funding, administrative and institutional measures, such as Union representation or the Boards of the public bodies involved in training, and legislation.
- Establishment of a Website providing on-line information, advice and support services to businesses, pertaining to skills development and training.

It is instructive to note that a primary motivating factor in the UK scenario is the recognition by the Government of the need to encourage more sustainable and better managed business strategies, including assisting companies in moving up the value-chain and enhancing business performance, all with a view to ensuring that UK productivity can match that of other developed countries, such as the USA, France and Germany.

In the Trinidad and Tobago context, there is need for a similar commitment by Government to develop the framework necessary to encourage small, medium and large organisations to invest in their staff, including developing benchmarks to allow organisations to assess themselves against a profile of excellence. In this regard,

it is important to acknowledge that a key step in this direction was recently taken with the launch of the National Apprenticeship Programme (NAP).

The aims of the NAP are as follows:

- Development of a Competent Workforce;
- To ensure that employers gain a competitive advantage and are provided with a constant supply of skilled workers in keeping with labour market demands;
- To upgrade and certify workers' competencies; and
- Apprentices will be certified with the Trinidad and Tobago National Vocational Qualifications (TTNVQ).
- Experience from School to the World of Work
- Graduates receive on-the-job training facilitated through organisations such as the National Skills Development Programme (NSDP), National Energy Skills Centre (NESC), YTEPP, the Trinidad and Tobago Hospitality and Tourism Institute (TTHTI), Servol, RBTT, ROYTEC, HYPE Training and Construction Services Limited, YAPA and MUST Programme.
- Fiscal Incentive for Employers
- Tax allowance of 20% of the wages actually paid to the apprentice(s) over the period of six (6) months in accordance with Section 11 (1) (L) and the Ninth Schedule (Apprenticeship Allowance Rules) of the Income Tax Act, Chapter 75:01.

With the establishment of the NAP, it is now critical that appropriate measures be instituted to ensure that the NAP functions efficiently and effectively, and that the aims and objectives are successfully achieved.

SKILLS FOR EMPLOYERS - THE SECTOR ROLE

Context - The UK Agenda

The UK Skills Development and Training Agenda accords a prominent role to a new network of Sector Skills Councils (SSCs), also referred to as the Skills for Business Network. The Councils are, in some respects, similar to the Industry Training Organisations (ITOs). The SSCs have, in effect, replaced the 73 former National Training Organisations.

Some 25 SSCs covering the entire UK are expected to be operational before the end of 2004. The SSCs provide an avenue whereby employers can secure influence in shaping the supply of training and skills to meet current and future needs.

An examination of the intended role of the SSC is instructive when compared with the ITO as it reveals possible improvements, which could be made to the ITO to ensure enhanced effectiveness.

Each SSC is expected to:

- Deliver top quality analysis of international, national and regional trends in labour, skills and productivity in their sector, which will feed into the cycle for planning and funding the supply of training.
- Develop and update national occupational standards, which define the skills, knowledge and competencies required by employers in their respective sectors, and which define the skills knowledge and competencies that training programmes and qualifications should aim to deliver.
- Seek to work with employers in order to broker a skills agreement (Sector Skills Agreement) for the relevant sector, demonstrating employers' commitment to maintaining and improving the skills base. The Sector Skills Agreement should set out a long-term agenda for action on skills, tailored to the needs and priorities of each sector and derived from each sector's unique business needs.

The Sector Skills Agreement would cover:

- An analysis of sector trends, the drivers of productivity, any areas in which a "low skills equilibrium" is apparent, and the consequent workforce development and skills needs to increase competitiveness over the medium to long term;
- A review of the current state of skills in the sector, identifying current skills gaps and latent skills shortage;
- A review of the range and quality of training provision available for the sector and priorities for improvement, covering provision at all

levels including generic employability skills, Modern Apprenticeships and Foundation Degrees;

- Identification of major cross-industry skills needs, particularly leadership and management, and Information and Communication Technology (ICT);
- As assessment of the scope for collaborative action by employers in the sector to tackle skills shortages, identifying what form that action might best take, and the extent of agreement amongst employers and unions as to its desirability; and
- Close collaboration with the Learning and Skills Councils (LSCs) and the Regional Development Agencies (RDAs) so that existing skills funding is prioritised to meet sector needs.

The main benefit of these Sector Skills Agreements, according to the Agenda Document, will be to engage partners representing both demand and supply in a compact and unified way that develops a shared analysis of the skills-challenges for each sector, shared objectives for tackling these challenges, collaboration in taking the necessary action, and the development of a demand-led method for allocating funds in response to employer needs.

The SSCs will also:

- Engage effectively with training providers and other bodies involved in promoting skills development and training, as well as funding agencies, to ensure they understand and act on sectors' skills needs, including getting real leverage over the allocation of public funds for adult skills;
- Identify the drivers of increased productivity in their sector, and the skills that will be needed to capitalise on these;
- Review the suitability of existing training programmes and qualifications to meet sector needs and commission the development of new programmes where needed, including ensuring the availability of high quality, up-to-date training programmes suitable for the needs of adults in supporting a broad base of employability skills leading to a full level II

qualification, viz. foundation skills such as literacy, language, numeracy and ICT;

- Contribute to joint work across the network on generic and cross-sector skills, with particular focus on leadership and management, and sustainable development (understanding, developing and implementing sustainable technologies and working practices);
- To ensure funding is available to support and implement Sector Skills Agreements, through the Sector Skills Development Agency (responsible for establishing the SSCs, promoting the development of each SSC and monitoring their performance).

The SSC is therefore a powerful mechanism for identifying the skills that employers in a particular sector must have to support future business success and instituting the necessary measures to ensure that the supply of training, skills and qualifications is responsive to meeting those needs. At the core of this approach is a recognition of the importance of understanding where each sector is going and what has to be done to match and exceed the best international productivity levels in that sector, a process which can certainly be facilitated via the medium of clusters.

It is significant to note that the establishment of the SSCs is the result of close collaboration between the Department for Education and Skills (DES) and the Department of Trade and Industry (DTI).

It is evident from the foregoing that the SSC's role is more comprehensive than that of the ITO, encompassing issues related to both skills and productivity. In this regard, the SSCs represent a good benchmark, which could be used for purposes of strengthening the ITOs.

Identified Sectoral Training Needs

A scan of key sectors of the economy reveals the following training needs:

Energy and Energy-Based Industries

Based on positive developments in the oil and gas based sector over the recent past, viz. significant oil and gas discoveries and the imminent coming on

stream of new production capacity, LNG capacity expansion and planned new investments in gas based downstream activity, it is evident that the energy and energy-based industries sector will continue to play a predominant role in national economic development in the lead up to 2020.

Whilst Trinidad and Tobago has one of the oldest petroleum industries in the world, appropriate skills training infrastructure for the sector has only relatively recently started to become a reality with the establishment of the Trinidad and Tobago Institute of Technology (TTIT) (now the Point Lisas campus of the University of Trinidad and Tobago).

The training needs identified in this sector are based on research conducted in 2002 in connection with work on the feasibility of establishing the University of Trinidad and Tobago[7]. The research took the form of a manpower survey of the 16 largest industries in the energy process sub-sector and interviews with key informants.

Based on anticipated continued and possible accelerated growth of the energy process industries, the following conclusions were drawn:

- The manpower requirements of the sector will increase substantially to circa 2010;
- The available pool from which Point Lisas benefited will have dried up with the result that aggressive "poaching" will be the order of the day;
- Projected increased technological sophistication of plants will require large numbers at the professional and technical levels and higher levels of skills;
- Design, engineering and construction activities will see a shift from the developed countries to Trinidad and Tobago to meet local value added criteria, with increasing demands for engineers and engineering technicians.

The findings revealed manpower needs in two (2) primary employment categories in the energy process industries, that is, Professional Engineers (Chartered and Incorporated),

[7] Presentation by Professor Ken Julien entitled "A Revised and Expanded Vision for Technology and Skills Training in Trinidad and Tobago", dated May 2002.

and Engineering Technicians. The annual manpower deficit to 2009 in the two (2) categories is estimated as follows:

Occupation	Manpower Deficit
Professional Engineers (Chartered and Incorporated	300 – 320
Engineering Technicians	500 – 550

Source: Revised and Expanded vision for Technology and Skills Training in Trinidad and Tobago.

Manufacturing Sector

Notwithstanding the general consensus that future economic sustainability in Trinidad and Tobago will be inexorably linked to the pursuit of knowledge-intensive activity, the manufacturing sector will continue to be an important contributor to GDP, employment creation and the generation of foreign exchange earnings in the lead up to 2020.

In 1997, this sector accounted for 10.2% of total employment. By the year 2000, it accounted for 10.9%.

Manufacturing and Total Employment Data: 1997 - 2000

Item	1997	1998	1999	2000
Manufacturing	46,800	51,500	53,000	54,900
Total Employment	459,900	479,300	489,400	503,400
Manufacturing % of Total	10.18%	10.74%	10.83%	10.91%

Manufacturing employment as a percentage of the overall employment figure may grow slightly, but is not expected to change much due to the inter-dependence of manufacturing and other sectors. Direct increases in manufacturing employment will show indirect increases in the service sector and other sectors.

Research conducted on the sector as part of the investigation into the feasibility of establishing the University of Trinidad and Tobago indicated that the sector had to address the following issues if it was to become modernised and competitive and remain an important employer:

- The quality and quantity of persons available for employment in the sector had to be increased dramatically. Only a small percentage of the total number employed (less than 5%) possessed formal technology qualifications at the degree or certificate level;
- The number of persons with some level of qualifications needed to be increased substantially;
- Structure and formal training programmes needed to be put in place for the production of design engineers, application engineers and engineering technicians biased towards manufacturing;

The training needs identified in the sector, based on the research undertaken and data provided by key informants, cover the following occupational areas:

- Professional Engineers (Chartered and Incorporated), including Design Engineers and Application Engineers;
- Industrial Designers;
- Engineering Technicians; and

- Skilled Craftsmen and Machinery Operators.

Construction Industry

Information provided by the Ministry of Science, Technology and Tertiary Education indicates that there is an acute shortage of professional, managerial and skilled workers in the construction industry. The shortage encompasses engineers, project managers, construction supervisors, maintenance supervisors and draughtsmen. The shortages are impacting adversely on efficiency in the sector and pose a threat to the smooth implementation of government's housing and infrastructural development programmes; which has prompted the Government to look within CARICOM for the requisite expertise.

Cultural Industries

Although in the past the cultural sector may not have been considered a priority area for investment and development, in terms of Government's overall diversification efforts, the sector is now recognised as having the potential to generate a significant number of employment opportunities for the country's creative and talented young people.

The cultural industries, as defined by Dr. Keith Nurse of the Vision 2020 Sub Committee on Labour and Social Security, encompass the following:

- Music (Compact Discs, tapes, records, live performances, music publishing, on-line subscription, etc.);
- Audio – visual (film, video, TV, radio, multimedia, Internet, video games);
- Literary Arts (writing, publishing of books, periodicals, magazines, journals, newspapers, etc.);
- Performing Arts (e.g. theatre and dance);
- Visual Arts (painting, sculpture, and like works of art, galleries, museums);
- Cultural, Festival and Heritage Events and Tourism; and
- Applied Arts (graphic design, photography, advertising, architecture, etc).

Based on information provided by Dr. Nurse, the music and cultural industries in Trinidad and Tobago generated foreign exchange earnings of US$50M (1998), placing the industry in the top ten export earning sectors.

In his presentation to the Labour and Social Security Sub-Committee, Dr. Nurse made reference to a shortage of human resource development in the artistic and entrepreneurial aspects of the industry.

Film Industry

The Master Plan for the Strategic Development of the Trinidad and Tobago Film Industry, prepared by the Tourism and Industrial Development Company (TIDCO), outlined the following recommendations in relation to skills development in this potentially lucrative area:

- Identify available film programmes and scholarships;
- Establish two (2) government scholarships per year in film and video production;
- Promote exchange arrangements with foreign institutions;
- Design and select training mechanisms;
- Identify programmes and agencies for training;
- Develop specific curricula;
- Prioritise needs assessed modules;
- Develop training networks locally and internationally;
- Develop mentorship/ internship programmes locally;
- Host a workshop for trainers to build training capacity;
- Host a workshop for writers;
- Work with the Ministry of Education for recognition of media studies on the schools curriculum;
- Establish the Trinidad and Tobago School of Film and Video as part of the Centre for the Creative and Festival Arts, UWI;
- Monitor and evaluate training institutions; and
- Conduct training impact assessment.

Music and Entertainment

The following preliminary recommendations were formulated by the Ministry of Trade and Industry over a series of meetings with the various sub-groups belonging to the above industry, that is, music, dance, drama and visual arts:

- Enhancement and development of adequate music, performing arts and visual arts curricula in tertiary, secondary and primary level education with the inclusion of practitioners and teachers;

- Focus curricula development on encouraging the pursuit of careers in the creative sector and including in these curricula links with business courses, for example, promotion proposals and other survival techniques;
- Strengthening of private tutors in the creative arts arena through the national associations and in schools;
- Creation of certificate programmes and courses targeted at developing the technical skills complementary to the performing arts, for example, stage managers, lighting technicians and acoustics;
- Implement apprenticeship programmes whereby agreements are negotiated among countries allowing local artistes to work in foreign countries for a period of time to learn the art form;
- Implement a sensitisation programme and provision of courses in the arts and drama for art critics and media houses; and
- Formation of a National Arts School.

Yachting Industry

The Yachting Industry witnessed considerable growth over the last decade of the previous century, as evidenced by the increase in the number of yacht arrivals and the number of yards and marinas, which have been constructed. Between 1990 and 2000, the number of recorded yacht arrivals increased five-fold, from a low of 637 yachts in 1990 to 3,249 yachts in 2000. There are now some 17 yards and marinas in Trinidad providing a total of 458 slips and space for some 1,200 pleasure boats.

Factors which contributed to this growth, included the following:

- Private sector initiative and investment;
- The creation of an enabling environment by Government, with supportive policies implemented by Customs and Excise, Immigration and TIDCO;
- An active industry trade organisation, the Yachting Services Association of Trinidad and Tobago (YSATT);
- The presence of a skilled workforce and competitive price levels; and
- Location outside the hurricane belt, low cost of living and hospitable people.

Since November 2000 however, there has been a notable reversal of this growth, with a drop in yacht arrivals, yacht population and active boats, of up to 40% compared with 2000. Contributory factors would include the decline in the tourism industry subsequent to the events of September 11, 2001, persistent sluggishness in the economies of the developed countries and the increase in the levels of crime in Trinidad and Tobago. This notwithstanding, the industry is considered important to the Government's diversification efforts and has been targeted for further development.

A study on the sector undertaken by the United Nations Economic Commission for Latin America and the Caribbean (UNECLAC), dated December 2002, estimated that yachting generates at least TT$130-150 million and makes a contribution to value added of over TT$99 million. The study indicated that the sector generates direct employment of at least 1,100 people.

A number of studies conducted on the sector have touched on sectoral training requirements, the principal one being a report on "*The Training Requirements of the Boat Building and Boat Repair Sectors in Trinidad and Tobago*" dated January 1998, prepared by the Commonwealth Secretariat (the Riley Report). The studies have alluded to the need for training, as follows:

- Middle Management Training
  - Customer Relations;
  - Communication Skills;
  - Small Business Management;
  - Basic Accounting;
  - Estimating and recording job costs (materials and labour);
  - Job Scheduling;
  - Inventory Management; and
  - Quality Control.

- Theoretical and Practical Training for Tradesman
  - Shipwright;
  - Joiner;
  - Boil Maker (metal fabricator);
  - Welder;
  - Machinist;
  - Fitter;
  - Plumber;
  - Electrician;
  - Electronics Technician;
  - Boat Husbandry;
  - Refrigeration and Air Conditioning Technician;
  - Lifesaving Equipment Serviceman;

- Painter;
- Glass Reinforced Plastic (GRP) Fabricator;
- Sail Maker;
- Rigging;
- Repairman of automotive diesel engines and petrol engines; and
- Upholsterer.

The studies also identified the need for the following:

- Comprehensive training and sensitisation programmes for Customs Officers;
- The creation and financing of a training institute at which individuals could receive certification in marine trades;
- An apprenticeship scheme that is recognised by the Ministry of Science, Technology and Tertiary Education and YSATT which allows for mobility of apprentices within the yachting industry; and
- Certification for existing workers to distinguish areas and levels of expertise.

Tourism Industry

Based on research conducted by the World Travel and Tourism Council, the tourism industry in the Caribbean region is estimated to grow by 10% in 2004 and earn some US $40 billion.

Travel and tourism is projected to contribute 16.5% to the Caribbean's GDP by 2014, more than any other individual sector.

The tourism industry has been identified by the Government, as a priority area for development and investment, and an integral part of its economic diversification thrust. The sector has been steadily growing in importance, with visitor arrivals in 2003 reaching a record of 407,000 persons.

The following training needs have been identified by stakeholder organisations[8]:

- Management
  - Leadership;
  - HR Management;
  - Marketing;
  - Customer Relations; and
  - Events Planning and Management.
- Skilled and Unskilled Staff
  - Communications; and
  - Customer Relations.
- Technical Areas

[8] See Joint Study of the Inter-Sectoral Unit for Tourism of the OAS and the Caribbean Tourism Organization (CTO) to assess Training and Education Needs of the Tourism Industry in the Caribbean, 1999.

- Culinary Skills/ Food preparation;
- Tour Guiding;
- Environmental Management; and
- Maintenance Technicians (Electricians, Plumbers, Air Condition Technicians).

Some of the training challenges included the following:

- Poor work ethic;
- Cost of training;
- Small staff, small operation; and
- Time for training.

Agriculture Industry

Although this sector's contribution to the national GDP has been in steady decline (1.4% in 2000; 1.3% in 2001; 1.2% in 2002 and 1.1% in 2003), it is seen by Government as having the potential to contribute significantly to the national development thrust. This is reinforced by the magnitude of the food import bill, which approximated TT $2 billion in 2003, and the fact that Caribbean food is among the fastest growing ethnic cuisine in North America and Europe.

There are, however, a number of hurdles to overcome, not the least of which are praedial larceny, susceptibility to the vagaries of the weather, infrastructural deficiencies (including poor access roads, irrigation and drainage), administration, land distribution and settlement issues, and an aging labour force.

To enhance efficiency and competitiveness in the sector, there is need for training in Good Agricultural Practices, including Post Harvest handling of produce, water management, proper use of fertilisers and use of appropriate technology for small farm mechanisation. Other training opportunities include integrated pest management, organic farming techniques, biotechnology and agro-processing, with particular focus on specialty and natural foods, and the pre-cooked market segment.

THE CASE OF TOBAGO

Whilst noting that critical skills needs exists in a number of areas including Land Surveying and Soil and Concrete Testing, the Sub-Committee is of the view that training needs analysis should be undertaken in Tobago to determine the full gamut of jobs and skills needed. This

notwithstanding, the following were identified as possible areas that could be developed to provide jobs for persons living in Tobago.

- Cassava production (farine);
- Aloe production;
- Fishing;
- Sweet Potato production;
- Carrot production;
- Sorrel production;
- Landscaping;
- House wiring;
- Small engine repairs;
- Upholstery, especially marine upholstery;
- Electrical Installation; and
- Plumbing.

Other measures that the Sub-Committee considers could be pursued are as follows:

- Examine Machinery produced by CARIRI to determine its applicability to developing agro-processing in Tobago;
- Develop Training Centres in strategic locations; such centres to cater for dormitory facilities or alternatively, offer transportation to and from the centres. These features would address the needs of persons coming from distant areas;
- Develop mobile training units (where applicable). These units could be used to teach land surveying, for example. The training provided must be competency based;
- Contractors in Tobago should be provided with an incentive for enrolling and hiring Tobago workers into training programmes. One suggested incentive is a tax break;
- Provide scholarships for persons in Tobago who have subscribed to training programmes and who may wish to further their education or skills development; and
- Provide scholarships for persons to travel to Trinidad to train as instructors.

The foregoing notwithstanding, the Sub-Committee acknowledges that steps are currently being taken to establish a campus of the UTT in Tobago to cater for the education and training needs of those in the sister isle.

SKILLS FOR INDIVIDUALS

Any credible Skills Development and Training strategy must recognise that:

- A successful economy can only be built on the skills and competencies of the individuals that make up the population;
- People develop skills not just for economic reasons but also personal fulfilment, that is, the dignity of self-improvement, the achievement of personal potential and the desire to serve their communities;
- Many people are faced with barriers and obstacles to learning that are not just financial. They require various types of support to overcome these obstacles and barriers.

In the local context, there is need to institute a framework that provides every young person with a firm foundation and affords adults opportunities to develop their skills throughout their working lives. In this regard, it is alarming that approximately 60% of the local workforce does not possess an adequate high school education. This figure comprises, in the main, primary school graduates and citizens with about three to four years of high school exposure. Furthermore, most of the workforce has eight (8) or nine (9) years of schooling when the minimum that is required for today's technologically driven world is thirteen (13) or fourteen (14) years. If Trinidad and Tobago is to compete successfully in the increasingly liberalised and globalised marketplace of the 21st century, it is crucial that increased attention be focused on up-skilling and re-skilling at all levels, including developing foundation skills for employability among the adult population. This would require a high level of support from all stakeholders, with Government support being especially critical.

Particular attention would need to be paid to individuals with special needs. These individuals have traditionally not been adequately catered for in the Skills Development and Training system, due largely to the lack of a dedicated focus and, as a consequence, the provision of inadequate resources. Whilst there is no estimate of the number of individuals in the country who fall into this category, research has shown that there may be as many as 30,000 students with special needs, namely, slow learners, dyslexics, visually impaired and physically challenged, within the school system.

The Sub-Committee has taken note of Government's intention to place emphasis on facilitating the immersion of special needs students in the education system, as evidenced by the statement on the subject matter made by Senator Hazel Manning, Minister of Education, in the Senate on June 15, 2004. Amongst the package of assistance to be provided for the academic year 2004-2005 is:

- Financial support in the sum of $1,000.00 per student for some 1,631 students at the Technical and Vocational Centres. This sum is to be used for the purchase of materials required for their course of study, such as tool kits for computer repairs, woodwork and welding kits;
- Extension of the textbook rental/ loan programme to cover the student population at the Servol Junior Life Centres, the Servol Adolescent Centres and the St. Bede's Vocational Centre;
- Provision of copies of textbooks in Braille, wherever necessary and depending on circumstances; and
- Access facilities such as ramps, elevators, specialised transport systems.

Whilst the aforementioned new initiatives represent a significant development in promoting equity in the education and training system, much still remains to be done to cater adequately for those with special needs in the area of skills development and training. A policy is required to effectively deal with this issue in addition to the provision of the requisite infrastructural support.

The elaboration of any strategic plan for skills development and training at a national level must of necessity take account of global and regional trends. Information is presented hereunder in respect of the ILO/ CINTERFOR, the Free Trade Area of the Americas (FTAA) and the Caribbean Single Market and Economy (CSME).

ILO/ CINTERFOR

At the 91st International Labour Conference held in Geneva in June 2003, a number of Conclusions relating to Human Resources Training and Development were adopted. These Conclusions stemmed from the work of the Committee on Human Resources, which was appointed to address the topic "Human Resources Training and Development – Revision of the Human Resources Development Recommendation, 1975 (No. 150)". The Conclusions are embodied in a Reference Document entitled "Revision of the Human Resources Development Recommendation, 1975 (No. 150); Proposed Conclusions". The document was presented to the 36th Technical Committee Meeting of CINTERFOR/ ILO, which was held from July 28 - 30th, 2003 in Guatemala.

The Proposed Conclusions stipulate that:

- The International Labour Conference should adopt a new international instrument concerning human resources training and development; and
- The instrument should take the form of a recommendation.

The Objective, Scope and Definitions outlined in the document propose that the instrument should encourage members to identify human resources training and development policies which:

- Facilitate lifelong learning and employability. For the purpose of the instrument the term "employability" means portable competencies and qualifications that enhance an individual's capacity to make use of the opportunities available in order to secure and retain decent work, progress within the enterprise and between jobs and cope with changes in technology and labour market conditions. Employability should be part of a range of policy

measures designed to achieve quality and safe jobs, as well as sustainable economic and social development;

- Give equal consideration to economic and social objectives, emphasise sustainable economic development in the context of the global economy and a knowledge and skills-based society, as well as the development of competencies, decent work, job retention, social development, social inclusion and poverty reduction;
- Stress the importance of innovation, competitiveness, productivity and growth of the economy, as well as decent job creation and the employability of people, considering that innovation creates new employment opportunities and also requires new approaches to education and training in order to meet demand for new skills;
- Address the challenge of transforming activities in the informal economy into decent work, fully integrated into mainstream economic life. Programmes and policies should be developed, aimed at creating decent jobs and opportunities for education, skill-building and training, as well as validating prior learning and skills gained, in order to help workers and employers move into the formal economy;
- Promote and sustain public and private investment in the infrastructure needed for the use of information and communication technology in education and training, in hardware and software for training purposes, as well as in the training of teachers and trainers, and making use of local, national and international collaborative networks; and
- Address and reduce inequalities in the participation of adults in education and training.

FREE TRADE AREA OF THE AMERICAS (FTAA)

The FTAA aims to establish the largest free trade area in the world, i.e. a single, unified market stretching from Alaska to Argentina. It would comprise thirty-four (34) countries in the Western Hemisphere with a combined population of 800 million

people and economic output estimated to be in the region of US $13 trillion. The value of trade within the bloc is estimated to be in the region of US $3.5 trillion.

Trinidad and Tobago, as a member of CARICOM, has been actively involved in negotiations for the establishment of the FTAA, which had been scheduled to come on stream in January, 2005. This implementation date, however, is unlikely to materialise as the negotiations have been deadlocked for some time over a number of critical issues including agricultural subsidies and dispute settlement mechanisms. Notwithstanding the impediments, it is probable that a hemisphere-wide trade agreement will be in place by the end of 2005.

Furthermore, it is noteworthy that, with the FTAA negotiations encountering major hurdles, the USA is proceeding apace with the conclusion of free trade agreements with its hemispheric neighbours.

What this implies for Trinidad and Tobago, whether through the FTAA, CARICOM or a US Trade Agreement, is increased competition in the domestic marketplace with the concomitant threat of contraction of the onshore economy, that is, business closures, loss of jobs and diminished government income. This thus points to the need for increased focus on building capacity for innovation and enhancing economic productivity and competitiveness, at the core of which is investment in human resource development. This requires a combined effort on the part of all stakeholders, that is, Government, private sector, unions and individuals to raise skills levels to enable the country to be internationally competitive. All parties must therefore view skills development and training as assisting them to realise individual and collective goals.

CARIBBEAN SINGLE MARKET AND ECONOMY (CSME)

The CSME envisages a deepening of the regional integration movement to cater for the free movement of capital and professional and skilled labour, in addition to free trade in goods and services. The CSME essentially creates a single economic space stretching

from Belize in the west to Suriname in the east, comprising some 15 million consumers.

Efforts are in train to make the CSME fully operational by December 2005. This entails the negotiation and implementation of a number of protocols aimed at a far-reaching reform of the Chaguaramas Treaty. With the proposed free movement of professionals and skilled labour under the CSME, particular attention will need to be paid to accreditation and articulation arrangements. Criteria and guidelines will need to be put in place to ensure programme articulation and student transfers to facilitate the movement of skills.

In this regard, the proposed establishment of the CARICOM Regional Accreditation Agency represents a significant development. The Accreditation Council of Trinidad & Tobago and the CARICOM Regional Accreditation Agency will need to collaborate with UWI to ensure that a sound national and regional system of articulation is put in place. This will help to promote and facilitate the movement of skilled persons among CARICOM countries.

Since the Sub-Committee recognises the need for a new model of the education and training system in Trinidad and Tobago, it is imperative that we look at some countries that can serve as international benchmarks in this regard. Consequently, the Sub-Committee has hereunder briefly examined the education and training systems in United Kingdom, Germany, Singapore and New Zealand. The focus however remains on skills development and training.

UNITED KINGDOM (UK)

An observation of the UK education and training system reveals that Trinidad and Tobago today, is in a somewhat similar situation to the UK in the late 1970s. As is currently the case with Trinidad and Tobago, the UK had a rigid system of schooling and training. Young people would enter the education system at about five (5) years of age and proceed to secondary school at about eleven (11) years of age. The type of secondary school very much rested on the outcome of one single examination. Those who passed this examination would normally be expected to eventually go on to universities and colleges at the age of eighteen (18). For those that did not pass the exam it was assumed that, after a few years more schooling, they would leave and go straight into work. A number would win apprenticeships to train in craft skills ranging from welding to hairdressing, for example. On completing their training these people would receive a certificate in recognition of the skills developed.

However, there were millions who left school with few, if any, qualifications, entering a world of work which would offer little or no training, no opportunity to develop themselves and no recognition for any competencies they may have developed.

The traditional apprenticeship system started to collapse. Young people failed to find training, skill shortages arose and businesses, the national economy and the UK's competitiveness suffered. It was clear that something had to be done.

Further, in the early 1980s, unemployment amongst young people was becoming a serious issue. The existing programme for youth training, funded by the

Government, had been expanded but still could only offer un-certificated training, which left employers unsure of what these potential employees could actually do, and the trainees often unable to convince employers about the depth, range and quality of what they had learned.

In 1981 the Manpower Services Commission (a predecessor to the DEE) made its first statement about competence-based standards and qualifications, published as 'A New Training Initiative'. Two of the main themes of that document were about occupational standards and young people. From that point, the UK started to develop occupational standards within each industry, taking responsibility for itself.

In 1985, the Government published the White Paper 'Education and Training for Young People' announcing a Working Group to review vocational qualifications in England and Wales. The Working Group, chaired by Oscar de Ville, reported its findings to the Government. One of its findings was that there was no effective national system of vocational qualifications; qualifications had evolved rather than been designed. While some industries had highly respected qualifications, others had none.

A system was needed that would recognise the skills people already had, and that was consistent, reliable and well structured. It would allow the skills-base of the country and success in up-skilling the whole of the national workforce to be measured. Qualifications needed to be realistic and accessible with scope for progression and people needed to feel part of the process.

The Government could not devise a new system in isolation, nor could it force people into a system through legislation. The key to any system was to have the full support of all involved; a voluntary system through partnership.

In 1986, the Government established the National Council for Vocational Qualifications (NCVQ) (now the Qualifications and Curriculum Authority (QCA) to set up a comprehensive framework of vocational qualifications, the National Vocational Qualifications (NVQs), covering all occupations and industries.

NVQs slot into a framework of occupations covering general, industrial and commercial sectors. The framework is divided into eleven groups:

- Tending animals, plants and land;
- Extracting and providing natural resources;
- Construction;
- Engineering;
- Manufacturing;
- Transportation;
- Providing goods and services;
- Providing health, social care and protective services;
- Providing business services;
- Communication; and
- Developing and extending knowledge and skills.

NVQs are divided into five levels. In the world of work these equate to:

- **Level 1** - Foundation skills in occupations;
- **Level 2** - Operative or semi-skilled occupations;
- **Level 3** - Technician, craft, skilled and supervisory occupations;
- **Level 4** - Technical and junior management occupations; and
- **Level 5** - Chartered, professional and senior management occupations.

In order for the skills development and training programmes to be demand driven, the UK recognised the need to engage all stakeholders. Employers were central - they needed to be persuaded to agree common standards for all occupations within their industries.

Also vital were the training providers, those organisations that actually provided training and awarded certificates. These stakeholders were organised into Standard setting bodies called Industry Training Organisations (ITOs) now called Sector Skills Councils (SSC's). The standards set were used to form the basis on which the NVQs were developed.

Prior to this happening, Training Providers and Awarding Bodies could set their own agendas with no regard for the needs of industry, the economy or the national skill needs. This had resulted in a jungle of disparate qualifications of inconsistent value and not geared to the changing needs of individuals, industry or the country. Qualifications needed to be flexible, widely recognised by industry, comprehensive, rigorously assessed, coherent and voluntary. Therefore the

National Vocational Qualifications (NVQs) were created. With the new system in place, the UK has now established a foolproof system of providing workers for industry that is based on a demand oriented system rather than a supply oriented one.

The UK also recognises the need to be constantly on the lookout for changes in trends and/or technological advances taking place locally and globally. NVQs have a lifespan of five (5) years after which they are revised. This also affects the development of training curricula and the type of skills development and training programmes offered. Therefore, the UK constantly revisits their National Training Strategy.

Since 1998, through the National Training Agency (NTA), Trinidad and Tobago had set course on following the UK lead. However, to date, attempts to establish ITOs in all the sectors have not materialised as intended and as a result very few TTNVQs were established. This also affected the attempt to establish a Framework of National Qualifications. As indicated previously, it is necessary at this time for the NTA to revisit what has been taking place in relation to the formation of ITOs, the establishment of TTNVQs and the Framework for National Qualifications.

GERMANY

Attendance at school is compulsory between the ages of six (6) and eighteen (18). At the primary level, there is a stage called the "orientation phase" when the student and their parents are given the opportunity to opt for either the technical-vocational route, or for the traditional "grammar type" route. Those who opt for the tech-voc route at the age of fifteen to sixteen must pursue a course of vocational training until eighteen (18), which entails both practical on-the-job training (mainly the Training Factory Concept) and theoretical instruction at school. The main purpose of the vocational orientation is to ease the transition from school to working life. This system calls for a partnership between the private and public sectors.

The system also provides for persons, who for some reason have missed out on the educational opportunities at school to "catch-up" via what is called "second route". Second Route gives working

people the outlet to attain certification in either the tech-voc or traditional grammar options. This includes working mothers who took time off to bring up a family and now wish to return to work.

There is also a mandatory system put in place for continuous or lifelong learning, which is usually funded by the German Industry. The 13 Landers (States) have specific legislation on continuous education (Weiterbildung). The Educational Leave Act allows for employed persons to obtain time off (usually 5 days) per year on full time pay, in order to take part in continuing education programmes.

Merits of the German Education and Training System:

- School attendance is compulsory from age 6-18;
- The German State and German Industry both invest heavily in education and training;
- Guidance for students at an early age (5th and 6th years of primary education) to be guided into choosing their career paths;
- Students are given the opportunity to choose tech-voc education, traditional education or combination of both;
- No child is denied an education because of a handicap;
- Provision is made for those who had "fallen" to complete their education in their chosen fields;
- Education and training programmes are driven by the needs of the German Industry; and
- There is a culture of research in Germany with the university system spearheading the drive to embrace research and development.

Trinidad and Tobago through the Metal Industry Company (MIC) has successfully adopted some of the training methodologies used in the German System, mainly the Training Factory Concept. This was dealt with in detail in Section 5.5. However, there are some additional aspects of the German System that can be applied to the Trinidad and Tobago education and training system.

These include the opportunity for students to engage in career guidance at an early age when they can be suitably placed in a school or institution that caters to their

particular needs. A second factor is that education and training programmes, like the UK, are demand driven or industry led. This signals the need for Trinidad and Tobago to address the deficiencies in the functioning of the ITOs to ensure effective partnering with industry in the formulation of education and training programmes. There is also the need for tertiary level institutions in Trinidad and Tobago to enhance capability in undertaking Research and Development.

SINGAPORE

Singapore is unique in the sense that it is a small country with a population similar to Trinidad and Tobago and possessing no natural resources required to produce goods. Its greatest asset is considered to be its human resources, and it has done extremely well in its thrust towards first world status through utilisation of its human resources potential. Singapore's Education Mission Statement expounds on its dependency on its people to develop its society expressing the philosophy that the wealth of a nation lies in its people

"....our future depends on our continually renewing and regenerating our leadership and citizenry, building upon the experiences of the past, learning from the circumstances of the present, and preparing for the challenges of the future...."

The strength of the Singapore education and training systems is mainly due to the provision of education and training that is specifically catered to the needs of the individual and choices are offered which relate to the course of study the individual wishes to pursue.

Singapore uses the Primary School Leaving Examination (PSLE), which assesses a student's abilities for placement in a secondary school course that suits his or her learning pace and aptitude. Students who obtain the necessary standards are then admitted to the Special, Express or Normal stream in secondary schools. Within the Normal stream, students have the option of taking the Normal (Academic) course or the Normal (Technical) course, both of which lead to the Singapore-Cambridge General Certificate of Education "Normal" (GCE "N" level examination) at the end of four years.

Normal Course

Students in the Normal (Academic) course have, as compulsory subjects, English, the "Mother Tongue" and Mathematics. Students write the GCE "N" level examination at the end of the fourth year. Those who meet the criteria proceed to a fifth year of study. On obtaining good results at the GCE "O" level examination, they can proceed to the junior colleges, polytechnics or technical institutes. Many of the pupils, who complete the Normal course in the fourth year, after sitting the GCE "N" level examination, are likely to take up technical and vocational education at the technical institutes.

Students in the Normal (Technical) course are prepared for technical-vocational education with the Institute of Technical Education. The curriculum is geared towards strengthening students' proficiency in English and Mathematics. Students will take as compulsory subjects English, Mathematics and Computer Applications and write them at the GCE "N" level examination at the end of the fourth year. Those who are able academically can continue another year to prepare for the GCE "O" level examination.

Curriculum Electives

The electives depend on whether a student is in the Arts, Science, Commerce or Technical stream. Students do at least one Humanities subject if they are in the Science stream. They can also do a third language, such as French, German or Japanese.

Students in the Normal (Technical) stream can do electives such as Technical Studies (or Design and Technology), Basic Science, Food and Nutrition, Fashion and Fabrics, Art and Craft and Elements of Office Administration, apart from the core subjects of English, basic Chinese/ Malay/ Tamil, Mathematics and Computer Applications.

Post-Secondary Technical Education

The Institute of technical Education (ITE) - The Institute of Technical Education (ITE) is a post-secondary, tech-voc institution, which equips secondary school leavers and working adults with technical skills and knowledge to meet the manpower needs of the various sectors of industry. ITE provides full-time institutional training and

apprenticeship programmes for school leavers as well as Continuing Education and Training (CET) programmes for workers.

Polytechnics - The Nanyang Polytechnic, Ngee Ann Polytechnic, Singapore Polytechnic and the Temasek Polytechnic have all been set up to ensure broad-based training for students inclined towards practice-oriented studies at tertiary level and are geared towards people with GCE "O" and GCE "A" level qualifications, as well as the graduates from the technological institutes.

The four polytechnics offer a wide range of courses such as engineering, business and maritime studies, mass communications, marketing, graphic, product and interior design, and computer studies. ITE graduates holding a Certificate of Merit in relevant National Trade Certificate Grade 2 courses, or who have completed the ITE's apprenticeship scheme can also apply to the polytechnics.

National Institute of Education (Teacher Training) - Professional training for teachers is conducted by the National Institute of Education (NIE), an institute at the Nanyang Technological University. NIE offers four-year degree programmes for "A" level students and a one-year Postgraduate Diploma in Education Programme for university graduates.

Institutes of Higher Learning (Universities)
Admission to the two universities, the National University of Singapore and the Nanyang Technological University, is based on GCE "A" level performance and, in some cases, interviews as well. Diploma holders can also apply for admission to the universities. A third university, the Singapore Management University, was established in 2000.

The National University of Singapore offers degree programmes in Arts and Social Sciences, Architecture, Building and Real Estate, Business Administration, Law, Science, Engineering, Medicine and Dentistry. Postgraduate studies are offered in all faculties and there are six postgraduate schools, namely the Graduate School of Arts and Social Sciences, Business, Science, Medicine, Dentistry as well as the Postgraduate School of Engineering.

The Nanyang Technological University (NTU) has its origin in the former Nanyang Technological Institute. With the incorporation of the National Institute of Education in 1991, NTU has become a comprehensive university offering a diverse selection of courses. Its Engineering and Business related programmes are most notable and have received accolades from international organisations.

The degree courses offered at NTU include Accountancy, Business, Communication Studies, Computer Engineering, Electrical and Electronic Engineering, Mechanical and Production Engineering, Civil and Structural Engineering, Arts, Science, Education and Physical Education.

Open University Degree Programme (by Distance) - The Ministry of Education appointed the Singapore Institute of Management to run the Open University Degree Programme (OUDP) because of the Institute's experience in organising part-time further education programmes for working adults. The OUDP is run in collaboration with the UK Open University and adopts an open approach to learning. Open learning systems are designed to meet individual requirements and remove barriers, notably of time and space, which may prevent attendance at traditional courses. The OUDP adopts a multi-media instructional system. Some of the main components are self-learning study units, audio and video tapes, revision classes as well as year-end examinations.

NEW ZEALAND

The strength of the New Zealand's education and training systems lies in the presence of the New Zealand Curriculum Framework (NZCF) and the National Qualifications Framework (NQF), which informs and guides the functions of the education and training systems.

The New Zealand Curriculum Framework (NZCF)

The New Zealand Curriculum Framework is the foundation policy statement covering teaching, learning, and assessment for all students in all New Zealand schools.

It is the first statement in the history of the country to provide such an overview and outline the ways in which the

New Zealand Curriculum can balance the needs and interests of individual students with the requirements of society and the economy.

The New Zealand Curriculum Framework acknowledges that individual students have unique learning needs. The Framework identifies the knowledge, understanding, skills and attitudes, which all students must develop if they are to play a full part in the world in which they will live and work.

The Principles

The Framework establishes and identifies the principles for all learning and teaching programmes in New Zealand schools. The principles are based on the premise that the individual student is at the centre of all teaching and learning.

The New Zealand Curriculum:

- Establishes the direction for learning and assessment in New Zealand schools;
- Fosters achievement and success for all students, and at each level clearly defines the achievement objectives against which students' progress can be measured;
- Provides for flexibility, enabling schools and teachers to design programmes which are appropriate to the learning needs of their students;
- Ensures that learning progresses coherently throughout schooling;
- Encourages students to become independent and lifelong learners;
- Provides all students with equal educational opportunities;
- Reflects the multicultural nature of New Zealand society; and
- Relates learning to the wider world.

The Essential Learning Areas

The framework identifies seven essential learning areas. These are broad, easily recognised categories of knowledge and understanding. They constitute a balanced curriculum within which the essential skills, attitudes, and values are developed.

The Essential Skills

The framework defines eight groups of essential skills. All students need to develop these skills to enable them to reach their full potential and take a full part in society. Students will develop the essential skills through a range of learning experiences across the whole curriculum.

Attitudes and Values

The framework outlines some of the attitudes and values, which are an integral part of the school curriculum. The school curriculum will encourage positive attitudes towards learning. It will help students to develop and clarify their own attitudes, values, and beliefs while respecting those of others.

Assessment

The framework sets out the policies and procedures for assessment in all New Zealand schools. The national curriculum statements provide clear learning outcomes against which students' progress can be measured. The purpose of assessment is to assist with planning the next step of learning for students, reporting to parents, and planning for the most effective use of resources.

The New Zealand National Qualifications Framework

The National Qualifications Framework (NQF) was developed in consultation with specialists from education and industry. Unit and achievement standards, National Certificates and National Diplomas are registered on the Framework. The National Certificate of Educational Achievement (NCEA) is New Zealand's main national qualification for secondary school students and part of the National Qualifications Framework. The National Vocational Qualifications (NVQ) is New Zealand's main national qualifications programme for industry skills and training as well as professional occupations. There are NVQs for almost all occupations.

Framework qualifications are **quality assured and nationally recognised**. An education provider must be **registered and accredited** Authority to be able to award credit for unit standards.

Every learner being assessed for Framework qualifications receives a Record of Learning (ROL).

Based on the foregoing analysis of the Education and Training System, it is evident that to achieve developed country status, with all that it implies in terms of economic transformation and the achievement of sustainable development and a better quality of life for all citizens, a radical overhaul of the system is required, given its central role in the developmental process.

The new system now being proposed seeks to build on the strength of the existing infrastructure while putting in place mechanisms to address the identified deficiencies. (It is important to note, as previously indicated, that initiatives are in train to address some of the identified deficiencies.)

At a general level, the new Agenda is designed to:

- Facilitate more effective co-ordination and coherence in the management and administration of the system, including the supply and delivery of training;
- Expand the conceptual framework of skills development and training to encompass innovation, R&D, entrepreneurship, enterprise creation, business support and job creation;
- Effect the optimal development of the country's human resource base, ensuring that current and future skills needs are catered for by the provision of the requisite human resources, in terms of both numbers and quality, to fill the full range of occupations in all of the economic sectors;
- Foster increased labour market flexibility and ensuring enhanced responsiveness of the economy to changes in the economic environment;
- Develop an innovative, creative and entrepreneurial workforce as a necessary pre-condition for the achievement of economic sustainability in a technology driven environment;
- Inculcate into the population at large a culture of lifelong learning by assisting people to recognise that the new and continuously evolving global economy now makes the notion of employability for life an imperative, inherent in which is there flexibility to adapt to economic change;

- Enable the country to effectively meet the competitive challenges and ensure its continued survival and growth in an increasingly liberalised and globalised international economic environment; and
- Foster greater appreciation of the value of technical and vocational education and training.

GUIDING PRINCIPLES

The new system is based on the following core, guiding principles.

The primary intent and focus of the Skills Development and Training System must be to adequately prepare students and trainees for the world of work.

Training and skills development are concerned primarily about FITTING PEOPLE TO JOBS in the world of work. Whereas education provides people with fundamental life-long capabilities, training and skills development is more job-specific. Training and skills development provides a specific set of skills to allow the individual to function in a specific environment and, if they are to be most effective, these skills should be superimposed on a sound EDUCATIONAL FOOTING.

The system must be closely aligned to the labour market and must therefore be informed on an ongoing basis by the country's skills/ human resource development requirements based on current and projected economic and social developmental activities, including Government's development plans and priorities, private sector plans for new capacity building and expansion and identified investment and revenue opportunities.

The employability of the students and trainees in the system is of paramount importance, especially in areas that are necessary for technological progress and international trade. Employability entails not only securing paid employment but also being equipped with the requisite tools to create employment opportunities via entrepreneurship.

Enabling infrastructure for sustainable job creation must be an integral part of the system, given the focus

on preparation for the world of work, and should involve the establishment of:

- A centralised and institutionalised co-ordinating body with responsibility for overall co-ordination of the system, environmental scanning, technological forecasting, researching and identifying employment opportunities, and marketing its output to the private sector; and
- Centres of Excellence, that is, Specialised Training and Development Centres, which would cater for exposure to the Training Factory Concept (TFC), and Business Incubators.

The success of the system is contingent on employment opportunities being continuously generated in sufficient numbers to absorb the mainstay of the graduates. This is needed to ensure that there is a sufficiently large enough pool of available, trained and skilled human resources to cater for the country's developmental needs, failing which there would be little likelihood of Vision 2020 ever materialising.

One of the differences between developed and developing countries is the inability of the developing country to achieve sustainable job creation, which is linked to innovation and R&D capacity building.

The common belief is that the development of an excellent Education and Training System will automatically lead to job creation and that well trained and educated people can create jobs for themselves. Whilst there may be some truth in this assumption, the stark reality is that sustainable jobs created in a structured manner that allows for major developments in various sectors of the economy cannot and will not be achieved through individual efforts.

Skills development and training must be linked to a sustained, formalised and institutionalised job creation thrust within a collaborative framework involving inputs from key stakeholders. Highly trained and educated people need to have access to good jobs in their home country if an accumulation of their capabilities and skills is to be made available to the wider population. However, a simple check will show that

the majority of our top 5% are not present to assist in dealing with our developmental problems.

In the absence of the creation of an adequate number of employment opportunities, a sizeable portion of the country's trained manpower will thus simply continue to seek out greener pastures in metropolitan countries. In such a scenario, less than optimal returns would continue to accrue to the country from the significant sums expended on education and training annually.

If the intention in pursuing the achievement of developed country status involves taking the entire population along, that is, leaving no group behind, it is imperative that we minimise the brain drain so that our top 5% are fully engaged in job creation in every possible sector.

In addition to the centralised co-ordinating body, the following infrastructural components are critical to facilitating the job creation process:

- Maintenance and expansion of the Training Factory Concept (TFC) pioneered by MIC, and affording opportunities for internships for top performing graduates at both the tertiary education and training levels; and
- Establishment of specialised Training and Development Centres, that is, Centres of Excellence, in activity areas that are critical to the country's development over the long term in the areas of Manufacturing (including Product Design and Development), Petrochemicals, Agribusiness, Hospitality and Tourism, and Culture and Entertainment. This component also caters for the establishment of Business Incubators.

The Training Centralised Co-ordinating body, Factory Concept and Centers of Excellence will be elaborated in a separate section.

Priority attention must be given to the holistic development of the student/ trainee

This recognises that the essence of the individual is multi-dimensional, incorporating mind, body and spirit. All of these aspects must be appropriately nurtured if the system's ultimate objective is to be

achieved, the ultimate goal being to produce a better citizen of Trinidad and Tobago, who is well rounded, whose potential can be fully realised and who can contribute optimally to the social and economic development of the country.

This means that in addition to increased emphasis being placed on the cognitive skills, adequate provision must be made in the curriculum, at both primary and secondary levels in particular, for exposure of students and trainees to ethics and values, spirituality, family life education, interpersonal skills, physical education, and education for sustainable development.

Thinking skills, innovation and creativity, as well as entrepreneurial skills, must be nurtured at every stage of the system.

The achievement of sustainable development and, by extension, developed country status can only be based on the country's human resources being its most valuable asset. Whilst there appears to be general recognition of this fact, the predominant perception is that oil and gas, which are natural resource endowments and wasting finite resources, are considered our most valuable assets.

A shift in the prevailing mindset is therefore needed to appreciate the importance of developing a thinking, innovative and creative workforce which would form the basis of the country's competitive advantage; a process which must be initiated at the primary education level and reinforced at the secondary and tertiary levels. This has obvious implications for curriculum design and delivery through didactic and pedagogical approaches being employed.

In this regard, it is important to point out that the mode of delivery in primary and secondary schools still revolves largely around rote learning, where chalk and talk predominate. It does not foster interactive learning or the development of abstract thinking, of research skills, or of problem-solving skills. However, these are the attributes that we must begin to inculcate in our young people on whose shoulders will fall the primary responsibility for taking this country forward to 2020 and beyond.

In this connection, it is instructive to note that the Board of Education of the Commonwealth of Massachusetts in the United States of America has embarked on a programme to incorporate engineering instruction into its standard curriculum from kindergarten through to Grade 12. The curriculum is currently being fine-tuned through 'pilot' initiatives and it is expected to be phased in over the next few years. Arguments advanced in favour of this course of action include the following:

- Engineering, with its hands-on activities that can demystify daily routines, brings math and science alive;
- Early engineering instruction ensures that students grow up to be technologically literate, able to understand how human-made objects (from can openers to bridges to microchips) work and why one design is better than another; and
- Very young children have the ability to grasp engineering concepts such as design or appropriate materials.

Massachusetts is the first state in the nation to require that students be exposed to Engineering instruction from elementary level through Grade school and at least twenty-five (25) other states are considering incorporating engineering into their standardised curricula.

Equal importance and emphasis must be placed on the Academic and Technical (Tech/VOC) Streams at all levels of the system and all students at the secondary and primary levels must be exposed to technology (tech/voc) education.

This acknowledges that all students have unique talents and abilities, and a major objective of the system must be to provide an appropriate enabling environment, that is, an environment that would facilitate the unearthing, nurturing and harnessing of these talents and abilities. Technical and Vocational Education must be viewed as complementary to the academic stream, with its own intrinsic value to the developmental process, and not as an option for only those students who are not "bright" enough to excel in the academic world.

In this regard, tech/voc education must be an integral part of the curriculum at both

the secondary and primary levels and all students at both levels, whether from schools deemed "prestige" or otherwise, must have some level of exposure to this subject area. This will go a long way towards eradicating the stigma that the technology (tech/voc) stream is inferior or of lesser importance to the academic stream. It will also help to create a more balanced and well-rounded graduate from the secondary level who has a greater appreciation of the value of both streams.

The system must cater for coherence in terms of all public sector, post-secondary training, affording articulation between secondary schools, non-degree post-secondary providers and tertiary Institutions.

This would enable students who have dropped out of the formal system and are desirous of re-entering the system to earn the requisite additional credentials required for entry into a tertiary training programmes (NTA Level 3 and above), including COSTAATT institutions.

Appropriate Teacher/Instructor development infrastructure must be a central part of the foundation of the System.

In order to achieve the desired output from the system, that is, individuals who are better equipped to assist the country in achieving developed country status by 2020, it is imperative that appropriate Instructor Development infrastructure be established. Such infrastructure could take the form of a Professional Development Institute and/or an Advanced Instructor Training Institute. It would cater for instructor training at all levels of the system on a full time basis.

Under this infrastructure, teachers/instructors would be exposed to all relevant methodologies for curriculum delivery including state-of-the-art delivery techniques, including use of multimedia tools, as well as educational counseling. This would serve to provide greater stimulus to the learning environment and should result in higher levels of achievement within the system.

It must be recognised, however, that increased output would also be contingent on a high level of dedication and commitment

on the part of the teachers/ instructors. This brings to the fore the issue of compensation packages and other terms and conditions of employment. Such issues would need to be adequately addressed.

In parallel with instructor development, standards of educational attainment must be established at the primary and secondary levels for Core Subject Areas, namely, English, Math, Science, Technology (Education and Information Technology) and Teachers must be held accountable for the achievement of these standards.

Appropriate support mechanisms must be instituted at every level of the system, particularly at the primary and secondary levels to ensure accessibility of the system to all. No one should be disadvantaged because of social circumstances, including gender, poverty, disability and even incarceration.

The high incidence of juvenile crime and delinquency, as reflected in school violence, gang warfare and other forms of anti social behaviour is symptomatic of a general breakdown in family life and values, with the lower and lower-middle classes being the most seriously affected. The country must confront the harsh reality of either dedicating appropriate resources to deal effectively with this problem or expending perhaps even greater resources to establish and administer correctional facilities.

Support mechanisms must therefore be put in place to address the growing number of students emanating from dysfunctional households, those unable to take advantage of the available opportunities because of poverty, the disabled and even those in correctional centres.

These mechanisms would comprise specialised social services, including guidance and psychological counselling, psychotherapy, lifestyle management, financial incentives, and remedial education, including bridging programmes.

The overall objectives of these measures would be to ensure that anyone desirous of taking advantage of education and training opportunities would be afforded the opportunity to

do so, including the "dropouts" desirous of re-entering the system and those in correctional institutions. The system must therefore, be guided by the dictum that no one must be left behind.

KEY PILLARS

The institutional framework for a Reformed Skills Development and Training Agenda to propel the country towards developed country status must be founded on the following key pillars:

Institutional

Establishment of a National Education and Training Collaborative, namely, the Trinidad and Tobago Education, Training and Employment Committee. (TTETEC)

Establishment of a National Education and Training Collaborative (inclusive of infrastructural and human resource support), comprising key stakeholders, to ensure more effective collaboration and an integrated approach to skills development and training among stakeholders. One suggested name is the Trinidad and Tobago Education, Training and Employment Committee (TTETEC). This would serve to address the deficiencies in the co-ordination of the National Training and Education System.

A specialised unit within TTETEC, i.e. the Manufacturing, Training and Enterprise Creation (MTEC) Unit will be responsible for:

- Educating and training engineers, technicians and craftsmen in partnership with other agencies like, UWI, UTT, COSTAATT, for the staffing of new and existing manufacturing enterprises;
- Creating new enterprises for the primary processing of indigenous as well as imported raw materials;
- Creating new enterprises for the production of primary products from the outputs of the primary processing enterprises;
- New enterprises for primary and secondary processing of raw material;
- Creating new enterprises for the production of secondary products; and
- Sustaining and developing existing enterprises by the introduction of new products and processes to

maintain markets and competitiveness.

A range of services will be provided by MTEC in creating new enterprises and servicing existing enterprises. These will be as follows:

- Trained personnel;
- Market surveys and feasibility studies;
- Process identification;
- Control systems;
- Capital equipment selection and/or design and fabrication;
- Tooling design and fabrication;
- Plant layout;
- Material handling;
- Raw material storage;
- Finished goods storage;
- Packaging and shipping;
- Plant maintenance; and
- Electrical distribution system

MTEC can sustain existing enterprises by providing:

- Additional trained personnel;
- New product market surveys and feasibility studies;
- New capital equipment addition to facilitate new product line where necessary;
- New tooling;
- New plant layout; and
- Upgrade to control systems and electrical distribution system.

Training Factory Concept

In order to fully exploit the potential of the manufacturing sector and facilitate sustainable employment creation, engineers and technicians should ideally be exposed to a 'real-world' factory-training environment. Such an environment would cater not only for classroom and laboratory workshop infrastructure but also commercial and semi-commercial operations. The Metal Industries Company Limited (MIC), which pioneered the Training Factory Concept (TFC) is today the only agency with elements of the capability necessary to adequately fill this role. The development of this capability is critical to achieving the goal of linking education and training to job creation.

The Training Factory Concept is therefore pivotal to capacity building for sustainable job creation. With the focus on solving "real-world" problems in a commercially driven environment, the TFC brings engineers and technicians together to develop their capability in Product Design

Engineering and Manufacturing Engineering, which are core constituents of job creation.

It thus provides a platform for the creation of a special cadre of engineers and technicians who will be capable of creating jobs for others in new manufacturing enterprises by designing and manufacturing, on a 'pilot' basis, new and innovative products for which markets currently exist or can be developed.

In this 'real world' learning environment, genuine competence in harnessing and developing the various manufacturing technologies can be acquired, practiced and disseminated, with trainees being afforded the opportunity to engage in:

- Plant layout from a "hands-on" perspective;
- Electrical power supply and distribution throughout an entire production system;
- Plant and process control using Programmable Logic Controllers as well as hard-wire logic for simple applications;
- Problems and solutions associated with the external need for effective and efficient material handling;
- The varying demands for storage of input materials and product outputs;
- Realistic Production Planning and Control where classroom exposure provides only the basis for a thorough understanding;
- Practical training in Plant Operation and Maintenance that can only be gleaned from a 'real world' setting; and
- Quality Assurance that can only be practices in a 'real world' setting.

It is important to stress that current practical exposure of trainee engineers and technologists/technicians to the world of work, including On-the-Job (OJT) training and Co-op Programmes, falls far short of developing this factory training capability which is grounded in design and manufacturing processes. Existing OJT programmes provide, by and large, for exposure to management, operations and maintenance, which have minimal job creation impact.

Since its inception in 1974, MIC has functioned largely as a Training Factory with quite notable results.

The intention under the Reformed System is to build on the base already established at the MIC by formally instituting a three-tiered arrangement, which revolves around the following core activity centres:

- Manufacturing Technology Centre (MTC) - responsible for manufacturing, education and training, as well as networking with all other tertiary training and educational institutions;
- Product and Process Innovation Centre (PPIC) - responsible for the design and fabrication of all new products, jigs, fixtures, dies, moulds, plant layout and material handling systems; and
- Internal Manufacturing Units (IMUs) - responsible for providing 'real world' training of Engineers and Technicians under the Training Factory Concept in plant layout, production planning and control, material handling systems, storage, plant operation, maintenance and management.

The existing IMU will need to be expanded beyond plastics production to cater for other key domains of manufacturing, namely:

- Precision CNC Machining for mass production;
- Foundry and Welding;
- Woodworking;
- Ceramics; and
- Leather craft.

The IMUs will not compete with local manufacturers, but instead will be used for test runs on a continuously changing array of new products. The length of the test run should allow the MIC to recover all developmental costs, while removing the bugs from the various systems. Once this is done, all capital equipment and tools designed and produced by the PPIC will be made available for the emergence of what can be deemed an "External Manufacturing Unit" (EMU). These EMUs represent opportunities for entrepreneurial activity, that is, the creation of small and medium-sized businesses.

Students from UWI, UTT, COSTAATT, NSDP, NESC, YTEPP and any other engineering programme associated with product design and manufacturing would be eligible for practical training at the MIC under the TFC. An expanded programme could possibly

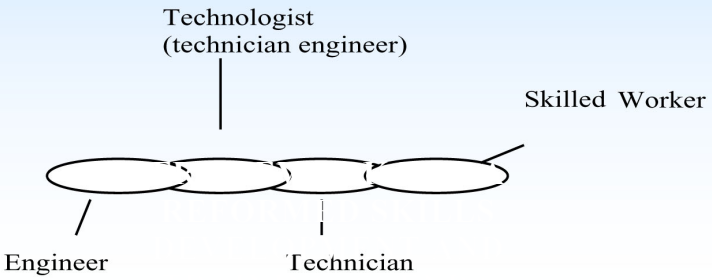
cater for exposure of some 450 trainees annually. Under such a programme, trainees, under the supervision of highly trained and experienced resource personnel, could interface with enterprises in key manufacturing sectors to share ideas and assist in product design and development with a view to utilising excess installed manufacturing capacity, which is common to many local enterprises. Production and financial feasibility support in this regard would be provided by the Business Incubator arm of the PPIC as an integral part of the practical training.

These two major outputs of MC, that is, new business creation and trained engineers and technicians in Product Design and Manufacturing, would provide the necessary infrastructural support for the creation of core manufacturing enterprises around which clusters can be developed.

In order to fully appreciate the importance of bringing graduates of the tertiary education and tech/voc training streams together with the framework of the Training Factory Concept (TFC), it is necessary to put the technology hierarchy into perspective.

The word 'technology' comes from the Greek word '*techne*' meaning art and skill and '*logos*' meaning science and discourse. Hence, 'technology' literally means '*the science of skills*'. Today it has come to signify the application of scientific knowledge to industry. This application requires a vast range of crafts and skills (know-how) involving design, construction and maintenance of artefacts and systems. The workforce embraced by technology is one with varying degrees of technical abilities, skills and levels of qualifications required to perform specific tasks. Those who work in the field of technology can be classified according to their level of qualification and the type of work they perform in their jobs as illustrated in the diagram below (Diagram 6).

Diagram 6 : The four types of technology worker



- **Skilled Workers**: Those highly trained to perform jobs requiring a high degree of manual skills and use of tools, for example, turners, welders, glassblowers and master masons.
- **Technicians**: Those qualified in a narrow field of specialisation. Graduates of technology schools following 2 to 4 years study, they are versed more in engineering practice than in design and theory and work mainly on repair and maintenance as well as installation work. Today many technicians also work as computer programmers.
- **Technologists** (*technician engineers*): These are the link between engineers and technicians. They are graduates of an engineering polytechnic or of a polytechnic given university status who have studied for 4 years. The emphasis of their training is on practice – less mathematics and science than in universities – and more applied technology courses plus hands-on training. Their jobs involve construction, operation, maintenance and repair, and engineering support work, such as building prototypes on a development project. They are often hired as engineers.
- **Engineers**: These are university graduates whose education provides extensive theoretical background in 'core' subjects with emphasis on mathematics and basic engineering sciences but limited coverage of practical applications and design subjects. Their jobs cover a wide range of duties: planning,

design, research and development, management, operations and maintenance. The different levels overlap to a greater or lesser extent and the overlap is greatest at the technologist-engineer level.

The main product of a university engineering education comes in the form of "software": theory, research, design, innovation and creation of ideas. A workforce of well-prepared technologists and technicians is needed to convert such software into hardware-applications and eventual exploitation of a product or technology. Without such a workforce, engineering projects will remain ink on paper or, in modern terms, 'megabytes on disks.'

Centres of Excellence

The Centres of Excellence are essential components of the Education and Training infrastructure. They would facilitate:

- Technology ingestion, that is, developing a thorough understanding of the processes involved in the application of the technology, which is essential for innovation and knowledge creation;
- Understanding of Research and Development;
- Research and Development activities - necessary for building the capability to innovate and thereby enhancing global competitiveness; and
- Creation of new enterprises.

BIBLIOGRAPHY

Abt Associates Inc. (January, 1998): ***Trinidad & Tobago Labour Market Study, Final Report***. Massachusetts, USA.

CINTEFOR/ILO (July, 2003): ***Revision of the Human Resources Development Recommendation, 1975 (No. 150) - Proposed Conclusions***.

Crichlow, Keith (May, 2001): ***MIC's Medium Term Policy Framework, 2001-2004***.

Crichlow, Keith (June, 2002): ***The Generation and Distribution of Wealth in Trinidad & Tobago via the Manufacturing Sector: Education, Training and Enterprise Creation - a Case for the Pursuit of Long Term Commercial Manufacturing Operations at MIC.***

Economic Commission for Latin America and the Caribbean (ECLAC). (December, 2002): ***Trinidad & Tobago - The Yachting Sector.***

Export and Industrial Development Division of the Commonwealth Secretariat. (January, 1998): ***Draft Report on the Training Requirements of the Boat Building and Boat Repair Sectors in Trinidad & Tobago***.

Federal Institute for Vocational Training, Germany. ***LEITTEXTE - The Self-Reliant Way of Learning.***

ILO Asian and Pacific Skill Development Programme (APSDEP). (1993): ***Making Technical and Vocational Skill Development Work – AN Agenda.***

ILO APSDEP: ***Asian and Pacific Skill Development Programme (APSDEP) Strategic Plan, 1992-2000, Bangkok, Thailand.***

BIBLIOGRAPHY

Julien, Ken Professor (May, 2002): ***A Revised and Expanded Vision for Technology and Skills Training in Trinidad & Tobago.***

MIC (February 2003): ***Report on HYPE Training Programme***.

Ministry of Education ( ): ***Report of the Joint Select Committee on the National Examinations Council (NEC).***

Ministry of Trade and Industry (Secretariat). (June, 2004): ***Industry Teams' Interim Report on Skills and Training Needs Assessment (Yachting and Cultural Industries.***

Mokhtar, Gamel A; Zaky Asser A. and El-Faham , Mohamed M. (August, 2002): ***The need for restructuring the Education Systems for Technicians and Technologists in developing countries***. Engineering Science and Education Journal.

National Training Agency (NTA) (December, 2003): ***Strategic Plan, 2004-2006***.

National Training Agency (NTA) (June – December, 2003): ***Employers Survey – No. 4.***

National Training Agency (NTA) (2002): ***Skills Foresight Report, Food and Beverage Manufacturing Sector.***

Nurse, Keith Dr. (November, 2003): ***Cultural Industries and Economic Development in Trinidad & Tobago:*** Presentation to Vision 2020 Labour and Social Security Sub-Committee.

Steering Committee established under the Ministry of Science, Technology and Tertiary Education to review Draft Policies on Tertiary Education, Training and Distance and Lifelong Learning. (April, 2004): ***Draft National Policy on the Development of Tertiary Education and Training in Trinidad & Tobago***.

BIBLIOGRAPHY

Tourism and Industrial Development Company (TIDCO). ***Investing in Trinidad & Tobago.***

UK Department for Education and Skills, and Department for Work and Pensions (July, 2003): ***21st Century Skills, Realizing our Potential – Individuals, Employers, Nation.***

Werum, Regina E. (March, 2003): ***Trinidad & Tobago's Post Secondary Education System: Bottlenecks in Technical Training Programs (First Draft of Final Report).*** Emory University. Inter-American Development Bank (IDB) Consultant.

FRAMEWORK FOR ACTION

VISION

To create and maintain a coherent, flexible, skills development and training system, accessible to all citizens and tailored to meet the human development needs of a modern, progressive, technologically advanced society.

SUMMARY

The Action Plan for Skills Development & Training is based on the fundamental premise that progress on this front is not the responsibility of any single actor or agency, but requires concerted inter-sectoral effort to succeed. The Sub-Committee also emphasised the fact that for training to become a permanent feature of the productive life of Trinbagonian society and thus equip the nation for the knowledge era it must be supported by a sufficient number and appropriate level of job opportunities that will attest to the benefits to the individual worker from such on-gong up-grading.

GOAL 1: To create a world class, thinking workforce that is skilled and is innovation and entrepreneurship driven.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
1.1 To undertake reforms in the general education system aimed at building world class capability.	Curriculum changes implemented in core areas.	1.1.1 Strengthen the curriculum to promote mastery in core areas such as literacy, mathematics, technology, science, communication, conflict resolution, critical thinking and problem solving.	P1	Ministry of Education, Ministry of Tertiary Education with private sector input.	Labour Action Plan
	ESD principles infused in the national curriculum.	1.1.2 Redesign curricula to include education for sustainable development (ESD).	P1	Ministry of Education, Curriculum specialists.	Ministry of Planning

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
1.2 To create, co-ordinate and rationalise opportunities for a flexible national system for skills training for workers and out of school youth.	Alleyne Model adopted.	1.2.1 Establish a Model for the National Training and Education system for comprehensive training needs development, delivery, accreditation, and benchmarking of skills training. (Articulation between the formal education system, TVET and Professional Training.)	P0	Ministry of Tertiary Education National Training Agency (NTA)	Private sector organisations (PSOs) Training Providers
	National Examination Council programmes re-introduced at John Donaldson and San Fernando Technical Institutes.	(Budget Speech 2005) 1.2.2. Re-introduction of the National Examination Council programmes at John Donaldson and San Fernando Technical Institutes at no cost to students. This is expected to play a significant role in the development of skills required in an increasingly industrialised T&T.	P0	MSTTE	NA

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Expansion of MUST Programme to include agriculture, tourism, hospitality and process manufacturing sectors.	(Budget Speech 2005) 1.2.3 Establishment of Multi-Sector Skills Training (MUST) Programme in July 2004 for training employment in construction for some 10,000 persons (especially those 'at risk', financially or academically challenged, vulnerable or differently-abled). - Expand to include agriculture, tourism and hospitality, and the process manufacturing sectors.	P0	MSTTE - TTHTI, MIC; CARDI, NAMDEVCO	NA

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Introduction of Associate Degrees at T&T Hospitality Institute.	(Budget Speech 2005) 1.2.4 Include associate degree programmes at T&T Hospitality and Tourism Institutes. - Develop human resource systems and international training opportunities for students at TTHTI. - Re-direct and enhance the YTEPP. - Merge Helping You Prepare for Employment (HYPE) with the National Skills Development Programme (NSDP) under the Metal Industries Company.	P0	MSTTE; Ministry of Sport and Youth Affairs	NA

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Increased number of life skills instructors/coaches within all local communities.	1.2.5 Restructure learning experiences to remove barriers to learning for those challenged in a variety of ways, particularly the physically and mentally challenged. - Develop a cadre of life skills instructors/coaches who may be mobilised in communities throughout Trinidad and Tobago.	P1	MOE Ministry of Tertiary Education NTA	Council of the Disabled/ Associations of the Disabled; Poverty Action Plan: Goal 1
	No. of people being trained. No. of retraining programmes running in relation to no. of persons wishing to be re-trained.	1.2.6 Provide retraining opportunities for those who wish to be retrained. - Assess retraining needs of the population and make available the relevant programmes to retool these individuals. (See Population Action Plan: Goal 5, Objective 5.4)	P0	Ministry of Science, Technology, Tertiary Education and Ministry of Social Services.	Population Action Plan: Goal 5, Objective 5.4

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Increase number of Trade schools.	1.2.7. Increase number of Trade schools. (See National Security Action Plan: Goal 1, Action 1.10.1.)	P1, P2	MOE, MSTTE MSYA	National Security Action Plan: Goal 1, Action 1.10.1
1.3 To provide retraining opportunities for those who wish to be retrained by December 2005.	No. of people being trained. No. of retraining programmes running in relation to no. of persons wishing to be re-trained.	1.3.1 Ministry of Science, Technology, and Tertiary Education to assess retraining needs of the population and make available the relevant programmes to retool these individuals. (Extracted from Population Action Plan: Objective 5.4)	P0	Ministry of Science, Technology, Tertiary Education	Ministry of Social Services, Ministry of Community Development
	Increase number of partnerships among training agencies.	1.3.2 Facilitate Public/ Private partnerships with training agencies to upgrade skills, promote entrepreneurship and innovation. (See I&E Action Plan: Action 1.6.3.)	P1	MOSTTE	I&E Action Plan: Action 1.6.3

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
1.4 To inventorise, assess and re-organise the existing skills training programmes. Ensure synergy between education, national training/skills needs and employment/world of work.	Conduct of comprehensive national needs/gap analysis.	1.4.1 Conduct a comprehensive national needs/gap analysis that goes beyond the traditional Labour Market Survey. - Ensure skills which employers need to support future productivity so that training programmes, occupational standards and accreditation criteria can be developed with considerations of these skills. - Increase the availability of information on existing and possible future skills needs to all stakeholders and citizens.	P0	Ministry of Labour Central Statistical Office	Private sector organisations Manufacturers Association

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Dictionary of Occupational Standards, revised and published.	1.4.2. Revise the existing Dictionary of Occupations to include all occupations in the various sectors.	P1	Ministry of Labour NTA	ILO (see Entrepreneurship Sub-Committee Report (SCR) – basal info for promoting entrepreneurship
	Formation of Industry Training Organisations.	1.4.3 Translate the skills into occupational standards required to design training programmes that are flexible to meet the needs of an ever- changing global village, making use of employers through the formation of Industry Training Organisations (ITOs).	P1	Ministry of Tertiary Education NTA	Private Training Providers

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Improved facilities for skills training	1.4.4 Conduct institutional strengthening and capacity building of existing resources including plant facilities and training providers.	P1	Ministry of Tertiary Education NTA Private training providers	MOE
	Scheme for recognition of work-based learning established – must include credit provision and increments.	1.4.5 Ensure that work-based learning is appropriately recognised and rewarded.	P2	NTA Private providers Private sector organisations.	MOE
	Accreditation Council established.	1.4.6 Establish independent Accreditation Council to certify all training, ensure consistency in training programmes and policies. (Possible expansion of role of National Training Agency?)	P0	Ministry of Tertiary Education NTA	MOE

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Registration system established.	1.4.7 Establish a system of registration and regulation of training providers.	P0	NTA	Private training providers
	Measures in place for facilitating access, including funding support, entry access at all levels.	1.4.8 Establish mechanisms to ensure equity of access to all Education and Skills Development & Training programmes.	P1	MOE, Ministry of Youth, Ministry of Labour	NA
	New catalogue of skills training opportunities available in Tobago.	1.4.9 Increase Skills Development and Training opportunities in Tobago.	P1	NTA Tobago House of Assembly Tobago training providers	NA

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Centres of Excellence established nation-wide.	1.4.10 Establish "Centres of Excellence" in strategic locations in Trinidad & Tobago to ensure that access to training is available to all. Also ensure that training of teachers and instructors is available. (Include the training of TVET teachers/educators/instructors)	P1	NTA Ministry of Education[1]	NA

[1] Centers of Excellence to be utilized by education system for training of teachers and available where feasible to senior primary and junior secondary students. Also ensure access to students who are physically challenged.

GOAL 2: To urgently address the serious deficit in middle and higher technical skills in the productive sector.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
2.1 To establish a major network of institutions utilising occupational standards to address the current and projected deficit of skills in specific sub-sectors – TTECH.	Model of systematic curriculum and instructional development.	2.1.1 Adopt a model of systematic curriculum and instructional development – drawing on international best practices – aimed at ensuring the efficiency and effectiveness of training programmes.	P1	NTA MOE	ILO Regional entities: NTA-HEART
	Occupational standards adopted.	2.1.2 Require network members to subscribe to the occupational standards curriculum and other specific industry-recognised certification.	P1	Proposed TTETEC; NTA Private sector providers	MOE

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		- Establish a National Education and Training Collaborative (inclusive of infrastructure and human resource support) comprising key stakeholders to ensure collaboration and an integrated approach among stakeholders. One suggested name is Trinidad and Tobago Education, Training and Employment Committee (TTETEC).			
	Industry Training Organisations (ITO) established.	2.1.3 Expand the National Training Agency's thrust in the creation of Industry Training Organisations (ITO).	P1	Ministry of Tertiary Education NTA	Private sector organisations Council for Tertiary Education

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Increased number of internship programmes incorporated into all training programmes.	2.1.4 Increase internship programmes and introduce them in training programmes where they do not exist. (See also Agriculture SCR: Goal 9, Action 9.1.1)	P1	NTA Private sector organizations	MOE
	Increased number of scholarships related to national training needs, linked to mandatory employment in T&T.	2.1.5 Offer scholarships based on national training needs and link these to a mandatory period of employment in T&T.	P1	MOE Ministry of Tertiary Education NTA	NA

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Establishment of programmes for non-traditional craft such as shoe making, woodcarving, leather carving, glass etching, glass blowing, etc.	2.1.6 Develop programmes for non-traditional craft such as shoe making, woodcarving, leather carving, glass etching, and glass blowing.	P1	NTA Training providers	MOE[2] Labour SC Plan – Action 2.2.1 I&E SC Plan
	Establishment of National Qualifications Framework by the National Accreditation Council.	2.1.7 Establish a National Qualifications Framework under the auspices of the National Accreditation Council.	P1	NTA, National Accreditation Council Private sector	MOE
	Preparation of National Training Bill for Parliament.	2.1.8 Draft a National Training Bill for Parliament. This should address, inter alia, the imposition of a training levy and the national training fund.	P1	Ministry of Attorney General, Ministry of Tertiary Education NTA, AG Chambers	NA

[2] Programmes in non-traditional craft should be developed as modules with introductory modules being made available to schools.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Administration of National Training Fund by the NTA.	2.1.9 Revamp the operations of the National Training Fund (to be Administered by the NTA) and to include a training levy.	P1	Ministry of Tertiary Education Ministry of Finance NTA	Private sector Governance SCR, Action Plan – 2.1.9
	Staff and Equipment upgrade in existing training institutions.	2.1.10 Upgrade capacity in existing training institutions: - Upgrade staff. - Upgrade equipment. Provide concessions for upgrading capacity of private providers.	P1	NTA Ministry of Finance	Private providers

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Creation of a National Training Database.	2.1.11 Create and maintain a national training database, including mechanisms to collect, collate and process data and make it available to various groups, especially all schools.	P0	NTA Ministry of Finance	MOE Private providers
	Introduction/Continuation of careers and counselling guidance at all school levels.	2.1.12 Strengthen career and counselling guidance in secondary schools and introduce in all primary schools.	P1	Ministry of Education; Private sector	Professional associations
	Development of a Career Guidance Dictionary for T&T.	2.1.13 Develop a Career Guidance Dictionary for Trinidad & Tobago and make available to all schools[3].	P1	MOE NTA	ILO Professional Associations

[3] Dictionary and career information to be placed on Career website under the jurisdiction of the NTA but accessible to all especially to the schools.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Free access to information on career opportunities to the public.	2.1.14 Provide information on career opportunities including career, education and training to the general public (through training providers)[4].	P1	NTA and Training providers	NA
	Increased number of retraining and in-plant training programmes in all industries.	2.1.15 Expansion of retraining and in-plant training programmes[5].	P1	NTA Private sector	NA
	Incorporation of equipment and facilities for the disabled in existing and new schools at all levels.	2.1.16 Incorporate equipment and facilities to cater for the disabled in all existing schools and any new school built.	P1	Ministry of Education and Council for Disabled/ Associations of the Disabled	Poverty SC – 1.6.2 and 1.6.3 Infrastructure SCR – building codes

[4] Dictionary and career information to be placed on Career website under the jurisdiction of the NTA but accessible to all especially to the schools
[5] Utilise National Training Fund to support this.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Introduction of new teaching and learning methodologies in the Education curriculum at TLIs and Teachers' Training Colleges.	2.1.17 Introduce the new teaching and learning methodology based on the concept of Learning By Design in all subject areas.	P1	MOE; NTA; Teachers' Colleges; Private Education providers	NA
	Introduction of problem-solving modules at every educational level.	2.1.18 Introduce mandatory problem solving modules in all schools.	P0	Ministry of Education	NA
	Introduction of pilot programme for TVET Camp (Summer vacation) to assess proposed new teaching and learning methodology.	2.1.19 Introduce a TVET Camp on a pilot basis over the Summer vacation in order to prototype the new proposed teaching and learning methodology.	2006	MOE NTA	Schools

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Increased competency in education and training of PSs and Directors of all Government Ministries.	2.1.20 Strengthen the role of the Permanent Secretary and Directors in Government Ministries as they relate to education and training.	P1	Ministry of the Public Service, Service Commissions	Line Ministry IOB[6]
	Sanction of transparency Institute by the President of T&T.	2.1.21 Invite the President of Trinidad and Tobago to sanction Transparency Institute to act as a watchdog institution. It is recommended that Transparency International assist the Institute in this regard.	2005/6	President of the Republic, Transparency Institute, Transparency International Integrity Commission	Governance SCR

[6] Special seminar for PSs on strategic HRD as central to the realisation of Vision 2020.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Increased flow of information (to parents and students) on alternative routes to tertiary education	2.1.22 Educate and encourage parents about alternative routes to tertiary education other than through A' levels for their children.	P1	Ministry of Education, Media Career website NTA Ministry of Tertiary Education.	Local government
	Increased number of trainers at Tobago educational institutes.	2.1.23 Prepare trainers for the Tobago skills training institutes. Select core of experienced persons from Tobago.	P1	NTA Tobago Legislature Tobago training providers	NA
	Introduction of Incentive programmes to encourage Tobagonian employers to hire workers from training programmes.	2.1.24 Provide incentives to employers and contractors in Tobago for hiring workers from training programmes.	P1	NTA; THA; Tobago private sector	NA

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Establishment of linkage with private sector to meet Ministry skills requirement.	2.1.25 Establish and maintain a feedback loop from the Private Sector to ensure that that skills needs are being met so that corrective action may be taken where necessary. ***(See I&E SCR, Action Plan: Action 1.3.2.)***	Po	NTA Ministry of Tertiary Education MOE	I&E Action Plan: Action 1.3.2
		2.1.26 Modify the Education System to deliver programmes designed to address education and skill needs identified as not being covered. ***(See I&E Action Plan: Action 1.3.3)***	P1	MOE	I&E Action Plan: Action 1.3.3

GOAL 3: To create substantial job opportunities for the employment of skilled workers in the productive sectors.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
3.1 To implement measures aimed at creating at least 25,000 jobs in the productive sector. To have 60% of the citizenry in sustainable employment by December 2007.	25,000 jobs created in productive sector. Apprenticeship system created. Revision of training and employment programmes to promote more sustainable employment.	3.1.1 Establish an Apprenticeship system for students in the formal education system. 3.1.2 Review and modify existing training and employment programmes (YTEPP, HYPE, CEPEP) with a view to creating sustainable employment. (Poverty SCR, Action Plan 2.2.1.)	P1, P2 P1	Ministry of Education, Employers in the productive sectors NTA	Labour SCR – Goal 2 Youth, Sports & Recreation SCR – Objective 3.1 Poverty SCR, Action Plan 2.2.1

(See also Housing SCR, Action Plan: Goal 2)

CRITICAL FACTORS

- Bridging the gap between the pre-primary, primary and secondary school levels.
  - Standardising pre-primary curriculum or programmes of activities.
  - Structuring programmes at the primary level to adequately prepare learners to move to the secondary level.
  - Articulating secondary education with tertiary level as well as skills training opportunities in a seamless manner.

- Introduce programmes at both the pre-primary and primary levels that introduce pre-requisite skills to engage in pre-technical, technical and technology education in secondary education.

- Conduct a national survey to determine:
  - The skills required across all sectors.
  - Where the nation's employable population is after secondary school? How many pursue tertiary education (locally and internationally)? How many pursues technical/vocational studies? How many enter the workforce? How many migrate?
  - Where do the nation's scholarship winners go? How many work (or return to work) in T&T after completion of their studies?

- Legislative and constitutional reform to guide public life.

- Strong political and Administrative will to ensure that all public sector agencies establish an example of networking together around the goals of Vision 2020, and so encourage private sector entities to participate fully.

ESSENTIAL PRE-CONDITIONS

- To obtain synergy among all stakeholders in a traditionally incoherent, demarcated environment.
- Implementation- this phase requires significant human resources in order to constantly monitor progress and make revisions as necessary.

- To put systems in place to address the issue of white-collar crime, which threatens the development of Trinidad and Tobago and the Vision 2020 initiative.
- To instil a sense of ethics and patriotism in citizens to enable them to choose National interest instead of self-interest.
- To create jobs to enable students to obtain employment after they graduate.
- Stop the haemorrhaging of 20,000 people emigrating from the country on an annual basis (CSO figures needed to support this). Examine the calibre of the people who come in from the other islands: to what extent do they contribute to the nation's development and at what developmental level?
- 75% or more of the top "brains" in the country are leaving in this group of 20,000 each year, making the vast majority of their services unavailable for critical developmental activity:
  - Teaching; and
  - Entrepreneurship.

It seems that this "brain-drain" as well as "people- drain" has been going on for an extended period (since the 1950s). It can be concluded that T&T has a group of citizens or former citizens (persons who were born here), whose size is estimated to be in excess of those currently living on the island (1.345 million).

Indeed there may be over 2 million people alive today who were actually born in T&T, but are resident outside the country. An average of 20,000 people are born in T&T every year (based on the number who write the SEA Exams every year since 1950 (CSO figures needed to support this). The death rate is 9.02 deaths per 1,000 persons (2004 est.) and the population has continued to lower between 1.2 and 1.3 million over a 50-year period. It is reasonable to conclude that approximately 20,000 people continue to leave every year without fail.

- Need to create jobs at the rate of population growth.
- Need to clearly define what "National Development" means? For example, everyone born in T&T must be given the opportunity to self actualise by finding meaningful jobs, then our training and education system must culminate in job creation at a rate that matches the birth dates.

THE WAY FORWARD

- Employ foreigners in all key sectors of education and training (preferably Trinidadians and Tobagonians already residing abroad).
- Attempt to retain the top 5% of the 20,000 people who leave each year (especially teachers, trainers, instructors, lecturers, engineers, technicians).
- Engage the top 5% in the Centres of Excellence that will be required to create New Enterprises.