

CHAPTER 5 TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET) CURRICULUM

5.1 Overview of the TVET Curriculum Development Process

The traditional view of curriculum is that it is prescribed by educational authorities, and courses undertaken as a consequence lead to the conferring of a qualification that is awarded by the relevant educational authority or course provider.

Within current TVET provision in many countries, it is now the view that industry, enterprises and the community (often collectively referred to as “industry”) should determine the competencies necessary to achieve a qualification. These competencies reflect expected job performances, and assessment is conducted in relation to competency standards identified by industry.

In Ghana, the notion of a TVET curriculum is largely traditional. The curriculum in most institutions is generally the responsibility of education and training authorities, with limited input from industry.

5.1.1 Curriculum Development Process in the Ministry of Education

Within the Ministry of Education (MOE), Junior Secondary Schools (JSS), Senior Secondary Technical Schools (SSTS), Technical Institutes (TI), Polytechnics, and Universities currently offer technical and vocational education and training courses. The current situation is that curriculum development and review for these institutions are performed by a range of different organizations. The organizations responsible for curriculum development do not always carry out assessment roles for the institutions. The following is a brief description of curriculum development process related to TVET under MOE .

- Junior Secondary Schools (JSS). The Curriculum Research and Development Division (CRDD) of the Ghana Education Service (GES) is responsible for the development and review. Consultation with the National Board for Small Skill Industries (NBSSI) is necessary for the incorporation of emerging industry needs. There is, however, no apparent evidence of the level of influence industry has on the curriculum.
- Senior Secondary Technical Schools (SSTS). The CRDD is responsible for curriculum development and review. The West Africa Examination Council (WAEC), however, administers examinations and issues certificates. Practical subjects are under review by WAEC in 2001

-
- Technical Institutes (TIs). The Technical Examinations Unit (TEU), under the Technical and Vocational Education Division of GES, is responsible for curriculum development, examination administration and certification. In some cases industry makes direct contact with TIs in order to seek customized specific training for their workers. In 1999 new courses in areas such as Small Engine Craft, Auto Body Repair Craft, Business System Technician, and Industrial Maintenance Technician courses have been developed in conjunction with a committee having a membership composed of industry experts, CRDD of GES, TEU, and TI. This approach was a first for Ghana technical education as there was no formal process for liaison with industry. The curriculum has borrowed heavily from similar French and Canadian models.
 - Polytechnics offer two types of courses: Tertiary Higher National Diploma (HND) and Non-tertiary Intermediate and Advanced Craft and Technician Certificates. The National Council for Tertiary Education (NCTE) primarily administers polytechnics. The National Accreditation Board (NAB) is the main agency for institutional and curriculum accreditation. Individual polytechnics have a governing body called the Polytechnic Council, which determines the institute's mission and governance over all activities including financial matters. An Academic Board determines academic matters such as the academic year calendar, class schedule and student discipline. For HND tertiary courses, the National Accreditation Board for Professional and Technical Examinations (NABPTEX) is responsible for curriculum development, examination administration and certification of the HND.
 - There is no formal process for significant industry involvement in curriculum development. NABPTEX is finalizing a review of HND courses for the MOE. For non-tertiary courses the TEU is responsible for curriculum development, examination administration and certification.

5.1.2 Curriculum Development Process in Other Ministries

Apart from MOE, there are two other ministries with a substantial role in administrating TVET programs. Ministry of Employment and Social Welfare (MESW) is responsible for National Vocational Training Institutes (NVTI) and Integrated Community Centers for Employable Skills (ICCES), and the Ministry of the Environment, Science and Technology (MEST) is responsible for Intermediate Technology Transfer Units (ITTU).

Although a wide range of TVET courses are offered by the various vocational schools managed by these ministries, the curricula are generally different from those used within the MOE system mentioned before.

- The curriculum for the National Vocational Training Institutes (NVTI) program is regulated by the Committee of the Trade Test, an internal NVTI committee, and it is predominantly derived from international TVET systems. A condition exists that the curriculum should be reviewed every five years, but there is no evidence of any review process or outcome. The curriculum for the Integrated Community Centers for Employable Skills (ICCES) is developed by technical experts within the MEST.

- Intermediate Technology Transfer Units (ITTU) have a strong industry-orientation to develop human resources that will support large-scale industrial industries in urban industrial areas. Some ITTUs have developed excellent relationships with local industry that result in contracts with industry clients to design, develop and conduct short courses for workers.

5.2 Certification in Technical and Vocational Education and Training

Related to curriculum development functions, certification for the TVET courses offered under MOE, MESW and MEST vary considerably. The certifications awarded by these ministries are not only different, it is also very difficult to articulate one qualification from another.

A student, for example, who has taken a course offered by an institution under MESW cannot use credit points to gain exemptions from units within a course run by an MOE institution even when the knowledge and skill levels in two courses are similar. Even between the courses such as Technician III and HND within the same MOE, students cannot transfer any of the credits from one to the other. This situation makes it difficult to make efficient human resources development pathways in the total TVET framework in Ghana.

The following sections describe the various technical and vocational certifications offered by three ministries: MOE, MESW, and MEST:

5.2.1 Certification offered by the Ministry of Education

Within MOE, there are various qualifications relating to technical education, such as SSS, Intermediate Craft Certificate, Advanced Craft Certificate, Technician Part I, Technician Part II, Technician Part III, Diploma in Business Studies, Higher National Diploma (HND), Bachelor of Technical Education and Master of Technical Education.

(1) Non-tertiary Courses and Certification

- Junior Secondary Schools (JSS) award a Basic Education Certificate Examination.
- Senior Secondary Technical School (SSTS) offer the Certificate which is examined and awarded by the West Africa Examinations Council (WAEC). The Secondary Education Division of the GES within the MOE administers the Certificate.
- Technical Institutes (TI) award the Intermediate Craft Certificate, Advanced Craft Certificate, Technician Certificates to level III. Assessment is by formal written exam conducted by Technical Examinations Unit of GES. Students undertake a 'industry attachment' which is not assessed. Although a TI staff member is allocated to visit students, there is little evidence identifying any benefits of this experience for the students.

(2) Tertiary Courses and Certification

- Polytechnics are authorized to issue the award of HND. Accra, Kumasi, Takoradi, and Ho Polytechnics continue to conduct “non-tertiary” courses for graduates of JSS, TI, SSS, offering Intermediate and Advanced Craft and Technician Certificates.
- University credentials are not included in this study

5.2.2 Certification offered by Other Ministries

(1) Non-tertiary Courses and Certification

- National Vocational Training Institutes (NVTI) and Integrated Community Centers for Employable Skills (ICCES) offer Grade 1 and 2 Certificates and also the National Craftsman Certificate. Trade testing officers from the National Trade Test Committee administer testing and the assessment is conducted in the form of a “trade test” including both written and practical tests. For participants with low-level English literacy skills a Certificate of Proficiency is offered. Holders of Grade 2 Certificates may apply for admission into the Intermediate Craft course. Although ICCESs do not offer any formal certificates, consideration is being undertaken by MESW to introduce some form of certificate
- Intermediate Technology Transfer Units (ITTU) and the Ghana Regional Appropriate Technology Industrial Service (GRATIS) do not offer any formal certificates for training. Consideration is being given by MEST to offer a formal qualification in the near future

(2) Tertiary Courses and Certification

There are no tertiary courses offered.

5.3 Analysis of Selected Polytechnic Curricula

5.3.1 Higher National Diploma

When the Polytechnics were formed in the early 1990s, MOE set up the University Rationalization Committee. This Committee had the task of setting up the Polytechnics including the development of appropriate curricula. The Committee asked experts from university, industry, and professional associations to review the diploma curriculum and formulate the new curriculum for the Higher National Diploma (HND) program. As a result of this process, new curricula for the HND were accredited by NAB in 1995 and became the standard for the HND program.

Courses offered in the HND program (shown in the Table 5.3.1) have been approved by National Council for Tertiary Education (NCTE). NCTE is the chief policy-making agency for tertiary education within MOE. Among HND courses, Engineering is prominent among the number of courses offered, but other practically-oriented courses such as Catering and Secretaryship are also offered. All the polytechnics attempt to offer as large a range of courses as possible. Some highly specialized programs such as

Agricultural Engineering, Chemical Engineering and Dispensing are only available in one or two Polytechnics mainly because of the need for specialized facilities and equipment. Details of curriculum structure in the HND programs were shown in Appendix 5.1.

Table 5.3.1 HND Courses offered in the Polytechnics

1. Engineering
Mechanical Engineering
Electrical/Electronics Engineering
Building Construction
Civil Engineering
Agriculture Engineering
Automobile Engineering
Chemical Engineering
Metallurgy and Foundry
Furniture Design and Wood Processing
2. Applied Science and Technology
Computer Science and Statistics
Hotel Catering and Institutional Management
Science Laboratory Technology
Dispensing Technology
3. Business and Management Studies
Accountancy
Marketing
Secretaryship and Management Studies
Purchasing and Supply
Bilingual Secretaryship
4. Art and Design
Fashion, Design and Modeling
Commercial Art

Source: NCTE handbook, NCTE

The Curricula for the HND programs are revised versions of the diploma programs that were formerly offered at the university level as two-year programs. The curricula are more theory-oriented than those of the Craft and Technician courses, and theory-based mid-semester and end-of-semester examinations are the predominant forms of assessment. The results of these examinations determine students' performance in the programs. The National Accreditation Board for Professional and Technical Examinations (NABPTEx), in collaboration with university teachers, act as external examiners and conduct a kind of quality assurance of the HND program through the external checking of the examination questions.

An inconsistency in the alignment of the polytechnic courses with other higher education programs is that although HND is considered a tertiary diploma, students who have successfully obtained an HND are still not accorded credit toward a Bachelors degree program in a Ghanaian University. HND, however, is equated to a university degree in foreign countries such as the UK, and students with HND are able to enter a Masters degree program directly. For this reason, quite a few Polytechnic students try to go abroad to pursue higher degrees, with the likelihood that many of them who successfully complete these postgraduate programs will not come back to Ghana.

5.3.2 Critical Review of Selected HND Curricula

The following HND curriculum documents were reviewed by the Study Team.

- Agricultural Engineering
- Furniture Design and Production
- Hotel Catering and Institutional Development
- Tourism
- Computer Systems Engineering (Bachelor and HND programs)
- Mechanical Engineering Production Option
- Accountancy
- Computer Literacy

Each document was rated based on four levels of compliance, H: high or very detailed, M: medium or compliance, L: low or minimal / incomplete detail, and N: did not comply. The criteria are clear statements regarding:

- Intended learning outcomes
- Assessment guidelines (e.g. assessment methods appeal process)
- Pre-requisites / co-requisites
- References / texts / reading lists /support material
- Evidence of recent changes reflecting introduction of new industry practices
- Employment opportunities
- Next review date
- Ratio of theory to practice

The summary of rating the selected HND curriculum documents is recorded in Table 5.3.2. The following is a brief summary of the findings:

- It was apparent that the curricula had been heavily based on overseas models. There was no indication of significant adaptation to the Ghanaian context, and the lack of suitable teaching resources, particularly in practical classes, compromised the integrity of the learning. Although most documents included a list of equipment required for teaching, little or no mention was given to reference materials (reading lists). Without appropriate teaching resources, the teaching style would have been predominantly didactic (teacher-centered) with far more emphasis on theory than on practical, hands-on work. All courses specify an "Attachment" period during which students have to find placements in industry. Although students are expected to spend approximately 3 months (outside of the academic year) attached to a relevant industry, the curricular documentation provides very little detail regarding this important aspect of the course.
- **HND Agricultural Engineering:** The performance objectives placed considerable emphasis on memorization of theory. Some of the courses were unevenly balanced with respect to performance requirements. Examples in the curricular documentation are, 'Identify animals kept on a farm' and 'Identify and repair faults in clutches, gearboxes and final drive systems'. The first performance requires very little effort, whereas performing the second task competently would require considerable human, physical and time, resources which are currently unavailable at a Polytechnic.
- **HND Furniture Design and Production:** To achieve the stated aims and objectives would place a very heavy demand on practical experience and resources. The current Polytechnics cannot provide the level of resources required.
- **HND Hotel Catering and Institutional Management:** Teaching and assessment in this course is based on the memorizing of a long, list of fragmented techniques. The syllabus is based on a large list of resources currently not generally available in any Polytechnic.
- **HND and Bachelor of Technology Computer Systems Engineering:** This HND program does not have a cohesive structure, and provides no clear stated outcomes. Currently this course has not been approved. The Bachelor program does not exist. The document provided only gave a brief introduction to Masters and Ph.D. program. It was obviously an incomplete document.
- **HND Mechanical Engineering:** This program is highly theoretical and again based on memorization of theory. It states, in the HND curricular documentation on Mechanical Engineering, that "Practical work should at all times be based on real applications." Performance objectives throughout the syllabus, are mainly in the form of: "describe, sketch, recognize, list etc." There are a total of 825 objectives for the Mechanical Engineering program and less than 20 objectives (2.4 percent) involve any practical work.

- HND Accountancy: This program is highly theoretical, and very few of the course areas are written in terms of performance objectives. None of the General Objectives for the course areas indicated what the students would be able to do. General aims were described in terms such as “understand” or “be familiar with.” A list of equipment and staffing resources needed to conduct the course was included. At present these resources are not available in the Polytechnic thus compromising the integrity of the learning outcomes.
- Computer Literacy: The level of requirement appears to be uneven. For example, requirements range from very basic computer skills to modifying existing programs to produce a new output using high-level programming languages. There is no rationale provided indicating the relationship between these courses and the other polytechnic courses it services.
- HND Tourism: The course is described in topic headings rather than student learning outcomes. Bibliography indicates old reference materials. There is no evidence of any review.

Table 5.3.2 Summary of rating the selected HND curriculum documents

TITLE	LEVEL	VERSION DATE	Intended learning outcomes	Assessment guidelines (methods, appeal process)	Pre-requisites / co-requisites	References / reading lists / support material	Recent changes to reflect latest industry practices	Employment opportunities	Date of next review	Ratio of practice to theory
Agricultural Engineering	HND	Not provided	L	L	N	N	N	L	N	L
Furniture Design & Production	HND	Aug 2000 DRAFT	L	L	N	N	N	L	N	L
Hotel Catering & Institutional Development	HND	Not Provided	L	N	N	N	N	L	N	L
Tourism	HND	Not provided	N	N	N	N	N	N	N	N
Computer Systems Engineering	Bach. of Technology	Not provided	N	N	N	N	N	N	N	N
Computer Systems Engineering	HND	Not provided	N	N	N	N	N	N	N	N
Mechanical Engineering Production Option	HND	Not Provided	N	N	N	N	N	N	N	N
Accountancy	HND	1999	N	N	N	N	N	N	N	N
Computer Literacy	Service course	2000	L	N	N	N	L	N/A	N	M

Note: With the exception of Computer Literacy (a program which services the other courses), all other programs take exactly the same length of time to complete (3 years) and are examined in the same way. A rating system based on four levels of compliance was used, H: High or very detailed, M: Medium or compliance, L: Low or minimal / incomplete detail, and N: Did not comply.

5.4 Recent Curriculum Reforms within the TVET Sector

5.4.1 Tertiary Education

In the tertiary education sector, there have been two initiatives relating to curriculum development in technical education: one involves the revision of the curriculum of each subject of the HND program, and the other is the staff development program currently managed by Kwame Nkrumah University of Science and Technology (KNUST) in Kumasi.

(1) Revision of the HND Curriculum

Before the Technical Institutes were upgraded to the Polytechnic, two-year Diploma courses in Engineering and Business were offered at the university level. The curricula of these courses were used as models for development of the HND program. The new courses were extended to three years and called HND program.

Because the HND curricula had not been reviewed since their inception, a Conference of Polytechnic Principals (COPP) initiated a process to revise the current HND curricula to reflect emerging industry and business needs in 1999.

The process of revising the HND curricula is described as follows. COPP sets up a Curriculum Review Committee comprising representatives from the Polytechnic sector to review the current curriculum of each course, as well as subject experts from universities and the industry sector. After reviewing the current curriculum, COPP sends the draft of the revised curricula to the NABPTEX, which sets up another Committee with experts in each field to validate the contents of the draft. After being reviewed by NABPTEX, the revised curriculum is sent to the NAB for accreditation. NAB has the authority to provide final approval of the revised curriculum. Finally, Polytechnic teacher representatives from each of the courses receive the revised curricula and meet to devise improved strategies for course delivery. It is reported that revision of current HND curricula by the Polytechnic Committee is almost completed.

Regarding the general direction of the revision of HND curricula, the South African Polytechnic is undertaken as the model for reform.⁴³ Practical work both within school and industrial attachments will be more emphasized together with changed orientation in the curricula and teaching methodologies from the conventional supply-driven to an industry-driven approach. This change reflects the other TVET reforms systematically implemented in other countries, such as Singapore (since late 70's to 80's) and Australia (since 80's to 90's), in the past three decades.

(2) Polytechnic Staff Development Program

When Polytechnics were upgraded, many polytechnic teachers did not have the qualifications (such as Bachelors and Masters degrees) perceived to be necessary to teach in higher diploma level programs intended to be roughly equivalent to Bachelor degree

⁴³ Principal of Accra Polytechnic, personal interview.

programs. The World Bank and African Development Bank financed the Polytechnic staff development program, in collaboration with KNUST. The three courses currently offered are Master of Technical Education, Bachelor of Science and Bachelor of Technical Education. The participants enrolled in these courses come from a number of polytechnics.

The Master of Technical Education program is a two-year course for Polytechnic teachers who already have a first degree. There were nineteen students in the first batch, and currently fourteen students in the second batch, which started this year. In this program, students undertake technical upgrading, as well as educational methodology, at the KNUST campus. Lecturers for the educational methodology component are invited from University of Cape Coast to participate in the program. In the second year, students are asked to go back to the Polytechnic and carry out action research and submit theses at the end of the year. However, timely completion of the action research turns out to be very difficult, because even though their teaching loads are reduced, the participants have to conduct teaching duties and administrative work. Students of this program have a five-year commitment to teaching at the Polytechnic.

The second program is the Bachelor of Science course, which thirteen participants have already completed. The entry requirement for this program is the HND. Candidates gain entry to the second year of the ordinary KNUST engineering program, so they need only three years to complete the program.

The third program is the Bachelor of Technical Education course, in which twenty students are currently enrolled. This is a three-year program, which includes courses in both technical upgrading and educational methodology. Since most of the students of this program only have a technician certificate, a program coordination office conducts six-week bridging courses twice a year. The intended necessary completion time for this program is four years.

In addition to this staff development program, some Polytechnic teachers are sent to South Africa for further study. Aside from this, however, there are no other opportunities for Polytechnic teachers to upgrade their qualifications and skills. Moreover, since funding from the World Bank and African Development Bank will be terminated this year, it is likely that this program will be discontinued.

5.4.2 Non-tertiary Education

There have been two major recent initiatives in curriculum development in TVET. One is the strengthening of the function of the National Coordinating Committee for Technical and Vocational Education and Training (NACVET), and the other one is the Vocational Technical Resource Center (VOTEC) Project.

(1) National Coordinating Committee for Technical and Vocational Education and Training

The National Coordinating Committee for Technical and Vocational Education and Training (NACVET), co-chaired by the Minister of Education (MOE) and the Minister of

Employment and Social Welfare (MESW), was established under the Provisional National Defense Council (PNDC), and has been given the role of coordinating all vocational and technical education institutions at non-tertiary level. Since its inception, NACVET has been engaged in various activities such as the “Umbrella Program for the Sustainable Employment Generation”, funded by the ILO/UNDP, and the “Labor Market Information System Research”, funded by the World Bank. Currently, NACVET is in charge of the curriculum development, training of teachers, and monitoring of the apprenticeship program, which is also funded by the World Bank.

Apart from these achievements, however, lack of a clear regulation of authority has made it difficult for NACVET to carry out its functions effectively. This is because vocational and technical education institutions are under the jurisdiction of MOE, MESW and MEST, as mentioned before. The Ghanaian Cabinet is currently reviewing the “National Council for Technical and Vocational Education and Training Act”, with the intention of defining the authority of the NACVET and consolidating the financial security of the organization. If this Act is effectively enacted, then coordination among various technical and vocational education institutions can be expected to improve.

A team of World Bank consultants developed a policy paper for reform of pre-tertiary technical education⁴⁴ indicating that NACVET is currently unable to effectively coordinate and rationalize all the TVET curricula and institutions in Ghana. The problems, they claim, are the lack of an adequate legal framework for the operations of NACVET, and the fact that it is presently co-chaired by two Ministries. The frequent meetings and discussions between the World Bank consultants, officials of the related Ministries, Ghanaian counterpart staff and the JICA Study Team have resulted in an agreement in promoting the new proposal for industry-driven TVET orientation originated by the JICA Study Team. The proposal is meant to set up a new system for developing and reviewing the TVET curricula and assessment methodologies.

(2) Vocational Technical Resource Center (VOTEC) Project

The idea of the establishment of a resource center under MOE was discussed in a policy paper ten years ago. This project has commenced with assistance from the Dutch Government, which will provide a substantial component of the finance through a grant and loan. The executing agency is GES, within MOE, and the total project cost at the initial design stage was US\$ 23 million.

The objectives of the VOTEC Project are to:

- Supplement existing TVET facilities and give ample opportunity for practical work using modern equipment and techniques;
- Enhance the orientation of students toward self-employment by teaching them entrepreneurial skills;

⁴⁴ *Draft TVET Policy Framework for Ghana*, developed for MOE/NACVET/MMDE, under the Vocational Skills and Informal Sector Support Project, March 2001.

-
- Provide training for students in institutions, both public and private, with well-equipped workshops.

The project seeks to strengthen twenty existing technical/vocational institutes (not any polytechnics), including some senior secondary technical schools, to operate as resource centers, two in each region. The project will provide the practical and competency-based training in the following four major areas in all centers:

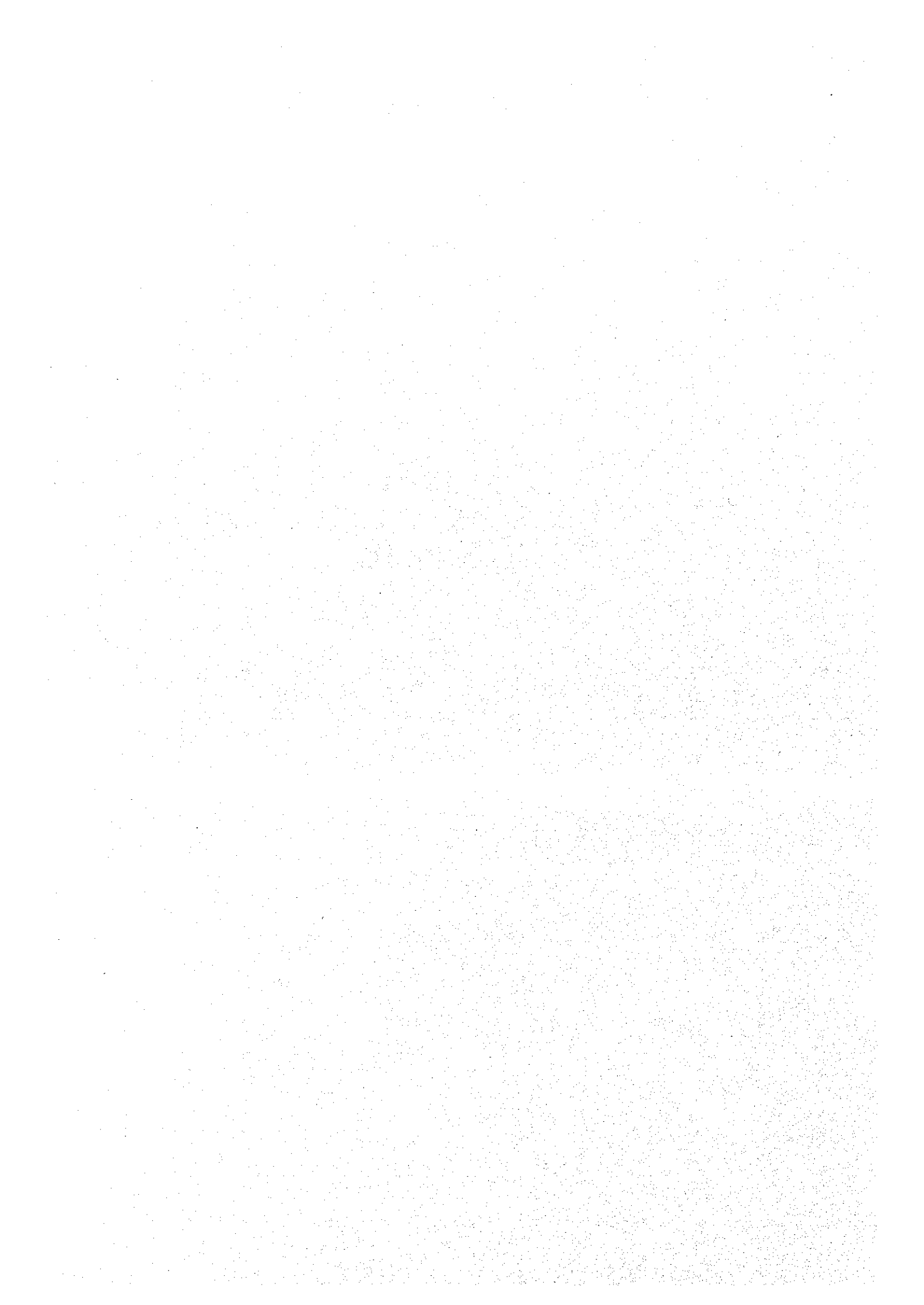
- Mechanical Engineering
- Woodworking, Joinery and Building Construction
- Electrical and Electronics
- Automotive Engineering

The project will also cover the supply and installation of equipment and materials, rehabilitation of existing workshops, provide technical assistance and staff development including in-country and overseas training. Currently two TIs have been selected as pilot venues for the Project, and eight teachers (four from Accra and four from Kumasi) are already in training programs in Holland.

The duration of the Project is two years, and on completion of the intended twenty Resource Centers, all institutions providing vocational and technical education, including NVTIs and Polytechnics, are expected to benefit from the Project.

The project is essentially supply-driven. The equipment was the most modern available from the Netherlands and may not be available either currently or in the near future in Ghana. Since Ghanaian industries have not been appropriately consulted about either current or projected training needs, it might be difficult to see how industry is specifically benefiting from the project, and how course participants would readily find jobs relevant to the training. Although no curricular documentation was available for analysis during the period of the Study, it is believed that the curriculum used in the project will be translated versions of curricula used in the Netherlands.

PART II
PLANNING



CHAPTER 6 MAJOR CONSIDERATIONS FOR THE PREPARATION OF A MASTER PLAN TO STRENGTHEN TECHNICAL EDUCATION

The chapter discusses major considerations for the preparation of a master plan to strengthen technical education in Ghana. They are: 1) national policy for human development in Ghana, 2) emerging issues in relation to TVET sector, 3) specific issues in Polytechnics, and 4) lessons from other countries.

6.1 National Policies for Human Resource Development in Ghana

According to *Ghana-Vision 2020*, “human development” is one of the five major development themes to achieve the nation’s long-term vision, which is to achieve “the status and standard of living of a middle-income country” by year 2020. The basic goals of human development are “to reduce poverty, increase average income and reduce disparities between incomes and opportunities.”⁴⁴ In order to achieve these goals, the Vision 2020 describes the development policies on education, training, and employment sectors as follows.

6.1.1 Policies on Tertiary Education

Vision 2020 stresses to revitalize and expand the tertiary education system in consonance with national human resource needs, which leads to the following 7 objectives:

- 1) Establishing an integrated and coordinated tertiary education system comprising all post-secondary pre-service training institutions, under the general supervision, direction and control of the Ministry of Education.
- 2) Making tertiary education more cost-effective and able to provide quality education for increasing numbers of students.
- 3) Increasing funding for tertiary education.
- 4) Providing greater access to tertiary education for qualified candidates.
- 5) Achieving a better balance between the supply of higher level and middle level personnel.
- 6) Ensuring an overall balance between the supply of trained personnel from the tertiary institutions and labour market demand.
- 7) Increasing the relevance and quality of tertiary education.

⁴⁴ Ghana Vision 2020, p. vii

6.1.2 Policies on Training and Developing Productive Skills

Vision 2020 emphasises the need to constantly train and equip workers at all occupational levels with the latest skills in order to maintain or increase Ghana's international competitiveness. In connection with this, the training system must strongly emphasise the practical aspect of training, as well as a problem-solving orientation that will help increase productivity as and equip people with the necessary skills for self-employment, especially within the rural and informal sectors of the economy.

The program objectives are:

- 1) Enhancing the skills of the labour force
- 2) Increasing the provision of management and business skills and training
- 3) Providing apprenticeship and in-plant training to equip trainees with entrepreneurial skills
- 4) Strengthening the training system, and
- 5) Expanding opportunities and modalities for training

6.1.3 Policies on Remunerative Employment

Vision 2020 stated that one of the most pressing and serious social problems contributing to the incidence of poverty in the country is the acute shortage of opportunities for stable employment. At present, the greater part (about 80 percent) of the economically active population of Ghana is self-employed. In addition to smallholder farmers and fishermen, a considerable number of people live precarious living in the informal sector as artisans and traders. Vision 2020 stressed that there is a need to increase opportunities for off-farm employment.

The program objectives are:

- 1) Raising the level of productivity in selected sectors;
- 2) Establishing and maintaining an employment promotion policy framework;
- 3) Strengthening links between the human resource development sector and the industrial, agricultural, and other productive sectors;
- 4) Strengthening the institutional capacity for employment planning, including the labour market information system;
- 5) Developing and diversifying off-farm employment opportunities;
- 6) Instituting special employment schemes for those vulnerable groups by-passed by the growth process, including the redeployed and unskilled poor; and
- 7) Revitalizing the co-operative spirit and creating an enabling environment for co-operatives to compete with other forms of business.

6.2 Emerging Issues in relation to the TVET Sector

The TVET delivery system in Ghana is affected by many of the problems currently faced by a number of developing countries in Africa and South East Asia. As indicated in the interviews conducted with representatives from key stakeholder groups, there is considerable dissatisfaction with current TVET provisions, which are summarized as follows:

6.2.1 Economic Factors

Ghana's weak economy is one of the most critical issues in relation to TVET sector. Ghana's export industry is very weak, and major export commodities are natural products, such as gold, cocoa, timber, etc. Manufacturing and service industries have not been sufficiently developed, which results in a lack of job opportunities in the country, especially for skilled laborers.

In fact, the current economic system in Ghana is not efficient in terms of creating new jobs. Weak export industry caused a large trade deficit, and it resulted in financial instability of the country. This financial instability brought about a shortage of foreign and domestic investment, and it weakened the demand of the labor market in the country. As a result, inactive economy caused a shortage of tax revenues for the Government, so that the Government had difficulty to deliver and maintain effective education and training. All these factors are more or less related to each other, as illustrated in Figure 6.2.1. In other words, human resource development is not isolated from social and economic systems. A TVET reform must be seen as a part of the processes of social and economic development in Ghana.

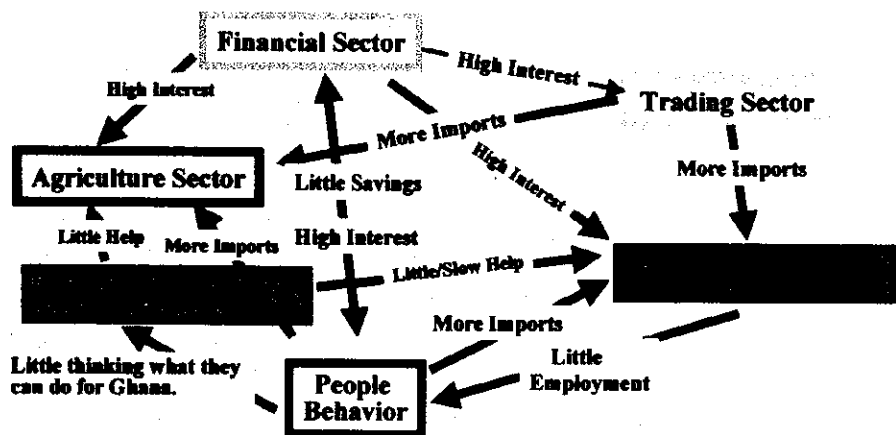


Figure 6.2.1 Dysfunctional relationships between sectors of the Economy

6.2 Emerging Issues in relation to the TVET Sector

The TVET delivery system in Ghana is affected by many of the problems currently faced by a number of developing countries in Africa and South East Asia. As indicated in the interviews conducted with representatives from key stakeholder groups, there is considerable dissatisfaction with current TVET provisions, which are summarized as follows:

6.2.1 Economic Factors

Ghana's weak economy is one of the most critical issues in relation to TVET sector. Ghana's export industry is very weak, and major export commodities are natural products, such as gold, cocoa, timber, etc. Manufacturing and service industries have not been sufficiently developed, which results in a lack of job opportunities in the country, especially for skilled laborers.

In fact, the current economic system in Ghana is not efficient in terms of creating new jobs. Weak export industry caused a large trade deficit, and it resulted in financial instability of the country. This financial instability brought about a shortage of foreign and domestic investment, and it weakened the demand of the labor market in the country. As a result, inactive economy caused a shortage of tax revenues for the Government, so that the Government had difficulty to deliver and maintain effective education and training. All these factors are more or less related to each other, as illustrated in Figure 6.2.1. In other words, human resource development is not isolated from social and economic systems. A TVET reform must be seen as a part of the processes of social and economic development in Ghana.

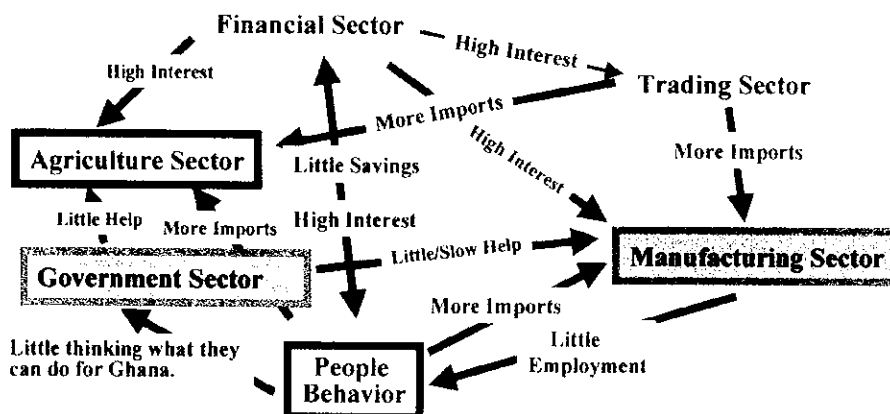


Figure 6.2.1 Dysfunctional relationships between sectors of the Economy

6.2.2 Lack of Linkages between the TVET Sector and Productive and Service Sectors

There is little linkage between the TVET sector and the productive and service sectors in Ghana. The lack of linkage is a major reason why the TVET sector has been unable to provide workers with effective training courses. There are currently two major industrial associations that fulfill this role. They are the Association of Ghana Industries (AGI), whose primary focus is to establish industrial policy, and the Ghana's Employers Association (GEA), which deals with industrial relations and human resource development matters. Both associations provide seminars and short-term training courses in areas, such as management of new technologies, personnel management, quality control, etc. The TVET sector should play a leading role in providing effective training courses for workers, in cooperation with the productive and service sector.

Currently, the productive and service sectors in Ghana play no significant role in shaping the directions of TVET programs. At times panels of industry personnel are requested to assist in the design of new curricula or review existing curricula. The process is essentially ad hoc and an informal one in which industry sectors are generally not able to provide regular or significant input. Furthermore, there are no formal structures that enable the industry to provide the overall direction, course content and standards of TVET programs. This is highlighted by the level of enthusiasm shown by representatives of GEA and AGI, who are conscious of this lack of input and are keen to become involved in curriculum design.

6.2.3 Lack of Effective Industry-Relevant Courses

There are many problems encountered in the current TVET system in Ghana, which are likely impediments in the implementation of effective industry-relevant courses. The major problems include:

- a) Lack of equipment - Many of the workshops in the TVET institutions are severely under-equipped and lack the facilities required for the effective implementation of practical training.
- b) Small industrial capacity - The small industrial capacity, combined with the current rigid curriculum in the TVET institutions, makes it difficult for students to obtain opportunities for practical training or industrial attachment. Even when places are available, there is no process that clearly defines what the students and the companies are expected to achieve. There is also no adequate assessment of what the students have accomplished.
- c) Weak partnership links between TVET institutes and the industry sector

Industry needs to utilize and exploit new technologies to be competitive in the global market. The TVET institutions are not providing effective programs relevant to the needs of industry in both the formal and informal sectors. This is due in part to the lack of industrial experiences of the administrators and teaching staff that undertake the design and development of courses. In addition, since there are no bridging schemes possible between institutions, students who want to shift into other technical education programs have to start their academic career development all over again.

6.2.4 Weak Demands of Labor Market

Although there are no reliable statistics⁴⁵, our interview survey with key stakeholders suggested that nearly 30 percent of recent Polytechnics graduates could not find appropriate jobs in the domestic labor market. This problem is largely caused by the mismatch between human resources trained in Polytechnics and industrial demands, and it is accelerated by the recent economic depression in Ghana. Although the Ghanaian economy has suffered from its low productivity and the lack of competitiveness in the global market, there are some potential areas to promote export industry. The TVET sector needs to provide effective training courses for workers to achieve relevant skills and know-how needed in the specific industrial areas.

The weak demand of the domestic labor market causes another issue. Many graduates from the tertiary institutions in Ghana leave the country to work abroad. According to our interview survey, about 5 percent of Polytechnic students leave their institutions to work or study overseas, prior to completing their education. In a sense, the government lost skilled human resources and a significant amount of money spent in their education.

6.2.5 Structural Complexity

Many aspects of the TVET system have essentially been developed from traditional academic schooling in Ghana. Various TVET institutions are operating under different Ministries with different standards. This raises difficulties in comparing the qualifications awarded by various institutions. Since each Ministry with a training portfolio is responsible for its own policy formulation and review, it will therefore be problematic to formulate a unified policy. It will be difficult to obtain the necessary approvals to rationalize the strategic directions and activities of the various TVET and bring their administration under one unified body.

Figure 6.2.2 illustrates the lines of responsibility of the MOE agencies, together with curriculum review and student assessment functions. Figure 6.2.3 indicates the relationships of the MOE's technical education with those of other Ministries. Both figures describe the structural complexity facing curriculum design, review and maintenance of courses.

⁴⁵ Polytechnics do not have a reliable system to monitor the progress of alumni and track the employment status of their graduates

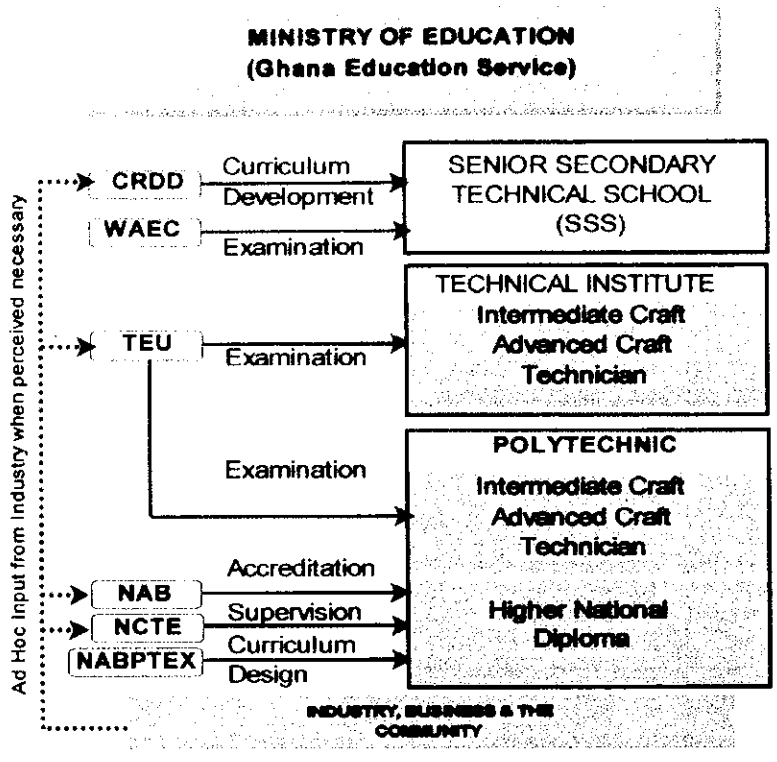


Figure 6.2.2 Curriculum review & student assessment functions in MOE

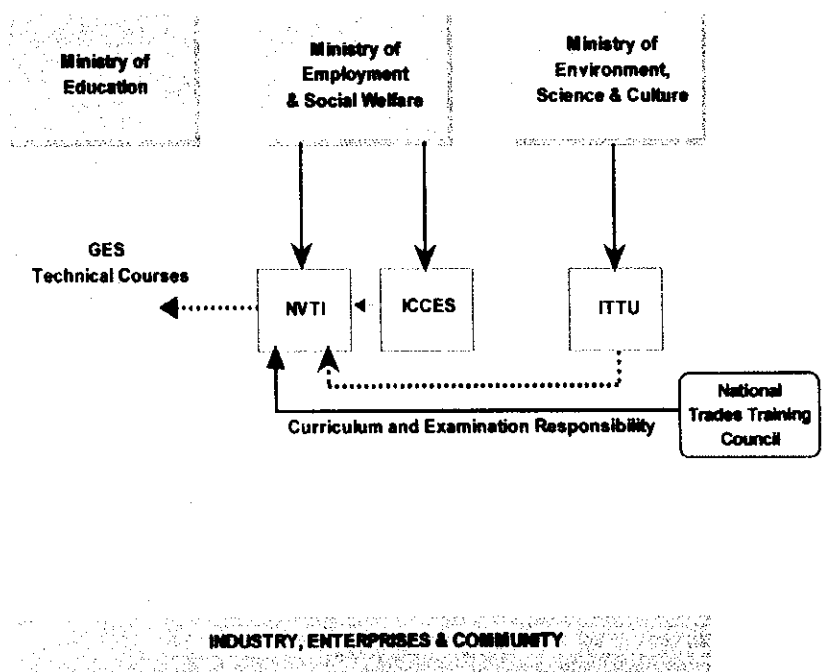


Figure 6.2.3 TVET programs offered by other two Ministries

6.2.6 Lack of Quality Assurance

There is no procedure for ensuring that the necessary quality standards for management and training operations are maintained. Students are assessed mainly on the basis of written examinations, rather than on a practical demonstration of skills acquired. Examinations tend to be conducted at the end of the training periods, mainly by means of written examinations set by external agencies (NABPTEX and the TEU), and so they do not assist students in the progressive acquisition of skills and knowledge. There are no processes to determine whether courses have been adequately administered and taught. Examinations are conducted by external examiners, who are generally not fully cognizant of the training activities undertaken.

The current TVET system lacks a systematic and progressive approach to assessment with an emphasis on practical demonstration of skills. The major constraint factors may have to do with a reluctance to change the traditional system of written examinations. Agencies traditionally responsible for these functions, such as NABPTEX, the TEU, and NTTC (National Trades Training Council), will be primarily affected. A flexible reform will require training staff in order to prepare these agencies to change their orientation to accommodate new roles.

6.2.7 Inadequate Practical Capability of Teachers

Technical skills and practical knowledge are important for teachers at TVET institutions, but currently there is no specific requirement for industry experience. As industry needs to adapt new approaches to working practices in order to become part of the global market, new approaches to teaching and learning must be integrated in the TVET sector. The current approaches to teaching and learning, such as the predominantly didactic (teacher-centered) teaching style and the academic rationalist orientation to curriculum design and assessment, are completely unsuitable and will significantly inhibit any attempt to meet current needs of industry. A new breed of teachers with new teaching and learning skills will be required to meet the challenges confronting the TVET sector.

Teachers Colleges will need to produce teachers who are skilled in a variety of pedagogic styles and methods, who will accept the role of a resource person and facilitator, and have skills in planning and scheduling resources and learning inputs and most importantly course and career counseling skills. This will obviously place considerable pressure on existing teacher training institutions and their staff. Figure 6.2.4 illustrates the complicated path to obtain professional teacher qualifications. A more flexible streamlined system of professional preparation of teachers will be required.

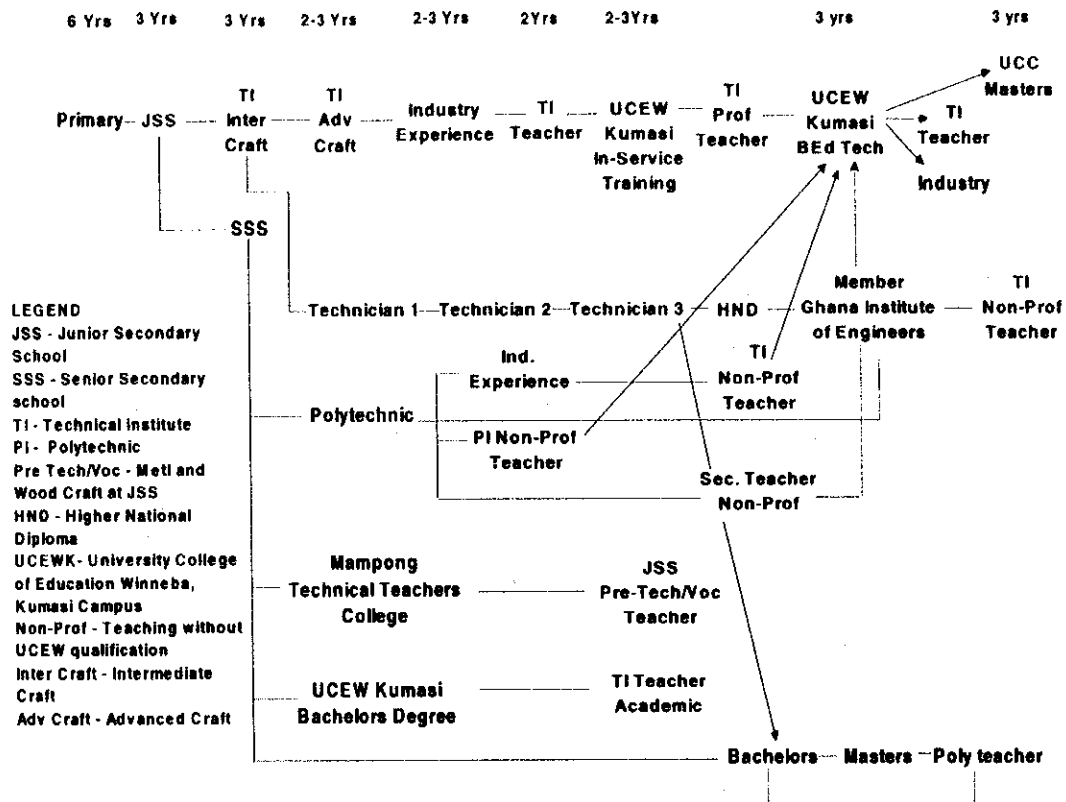


Figure 6.2.4 Current academic career development path for technical teachers

6.2.8 Limited Learning Opportunities

The productivity of the country depends on the extent to which the population has the capability to utilize updated technological and managerial know-how and skills. The current TVET sector in Ghana, however, provides only limited opportunities to obtain the latest knowledge and information. Furthermore, the TVET sector does not have a flexible accessibility for participation, such as acceptable tuition levels, flexible learning schedules, self-paced learning, home learning, self-learning at nearby local learning centres, and short courses. In order to provide equity, particularly for workers in the non-formal sector and people living in remote areas who have not been given the opportunity to enroll in educational organizations, different types of technical education delivery systems need to be developed.

6.3 Specific Issues in Polytechnics

In addition to the emerging issues in the TVET sector discussed in the previous sections, several specific points should be made regarding the Polytechnics, as follows.

6.3.1 Policies

Recently, there has been a rapid growth in enrolment in higher education. The government budget for higher education, however, has not increased much during the last decade (see section 4.2.5 of this report). This has resulted in lower quality of education. The Government should make a strong effort to improve quality of education. Some cost sharing schemes, such as increasing tuition fee and income generation, should be introduced into higher education institutions.

A quantity-oriented policy causes various problems in Polytechnics, such as insufficient equipment, inadequate classroom areas, and insufficient funding to provide appropriate maintenance. This means that a sharp increase in student enrolment, without sufficient support and funding, together with appropriate teachers and facilities, will cause a deterioration of quality in technical education in Polytechnics.

There is no practical policy to enhance continual cooperation between Polytechnics and the industrial sector for the purposes of using industrial employees as part-time teachers and promoting joint use of industrial facilities.

In the current system, the qualifications are determined by the educational sector alone, since there is no national policy to set requisite guidelines for development of industry-led training programs at the Polytechnics.

6.3.2 Lack of Funding

One of the most critical issues for Polytechnics in delivering good TVET is the lack of funding to purchase educational equipment and reading materials. Another issue is the inability to provide maintenance services for the existing educational equipment. The latter is a crucial issue for the foreign assistance programs, since inadequate funding may constrain the appropriate level of maintenance work in the future, and the lack of maintenance will allow the equipment to deteriorate in a relatively short period of time.

Any foreign assistance scheme has a fixed period for project implementation, during which the potential shortage of funds for maintenance is not an identified problem. There is generally a budget allocation for maintenance available to foreign experts. Unless funded properly for equipment maintenance and updating of software, it is anticipated that educational equipment such as computers and other machinery would deteriorate in a few years, and many of the computers and their related equipment could become obsolete within a short period of time as well.

6.3.3 Management

There are many managerial difficulties in the Polytechnics, such as the lack of systems to monitor the employment status of graduates, limited linkages with industrial sectors, a lack of managerial experience in management staff and a lack of motivation schemes for teachers.

At Polytechnics, managerial options have never been firmly taken to minimize these constraints. For instance, 1) there is no obligatory system by which technical institutions can monitor and document the activities of graduates, 2) there is no self-evaluation system of Polytechnic performance, 3) there is very limited recruitment of top managerial staff from the industrial sector 4) there are little incentive schemes for teachers to teach in industry, participate in distance-learning, obtain industrial attachments develop teaching/learning resources and; 5) the roles and functions of industrial liaison officers, who play a crucial role in coordinating with industries, are inadequately supported.

6.3.4 Curriculum Delivery

Delivery of education and training in Polytechnics is mainly traditional and teacher-centred. There is currently little scope for alternative teaching methods, such as self-paced, student-centred and distance-learning. An introduction of an effective teaching method will require major changes. There may be substantial difficulties in getting teachers to change their teaching methodologies, particularly those who have been in the traditional system for a long time. To develop and practice effective TVET at Polytechnics in order to meet the needs of industry, there are substantial requirements for re-training and re-orientation of all teachers, together with provision of incentive schemes for them.

6.3.5 Teaching/Learning Resources

There is a widespread tendency to rely on imported textbooks. Foreign textbooks are often not suited to the knowledge levels of the students and also to given conditions, such as lack of educational equipment. In many cases, because foreign texts are expensive and difficult to acquire, students rely on the notes teachers make from textbooks.

It is necessary for the staff of the training organizations to develop resource materials that are far more specific to the learning outcomes that are prescribed for all courses. However, most of the teaching staff lacks the requisite skills to prepare good quality teaching materials on their own, since presently general texts do not contain resources such as "student workbooks" and "workshop log books".

6.3.6 Industrial Attachments

Students in Polytechnics are required to undertake industrial attachments during their summer vacation for three months at the end of the first and second years of schooling respectively, but there is an insufficient number of spaces available. However, the industrial attachments themselves are generally not productive, because they are unstructured and inadequately supervised. More importantly, there is no adoption of "Trainer" and "Assessor" roles in current industrial attachment arrangements, since industrial attachment is not an assessable part of the accredited courses.

6.3.7 Access and Equity Issues

There are increasing pressures on higher education institutions to address issue of access and opportunity for all. As a result, the traditional roles of Polytechnics are being challenged to demonstrate relevance of course offerings and student outcomes as well as improved access for people who are outside the academic system and wish to re-enter it.

There is a need for the Polytechnics to consider credit for previous on-the-job experiences when discussing access to programs. The Australian model calls this Recognition of Prior Learning (RPL) or Recognition of Previous Experience (RPE), whereby some course credit is given for competency shown in certain skills.

Increased participation of women in scientific, technical, and math-related fields is a national policy directive. However, the enrolments of women were 15 percent in Technical Institutes and 20 percent in Polytechnics (see Table 6.3.1). There are many factors inhibiting higher enrolments of women in Polytechnics. These factors include limited dormitory facilities for women, the lack of flexibility in course scheduling, and the limited opportunity to undertake part-time diploma and certificate courses.

Table 6.3.1 Enrolment percentage of female students

Education level	Number of boys	Number of girls	Total	% of girls
Primary education	1,263,697	1,133,651	2,397,348	47.3%
Junior secondary	477,855	402,264	880,120	45.7%
Senior secondary	129,716	93,470	223,186	41.9%
Technical institutes	11,336	2,002	13,338	15.0%
Polytechnics	14,136	3,690	17,826	20.7%

Note: All numbers estimated by JICA study team for 1999 data except for TI in 1996/97. Both of Technical Institutes and Polytechnics show numbers of students enrolled in major courses not including short courses.

6.4 Lessons from Other Countries

In developing a master plan for TVET reform in Ghana, the Study Team visited eight countries to investigate relevant developments in each country. The lessons learned from the countries are: "Post-1992 Universities" in the United Kingdom, "Technical and Vocational Education and Training (TVET) Reform" in Australia, "Vocational Education and Training (VET) Reform" in South Africa, "Higher and Vocational Education Reform" in Ireland, "Distance-Learning" in Japan and Thailand, "Skill Development Fund (SDF)" in Singapore, and "Human Resource Development Fund" in Malaysia. The followings are brief summaries of those lessons (Refer to Appendix 6.1 for details).

6.4.1 United Kingdom (U.K.): "Post-1992 Universities"

Lessons from the U.K. are particularly important for Ghana, because Ghana's technical education system, including Polytechnics, was originally based on the UK's. Under the Education Reform Act of 1988 and the Further and Higher Education Act of 1992, all of the former Polytechnics of UK had been transformed into "universities," and they are currently called "Post-1992 Universities." Some of them are London Guildhall University (LGU), University of East London (UEL), Middlesex University (MU), and University of Westminster (UW). As compared to the traditional Universities, "the Post-1992 Universities" have the following characteristics:

- Concentration on applied programs with direct links to employment.
- A more open access for students from disadvantaged groups;
- Greater innovation and flexibility in course development;
- Emphasis on teaching students, rather than teaching subjects;
- A tendency to prepare students in respect of basic aptitudes and attitudes, rather than in specific areas or skills;
- A high proportion of mature students and ethnic minorities.

To keep abreast of the industrial and social needs, they make various efforts, such as meetings with professional bodies in the banking and accounting sectors with an important role in the economy of the London area, arrangement of curriculum development advisory groups by both the private & public sectors, and project implementation for the economic regeneration of poor parts of London. All the Post-1992 Universities in London are members of London First⁴⁶, a non-profit organization that also facilitates discussion between educational institutions and the private sector.

The management of the Post-1992 Universities has the following characteristics:

- Complete autonomy regarding decisions on what courses and programs to run based on the market needs, such as the current little demand for engineering, but strong demand for Information Technology (IT) courses.
- Industrial placement is frequently offered by so-called sandwich courses, in which 6-12 months of practical experience is built into 3-year courses.
- Credit may be given for prior learning and for companies' in-house training.

⁴⁶ London First (LF), a private non-profit organization supported by the private and public sectors in London, was founded in the early 1990s after the disbandment of the Greater London Council (GLC). The principal objectives were 1) to get better governance, 2) to improve transportation, and 3) to solve environmental problems e.g. waste disposal. Activities in respect of education were rather new. All universities in London are currently members and pay fees of UKP10,000/year.

- The Government, through Higher Education Funding Council for England (HEFCE), pays a part of the cost for each student at the same level of subsidy for the university students. The students pay tuition fees and many students work part-time to fund their tuition.
- Tuition fees are unregulated for overseas students and Ph.D. courses. Therefore, a big effort is being made to recruit students from overseas, as well as the development of partnerships.
- Teachers' pay scales are negotiated and set on a national basis.
- Lower income, as Post-1992 Universities generate much less income from research and do not have income from foundations or inherited assets.

6.4.2 Australia: Technical and Vocational Education and Training (TVET) Reform (1974-2000)

Over the past twenty-five years, and specifically in the last ten years, the industrial sector has participated in the emergence of a national vocational education and training system in Australia. There has been a wide recognition that education and training can provide competitive advantages for the nation, and a Competency-Based Training (CBT) approach has been adopted in post-secondary technical and vocational education and training (TVET) sector.

The TVET reform started in 1974 and the major strategies used to achieve TVET reform were:

- Regulatory framework supported the achievement of agreed national competency standards, through effective assessment and skills recognition. Industry is required to take a leading role in the determination and implementation of training and standards development within a quality assurance framework;
- The control of training outcomes was shifted to the key industrial parties and away from training providers and educationalists. Issues, such as the identification of skill levels, the assessment of competence, recognition of prior learning, determination of competency standards, training time, off and on-the-job training, are no longer the province of the training bureaucracy, but have real currency in the determination of wage rates, career structures, performance agreements and workplace promotion.

Although initial reform strategies sometimes lacked a cohesive and uniform approach, TVET reform in Australia has continued to be a dynamic process, and its most important achievements have been the consolidation of Government infrastructure, proliferation of CBT resources, and acceptance of training reform by the major stakeholders. Particular achievements of Australian TVET reform include:

- Formulation of a clear national policy which, above all else, frames national objectives for TVET which are capable of being measured and monitored, so that progress can be reviewed.

-
- Development of a system that encourages life-long learning, and which is broad in coverage and scope as a systematic response to technological changes by enabling people to receive re-training.
 - Provision of diversity and comprehensiveness, with coverage from short programs of training to intensive, advanced programs across a wide range of areas.
 - The development of a sustainable industry-led training sector through the creation of an overarching authority (Australian National Training Authority) and Industry Training Advisory Boards with predominant responsibility for determining and monitoring training directions.
 - Creation of a modular training system better suited to alternative modes of delivery such as in-plant and distance-learning.
 - Establishment of a competitive system of training providers comprising Government-funded and private organizations. Government-funded training organizations are encouraged to progressively reduce their dependency on the Government budget by making direct contractual arrangements with individual enterprises and industries.
 - Establishment of a framework for national recognition of TVET that will enable the industrial sector to determine TVET qualifications.
 - Development of a focus on outputs and outcomes, which has accompanied the shift from a predominantly provider (or supplier)-determined training system to an industry-led system.

6.4.3 South Africa: Vocational Education and Training (VET) Reform

(1) The VET system

Technical education at the post-secondary level is provided by Universities, Technikons and Technical Colleges, under the Department of Education in South Africa. The main institutions responsible for the vocational training are the Department of Labour, the National Training Board (NTB), Industrial Training Boards (ITBs), employers, and public and private training providers. Industrial sectors voluntarily established ITBs for accreditation and setting standards.⁴⁷

(2) South Africa Qualification Authority (SAQA)

SAQA was established through the SAQA Act of 1995. The major functions of the SAQA are:

- "To oversee the development of the NQF (National Qualification Framework), by formulating policies and criteria for registering bodies for establishing education and training standards or qualifications and for accreditation of bodies for monitoring such standards and qualifications,"

⁴⁷ See for example, Adrian Ziderman and Arvil Van Adams, "South Africa," in *Vocational Education and Training Reform*, Edited by Indermit S. Gill, Fred Fluitman and Amit Dar, pp. 341-362, Oxford University Press/The World Bank, 2000.

- “To oversee the implementation of the NQF by ensuring the registration, accreditation to the bodies above, as well as the registration of national standards and qualifications in NQF, also ensuring that standards and qualifications are internationally comparable.”

SAQA has established twelve National Standards Bodies (NSBs): 1) Agriculture and nature conservation, 2) Culture and arts, 3) Business, commerce and management studies, 4) Communication studies and language, 5) Education, training and development, 6) Manufacturing, engineering and technology, 7) Human and social studies, 8) Law, military science and security, 9) Health science and social services, 10) Physical, mathematical, computer and life sciences, 11) Services, and 12) Physical planning and construction. Members of NSBs are drawn from six constituencies: state departments, organized business, organized labour, education and training providers, interest groups, and community/learner organizations. The NSBs recommend standards and qualifications for registration in the NQF.

Under the Ministry of Labour, the Department of Labour is responsible for skill development, and it established the National Skills Authority (NSA) and the Sector Education and Training Authorities (SETAs) to assure the quality of education and training. They will have to be accredited by SAQA as Education and Training Quality Assurance bodies (ETQAs).

Under the Ministry of Education, the Department of Education is responsible for higher education, and it created the Council for Higher Education (CHE) and Higher Education Quality Committee (HEQC) to assure the quality of education and training. For this, the CHE will have to be accredited by SAQA as Education and Training Quality Assurance bodies (ETQA). In addition, the Department of Education is proposing the establishment of a General and Further Education and Training Quality Assurance Council (GENFETQA) for assuring quality of education and training.

(3) National Qualification Framework (NQF)

The South African Qualification Authority (SAQA) developed and implemented the National Qualification Framework (NQF). The NQF is meant to bring together separate education and training systems into a single national system, as well as open up learning and work opportunities for those who were treated unfairly in the past because of their race or gender.

The SAQA has adopted an eight-level framework. The NQF level 1 is general education and training taking nine years, which is provided by formal schools or adult basic education and training providers. The NQF from level 2 to level 4 is the area of further education and training provided by senior secondary schools, technical colleges, private providers, etc. The NQF from level 5 to level 8 is the area of higher education and training provided by Universities, Technikons, and Colleges.

6.4.4 Ireland: Higher and Vocational Education Reform

Ireland has experienced a rapid economic growth over the last decade. The Study Team visited Ireland to investigate higher and vocational education reform strategies, which have contributed directly and indirectly to the recent economic growth of the country.

(1) Higher Education Authority (HEA)

The higher education is provided by four types of institutions under the Higher Education Authority (HEA); They are universities, institutes of technology, colleges of education, and other institutions focusing on specific fields, such as art, design, medicine, theology, music and law. In the state-founded universities and institutes of technology, the tuition fees for the undergraduate students with EU nationals were abolished in 1996. Now more than ninety-percent of the income comes from the government.

Considerable growth has been seen in higher education over the last two decades, especially at university level in the areas of business and technology. It is believed that the recent rapid economic growth of the country has been related to the expansion of higher education and human resource development.

Regarding human resource development, the Employment and Training Strategy Unit (ETSU) under the Higher Education Authority has been a main organization responsible for the introduction of National Training Fund (NTF) and establishment of the National Qualifications Authority (NQA). The NTF began in December 2000, which was a levy on employers.⁴⁸ It supports a wide range of employment training initiatives, including apprenticeships, company-specific training programs and training courses for unemployed people. The ETSU was also intensively involved in the development of Qualifications (Education and Training) Act, which was enacted in July 1999 by the Minister for Education and Science. The NQA was established in 2001 to develop the national qualification framework for education and training.

(2) National Training and Employment Authority (NTEA)

Along with the HEA, the National Training and Employment Authority (NTEA) has been responsible for training certification in Ireland. The NTEA emphasizes on the following aspects for training certification:

- Skill focus: certificates skills and skill levels, rather than certifying courses;
- Modular focus: modular training is matched by modular assessment programs;
- Competence focus: emphasis on practical and personal skills;
- Industry standards: industrial endorsement is essential for national recognition;
- Assessment based on criterion-referenced standards: assessment is presented in terms of key objectives identifying the skills and knowledge derived from business requirements;
- Local administration: the primary responsibility for assessment lies at local level.

⁴⁸ 0.7% of pay-related social insurance contributions

Another significant achievement by the NTEA was the establishment of the Overseas Training Program (OTP). The purpose of the OTP was to provide new graduates from the tertiary institutions with practical work experience (remove dash) in foreign countries. Under this program, over 900 graduates worked mainly in Japan, Korea and Taiwan since the program started in 1983. Under OTP, students were selected in terms of their academic performance, cultural flexibility, and language capabilities. The initial arrangement is normally two years of overseas study, which may be extended if both the company and the graduate agree. There are benefits for the government and the students. The students can get jobs overseas after completing the study, and the government can benefit from a larger number of recent graduates with advanced knowledge and skills. In fact, a sizeable number of graduates who participated in the program occupied important positions in the government.

6.4.5 Japan: Distance-learning - University of the Air

University of the Air (UOA) is the largest public university offering distance-learning through TV and radio broadcasting. The followings are the characteristics of the UOA:

- The UOA currently has 81,258 students enrolled (45,848 degree students, and the remainder are non-degree and research students). Enrolment has been expanding steadily since its establishment in 1985. Most of the students are full-time or part-time employees.
- There are six courses available in the UOA: 1) living and welfare, 2) human development and education, 3) social and economic studies, 4) industry and technology, 5) humanities and 6) natural sciences.
- There are ninety full-time academic staff and 250 administrative staff. In addition, there are part-time teachers from other universities.
- There are forty-nine learning centres located over the country.
- There are variety of tools to learn in the UOA: 1) TV and radio, 2) videos or audiotapes, 3) printed textbooks, 4) instruction by correspondence (once a semester), 5) individual research (elective), and 6) face-to-face instruction at learning centres.
- Degree students have to complete one hundred and twenty-four credits for their Bachelor's degree, which requires thirty-six common credits and ninety-four specialized credits. Among the one hundred and twenty-four credits, the degree students must complete twenty credits by face-to-face instruction. The average course work for those who want to complete a degree course within 4 years is, on a weekly basis, 1) seven forty-five minute broadcast programs, 2) 45-60 pages of printed study materials and 3) 2.25 hours of face-to-face instruction.
- In addition to the admission fee of US\$160, the tuition fee is charged at US\$40 per credit, which includes textbooks. The use of any facilities in the learning centres is free. The total cost for a Bachelor's degree is about US\$5,000.
- The overall operational cost was US\$153 million in 2000 and the tuition revenue was US\$42 million (27 percent of the total operational cost).

6.4.6 Thailand: Distance-Learning - Sukhothai-Thammathirat Open University

Sukhothai-Thammathirat Open University (STOU) was established in 1980 through technical and financial support from Japan International Cooperation Agency (JICA). It was the first institution to offer distance-learning programs in Thailand. The programs offered at the STOU include a variety of fields, such as construction management, agriculture extension, health science, law, home economics, liberal arts, economics, political science, communication arts, science & technology, nursing, and teacher training courses. There are 360 academic and 900 administrative staff, and 209,680 enrolled students in 1999. The STOU offers nearly 600 courses in 1999.

(1) Teaching Methods and Facilities

In the distance-learning programs at the STOU, the students learn through TV, radio, videos, textbooks, schooling, industrial attachment, and question and answer through telephone. Live tutorials using satellite have been recently started. The STOU does not have ordinary class room at the headquarter in Bangkok, but it has the facilities of administration, development of teaching materials, broadcasting, textbook development/printing, etc. In the Educational Broadcasting Production Centre (EBPC) at the STOU headquarters, there are four TV studios and six radio stations with about 100 professional staff working for camera, video edition, maintenance, radio and administrative jobs. In addition to the main campus, the STOU has the following facilities across the country:

- Ten (10) Regional Distance Education Centres with classrooms, seminar rooms and libraries
- Eighty (8) Corners located in public libraries with printed teaching materials
- Seventy-five (75) Local Study Centres located mostly at high schools in every province
- Seven (7) Regional Study Centres located in universities, mainly for practical training
- Fifty-seven (57) Specialized Study Centres, such as nursing and agricultural training

(2) Textbook Development

The Office of University Press (OUP) has been responsible for the development, printing and distribution of all the textbooks for the programs offered at the STOU. The textbooks have been developed by faculties at the STOU, and from other universities. Teachers who develop textbooks are paid Baht 15,000 per subject. They have been revised and updated every 5 years for those in Bachelor courses and every 3 years for those in Masters courses. Sales price of each textbook is around Baht 400. Since the STOU offers around 600 courses, and each course uses 2 textbooks, a total of 1,200 textbooks have been prepared by the OUP.

(3) Financial estimation

It seems that the STOU has been financially sustainable, because more than 70% of the total revenue at the STOU come from their own sources, according to our estimation. The tuition fee is Baht 550 per subject in 2000, and students normally take 2 subjects per semester. Each student, therefore, pays an amount of about Baht 2,200 per year. With the cost of textbooks, the total cost per student is estimated at about Baht 3,600 per year. Accordingly, the total revenue of the STOU would be some Baht 1,210 million per year (209,680 students times Baht 3,600). The STOU receives Baht 360 million as subsidy from the government, which means that the STOU may currently operate at 77 percent self-financing.

6.4.7 Singapore: Skill Development Fund

The Government of Singapore has adopted two national strategies for development of human resources. The first and fundamental thrust was to establish and maintain a sound education system with an early focus on technical and vocational training. The second thrust was to meet specific training needs for existing workers from the industries.

In order to achieve these national strategies, the government introduced the Skill Development Fund (SDF) in 1979. SDF is characterised as a “levy-grant” system, which consists of levy⁴⁹ from employees’ payroll and a government grant. The purpose of SDF is to provide effective training programs for workers. Singapore’s SDF is the first and most successful scheme in the world, because it has been supported by both the Government and the private sector. Since the SDF scheme was introduced, the productivity of industries has improved constantly. Currently nearly 45 percent of all the workers in Singapore have participated in skill development training programs every year. The number of training places, including in-house training, reached over 560,000 locations in 1998 (16 times larger than 33,000 in 1981).

The rationale for SDF can be summarized as follows:

- Industries have incentives/responsibilities to train their employees, since they make profit from their trained employees.
- Employees are encouraged to receive training, as their upgraded skills will increase their income

Currently SDF supports S\$4 per trainee per hour or 80 percent of the course fee, subject to a maximum of S\$8 per trainee per hour for training leading to national/industry-wide certification. An interested company can obtain and file the application form of Training Voucher Scheme with the training provider, stating its intention to enrol the trainee in the course, and pay the discounted fee (i.e. the unsupported portion of the fee) to the provider.

⁴⁹ Originally, the rate was 4% of payroll, but currently it reduced to 1%.

6.4.8 Malaysia: Human Resource Development Fund

In the 1980s Malaysia faced intense global competition in the export market. Malaysia's export items were mainly raw materials during the period, such as rubber, tin and palm oil. The manufacturing sector was not competitive in the export market in terms of the quality and price. Thus, the Government has taken a strong effort to develop skilled human resources to achieve the country's industrialization. Under the current Seventh Malaysia Plan 1996-2000, human resource development is one of the highest priorities with the investment of about 15 percent of total government expenditure.

(1) Skill Development Program: 1989-1994

Malaysia started working to develop the concept of Skill Development Program (SDP) in 1989, based on the successful example of the Skill Development Fund in Singapore. The SDP was named "Human Resource Development Fund (HRDF)," under the Human Resources Development Act of 1992. The HRDF encouraged training, re-training and skill-upgrading for workers in the private sector. The idea of HRDF is similar to Singapore's SDF, and it consists of the fund collecting from employees and the same amount of matching fund from the Government. In 1992, the HRDF amounted to nearly M\$100 million. The private sector, which participated in the HRDF, is eligible to apply for grants to defray or subsidize costs incurred in training their workers. The amount of HRDF reached M\$145 million in 1997.

(2) Regional Training Centre

The Penang Skill Development Centre (PSDC) was Malaysia's first industry-led regional training institution. The concept of industry-led training is based on the idea of cooperation among industries, government and training institutions. It is now being disseminated to other states in the country. The PSDC pilot program started operations in 1989 with the participation of 307 workers in 16 short training courses. The training capacity had increased to more than 500 short-term courses with 10,500 participants in 1999/2000. Some of the courses are now equivalent to university education with credits.

CHAPTER 7 A MASTER PLAN TO STRENGTHEN TECHNICAL EDUCATION

7.1 Major Goals for a Master Plan

The primary goal of the Study is to formulate a Master Plan to enhance technical education in Ghana. The concept of “technical” used in this study incorporates a broad range of technical and vocational programs delivered in a wide variety of institutions not only under Ministry of Education (MOE) but also other Ministries in Ghana. The Master Plan, therefore, covers a wide variety of institutions in the formal and non-formal Technical and Vocational Education and Training (TVET).

The Master Plan, targeted for the year 2020, will present a comprehensive framework showing what the TVET system in Ghana should be in the future, and how it can be achieved. An appropriate TVET system should be an efficient human resource development system, which can respond quickly to the changes of labour market and industry needs. Furthermore, the system should be less dependent on government subsidy in order to become financially sustainable.

7.2 Development Scenarios

7.2.1 Development Scenarios based on Future Economic Growth

Three development scenarios (high, medium and low growth scenarios) were considered based on a study to estimate the future infrastructure and human resource development of TVET in Ghana up to the year 2020. Keeping in mind that *Ghana-Vision 2020* intends to achieve “the status and standard of living of a middle income country,” we developed these scenarios in reference to the data of per capita GDP in middle-income countries.

The estimate of the high growth scenario is that Ghana could achieve a per capita GDP of US\$1,500 in 2020, with an annual growth rate of 8.6 percent between 2001 and 2020. The estimate of the medium growth scenario is that Ghana will achieve a per capita GDP of US\$1,000 in 2020, with an annual growth rate of 6.7 percent. The Low growth scenario is estimated at a GDP per capita of US\$665 with an annual growth rate of 4.7 percent for the same period (This scenario was projected based on the growth rate of per capita GDP experienced between 1993 and 1999). Table 7.2.1 shows the targets in the three scenarios.

Table 7.2.1 Target of three scenarios

		Scenario 1 (High growth)	Scenario 2 (Mid growth)	Scenario 3 (Low growth)
Per capita GDP	(US\$/capita)	1,500	1,000	665
GDP growth rate	(%)	8.6	6.7	4.7
GDP	(Mil. US\$)	46,497	30,985	20,604

7.2.2 Future Demand Forecast of Labor Market

The future demand of the labor market was estimated by education levels - tertiary, secondary and other general education - based on the annual growth rates of per capita GDP between 2001 and 2020 (see Table 7.2.2). The details of the deductions used for the estimation were discussed in Appendix 7.1. The following are major characteristics of the future demand of the labor market using this development scenario:

- In the high growth scenario, the total demand of the labor market will increase from 731,000 persons in 2000 to 1,675,000 persons in 2010 and to 3,839,000 persons in 2020, with an annual growth rate of 8.6 percent between 2000 and 2020. The demand of the labor force composed of graduates from tertiary institutions is estimated to increase significantly with an annual growth rate of 14.3 percent during the same period. In the total demand of labor market in 2020, 672,000 persons will be the graduates from tertiary institutions, such as Universities and Polytechnics, 1,291,000 persons will be the graduates from secondary technical institutions, such as Technical Institutes (TIs), National Vocational Training Institutes (NVTIs) and other private institutions, and 1,875,000 will be the graduates from general education institutions, such as Senior Secondary Schools (SSS) and Junior Secondary Schools (JSS).
- In the medium growth scenario, the demand of labor market will increase from 731,000 persons in 2000 to 1,393,000 persons in 2010 and to 2,654,000 persons in 2020, with an annual growth rate of 6.7 percent between 2000 and 2020. The demand of labor force graduated from tertiary institutions is estimated to increase with an annual growth rate of 12.2 percent during the same period. In the total demand of labor market in 2020, 465,000 persons will be the graduates from tertiary institutions, 893,000 persons will be the graduates from secondary technical institutions, and 1,296,000 persons will be the graduates from general education institutions.

- In the low growth scenario, the demand of the labor market will increase from 731,000 persons in 2000 to 1,157,000 persons in 2010 and to 1,832,000 persons in 2020, with an annual growth rate of 4.7 percent between 2000 and 2020. The demand of the labor force graduated from tertiary institutions is estimated to increase with an annual growth rate of 10.1 percent during the same period. In the total demand of labor market in 2020, 321,000 persons will be the graduates from tertiary institutions, 616,000 persons will be the graduates from secondary technical institutions, and 895,000 persons will be the graduates from general education institutions.

Table 7.2.2 Demand shift by education levels in three scenarios

Unit: 1,000

	Year 2000	Year 2010	Year 2020	Growth rate (2000-2020)
Scenario 1 (High growth)				
1 Tertiary education	46	245	672	14.3%
2 Secondary technical education	129	517	1,291	12.2%
3 General education	556	913	1,875	6.3%
Total	731	1,675	3,839	8.6%
Scenario 2 (Mid growth)				
1 Tertiary education	46	204	465	12.2%
2 Secondary technical education	129	430	893	10.2%
3 General education	556	759	1,296	4.3%
Total	731	1,393	2,654	6.7%
Scenario 3 (Low growth)				
1 Tertiary education	46	169	321	10.1%
2 Secondary technical education	129	357	616	8.1%
3 General education	556	631	895	2.4%
Total	731	1,157	1,832	4.7%

7.2.3 Scenario Selected for a Master Plan

Based on the demand forecast of the labor market, the enrolments in Universities, Polytechnics and Technical Institutes (TIs) were estimated as shown in Table 7.2.3. The future enrolment based on each development scenario was summarized as follows:

-
- It might be unrealistic for Ghana to achieve the target in the high growth scenario, because the average annual GDP growth rate of 8.6 percent from 2000 to 2020 is extremely high. To achieve this scenario, Ghana's economy needs to grow with nearly double of the past growth rate of 4.7 percent per annum between 1993 and 1999. In this scenario, it is also difficult for the education sector to increase its capacity of enrolment. For instance, the enrolment in Universities will be three times the amount it was in 2000 (43,000 students) in the year 2020 (an estimated 142,000 students). The enrolment in Polytechnics will also increase from 22,000 persons in 2000 to 160,000 persons in 2020. The tertiary enrolment ratio will be 977 persons per 100,000 inhabitants in 2020⁵⁰. The enrolment in TIs will increase from 14,000 persons in 2000 to 76,000 persons in 2020. This estimation seems to be too idealistic according to the current economic situation in Ghana.
 - In the medium growth scenario, Ghana will achieve economic growth at 6.7 percent of the average annual GDP growth rate from 2000 to 2020. If we follow this scenario, the enrolment in Universities will become double, with 43,000 persons in 2000 to 86,000 persons in 2020. The enrolment in Polytechnic will increase from 22,000 persons in 2000 to 97,000 persons in 2020. The ratio of tertiary enrolment will be 593 persons per 100,000 inhabitants in 2020. The enrolment in TIs will increase from 14,000 persons in 2000 to 46,000 persons in 2020. This estimation of enrolment would be a reasonable target, if the TVET sector can be strengthened and improved properly.
 - In the low growth scenario, Ghana will achieve economic growth at 4.7 percent of the average annual growth rate of GDP per capita from 2000 to 2020. If we follow this scenario, the enrolment in universities will increase by only 8,000 persons (from 43,000 persons in 2000 to 51,000 persons in 2020). The enrolment in polytechnics will increase from 22,000 persons in 2000 to 57,000 persons in 2020. The ratio of tertiary enrolment will be 349 persons per 100,000 inhabitants in 2020, which is nearly the same level of enrolment as in 2000. The enrolment in TIs will double from 14,000 persons in 2000 to 27,000 persons in 2020. This estimation would be the minimum target.

Upon consideration of the three scenarios, it was decided that the high growth estimate is unrealistic in the context of the recent economic situation in Ghana. The low growth scenario is perhaps pessimistic, especially in the context of the reforms being implemented as part of *Ghana – Vision 2020*. The Study Team thus selected the medium growth scenario as the framework for a Master Plan.

⁵⁰ UNESCO Statistic Book, which is the similar level of enrolment ratio to that in Malaysia in 1998

Table 7.2.3 Enrolment growth by education levels, 2000, 2010 and 2020

Unit: 1,000

	Year 2000	Year 2010	Year 2020	Growth rate (2000-2020)
Scenario 1 (High growth)				
1 University	43	78	142	6.2%
2 Polytechnic	22	60	160	10.4%
3 TI	14	33	76	8.8%
Total tertiary (Univ. and Polytechnics)	65	138	303	8.0%
Scenario 2 (Mid growth)				
1 University	43	61	86	3.6%
2 Polytechnic	22	47	97	7.6%
3 TI	14	25	46	6.0%
Total tertiary (Univ. and Polytechnics)	65	107	184	5.3%
Scenario 3 (Low growth)				
1 University	43	47	51	0.9%
2 Polytechnic	22	36	57	4.8%
3 TI	14	19	27	3.2%
Total tertiary (Univ. and Polytechnics)	65	82	108	2.6%

7.3 Strategies for Systemic Reform of the Technical Education System in Ghana

Ghana's TVET system is very fragmented and lacks linkages with industries. In order to achieve the target of the mid-growth scenario, the TVET sector needs to undergo a comprehensive structural reform. In general terms, Ghana's TVET system needs to change from the current *supply-driven* model to a *demand-driven* model in order to support industrial needs and respond to changes in technology and global market demands. The change of the TVET system is not an easy task and needs considerable effort by all the stakeholders, including the government Ministries, education and training institutions, and industries.

7.3.1 Establishing a Long-Term National Policy

Human resource development, including the TVET sector, is considered to be one of the most important elements in achieving the nation's long-term vision and goals. The Government should establish a clear national policy to develop an efficient and integrated TVET system. This will require considerable collaboration among all key stakeholders, including relevant institutions, teaching staff, industry representatives and their managers, students, and the relevant government agencies, such as Ministry of Education (MOE), Ministry of Environment, Science and Technology (MEST), Ministry of Employment and Social Welfare (MESW). The national TVET policy should provide for:

- Identification of issues that are specific to TVET and separate from issues related to academic education at all levels;

-
- Identification of the appropriate directions and objectives of TVET sector in relation to the nation's long-term goals. Those consulted should include not only Government officials, but also education and training organizations, and the private sectors;
 - Formation of formally constituted bodies for regular and extensive discussions with the "clients" and "beneficiaries" for the TVET sector, namely students and industries;
 - Industry groups should be consulted in a formal and systematic way in order to support and develop the TVET sector; and
 - Setting up measuring and monitoring systems for constant review.

7.3.2 Moving towards Continuing Education in the TVET Sector

The current TVET system in Ghana is mainly focused on young people in school without extensive job experience. It is no longer sufficient, however, to have a TVET system aimed only at preparing youth entering the workforce. The key reasons for the importance of continuing education are as follows:

- Employees need to be able to continuously upgrade their skills even in the same field of work. The national TVET policy should therefore focus more on the adult workforce as well as young people.
- Because of rapid technological change, workers need to continuously upgrade their skills. In addition, emerging fields of work, such as Information Technology and communication, require complex expertise and advanced skills. An effective TVET system should be able to respond to these emerging needs.
- Experienced workers should have the opportunity to select specialized short courses that are specifically geared to update their skills as their roles in the workforce evolve.

Short courses will benefit employees in the formal and non-formal sectors by providing easier access to training. In addition, short courses in many technical areas can be conducted using existing facilities and human resources in the TVET institutions and, therefore, may not incur significant additional investment.

7.3.3 Adopting a Competency-Based Training (CBT) in the TVET Sector

Structured dialogues between the TVET sector and industries do not generally take place in Ghana. This often causes a significant mismatch of persons trained in the TVET institutions and the skills needed in industries. This mismatch is a major reason for the industrial sector's reluctance to provide financial and technical support to the TVET sector. An appropriate consultation mechanism between the TVET sector and industries thus needs to be formalized.

A Competency-Based Training (CBT) approach is an appropriate solution to the diverse education and training needs for post-secondary and adult students, particularly in technical and skill-oriented programs. CBT is a systematic learning process in which the primary focus is on the students' ability to demonstrate industry-developed competencies. The competencies comprise appropriate knowledge and skills required to perform workplace roles. CBT methodology provides learners with recognition and accreditation of previously acquired knowledge and skills, flexibility in scheduling learning activity, self-paced individualized study determined by the student's learning style, a learning continuum determined by student needs, and the possibility of starting and finishing a program at any time during the year.

CBT systems have been adopted by a number of countries as an effective education and training system to respond to the need for people *entering* the workforce for the first time, *re-entering* the workforce or *upgrading* their skills for an existing job. These countries include Singapore, Canada, Australia, Indonesia, the Philippines and South Africa (refer to the section 6.4).

The CBT approach is based on identified job competencies relevant to the needs of industries. An appropriate CBT system needs to:

- Develop *competency standards* for each industry. The training directions and standards require extensive industry involvement (traditional curriculum has primarily been the responsibility of education and training institutions and centralized bureaucracies).
- Identify *national qualifications* for each industry sector.
- Develop *industry-driven assessment guidelines* for evaluating the achievement of students' competence.

The implementation of a CBT system will allow for a greater emphasis to be placed on direct provider-client relationships. Figure 7.3.1 illustrates the benefit of a CBT approach.

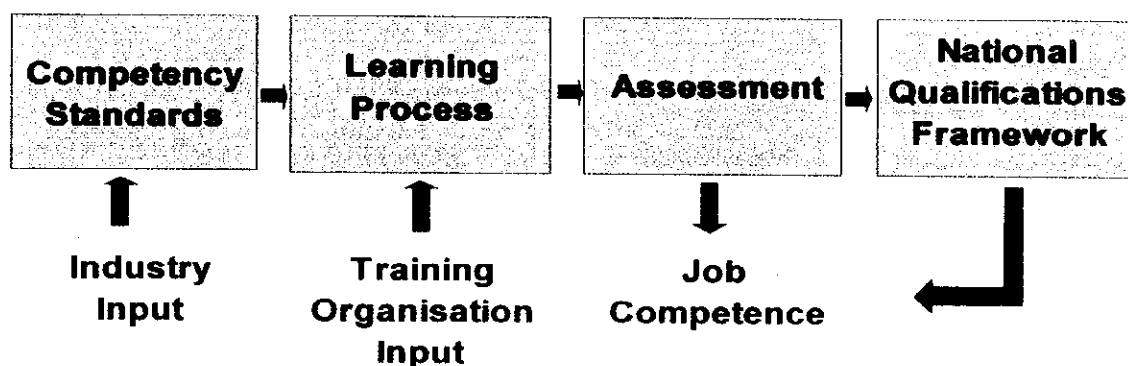


Figure 7.3.1 Benefits of CBT in creating a strong link between industry and training providers

7.3.4 Developing an Industry-Led TVET Sector

Traditionally, curriculum development and maintenance have been the primary responsibility of education and training institutions and central bureaucracies. The Study advocates a significant change from the traditional concept of "curriculum" to the new concept of "Training Packages." Training Packages are developed by industries, for industries. As Figure 7.3.2 indicates, in the formulation of Training Packages, representatives from each industry sector determine the competency standards, assessment guidelines and qualifications that comprise all certified TVET courses. In formulating and maintaining competency standards, substantial collaboration will be needed between industry representatives and key personnel in the TVET sector.

The TVET institutions are responsible for the development of appropriate learning strategies, assessment tools and professional development materials (resources) needed to effectively deliver training to meet the requirements set in the Training Packages.

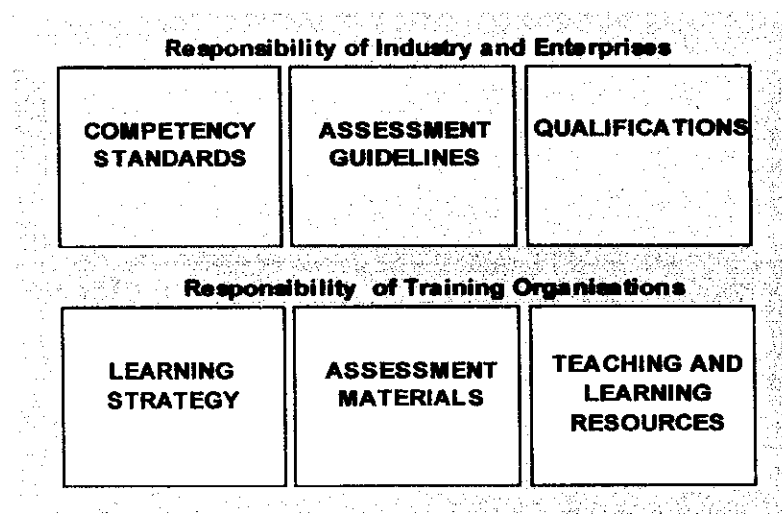


Figure 7.3.2 Industry input and training organization input

7.3.5 Flexible TVET Delivery to Assist Adult Learners and the Informal Sector

Currently the majority of TVET programs offered at formal technical and vocational institutions in Ghana require students to enroll in two or three years of full-time study. In order to achieve certification, students have to complete all subjects prescribed for the courses, and there are very strict requirements (prerequisite qualifications) to enter all courses. There is little recognition of prior learning. There are very few short courses, and it is difficult for people, especially adult learners in the informal sector, to learn new skills and upgrade existing skills in the current system.

Separate components of certificate courses ("modules") can be offered as short courses. Offering a range of short courses would enable much more varied groups of students to gain specific skills needed to perform occupational roles. These roles could be in existing companies and enterprises in the formal private or public sector, in a number of fields in the informal sector.

People from the informal sector, for example, could undertake modules specifically relevant to operating and managing small businesses (“Entrepreneurial Studies”). Upon the successful completion of short courses, students would gain certificates of completion which would stand alone, but this could also give them credits that could be used towards the completion of other related courses within formal certification programs at a higher level.

The aim of offering modular courses in the TVET sector will be to increase flexible delivery of training, which would be of greater benefit to the wider community. The major benefits of such a system include:

- Encouraging more adults to upgrade their skills by enrolling in part-time programs at night, on weekends, or in distance-learning programs
- Providing alternative options to disadvantaged groups, such as employees in the informal sector and people with special learning difficulties or different language requirements.

7.3.6 Establishing Competition amongst TVET Providers

Although it is reasonable to expect that the Government will continue to support publicly funded TVET institutions, the national policy should look towards increasing competition between TVET providers. With clearly defined national curriculum standards, public and private TVET providers will be encouraged to become "centers of excellence" and compete for training delivery.

A more competitive approach, especially if it is accompanied by a system of proper assessment and supervision, will lead to greater accountability. The extent of public funding to TVET institutions will depend very much on the quality of training outcomes. This would provide incentives for institutions to demonstrate and improve their capability, and ensure that student numbers will reflect the quality of the course offered. Benefits of encouraging competition among TVET institutions are:

- Greater choice of TVET providers for Government, industry, business and individual clients;
- The development of more specialized private training providers in new areas where human resource demands are growing in the market force; and
- Competitive efficiencies leading to lower unit costs of operation in TVET institutions.

7.3.7 Creating a National Qualifications Framework (NQF)

Currently there is not a national qualifications framework (NQF) in Ghana that incorporates all qualifications. Each Ministry has its own qualifications system, and there is no articulation between the courses and qualifications provided by Ministries. Even within the qualifications under MOE, there is no articulation between qualifications at technical institutes (TIs) and Polytechnics in the same fields. This means that even if

students have completed a course for Technician at a TI, they cannot transfer any credits they have gained to credits at a Polytechnic. If the students with a Technician certificate wish to pursue a HND, they have to enroll in a three-year course from the beginning at the Polytechnic.

The NQF qualification system will replace the varied TVET qualifications currently offered by MOE, and other Ministries such as MESW and MEST. In the NQF, TVET certification will be developed from the competencies identified by Industry Training Advisory Board (ITAB) in each industry sector.

The NQF will ensure flexible pathways for training participants or students by recognition of prior learning (RPL) credit transfer, and prior experience. The NQF will define linkages between qualifications from one to another upon demonstration of the competencies in course modules.

Figure 7.3.3 provides an indicative description for various levels of TVET courses. In this scheme, the TVET sector is separate from academic schooling at SSS and also the university sector. In fact, there will be TVET courses to be incorporated into these streams, but it is recommended that the names of qualifications, and the management and quality assurance be separately administered from the purely academic courses, because of the nature of TVET courses. Once the competencies are determined for the respective industry sectors, current courses conducted by the various ministerial TVET agencies can be mapped against the competencies in the NQF.

SCHOOLS SECTOR	TVET SECTOR	UNIVERSITY SECTOR
		DOCTORAL DEGREE
		MASTERS DEGREE
		BACHELORS DEGREE
	DIPLOMA (HND)	
	CERTIFICATE IV	
	CERTIFICATE III	
SSS 3	CERTIFICATE II	
SSS 2	CERTIFICATE I	

Figure 7.3.3 New broad categorization of post-JSS level qualifications

7.3.8 Moving the Focus from Quantity to Quality in Tertiary Institutions of the TVET Sector

In recent years, the number of enrolments in tertiary institutions has been growing at extremely high rates.⁵¹ This is a government policy intended to provide more opportunities for people with higher education. This policy is, however, rather questionable, because the present labor market does not require a large number of people with high qualifications. More importantly, the tertiary institutions, such as Universities and Polytechnics, do not have enough capacity to increase the number of students, because of the current size of their teaching staff, their equipment and physical infrastructure. The large number of students will then result in lower quality of education and training. It has been recommended that the policy for tertiary education shift its focus from quantity of students to quality of education and training. At the same time, the demand of the labor market should be carefully monitored in order to estimate appropriate numbers of graduates in tertiary institutions.

By implementing a much more rationalized form of TVET, Ghana should prepare against the foreign threats, that is "internationally competitive foreign goods or industries," by means of the development of more competitive human resources. A rationalized new form of the TVET system in Ghana should provide better quality (not quantity, as presently, there is a weak demand for human resources by the domestic industries) of human resources and should more directly assist the current emerging industrial needs. Consequently, it is said that a future increase in the capacity of enrolments in the TVET sector can only be justified if domestic industry shows strong demand for the graduating students. With the introduction of a more efficient TVET system, the education and training institutes will be left to market mechanisms to a greater extent.

7.3.9 Establishing New Funding Schemes to support the TVET Sector

Generally, public education is one of the most costly services provided by governments in many developing countries. The TVET sector is not an exception, and governments spend a substantial amount of money designing and delivering the TVET. Because of the weakness of the industrial sector in Ghana, the TVET sector has not been supported by the private sector. To cope with these problems, the Study Team proposed new funding schemes to support the TVET sector. These are: 1) a skill development fund (SDF), 2) a Ghanaian emigrants' fund (GEF), and 3) a new student loan. Of course, the new funding programs proposed here need consensus among the Ministries as well as the Ghanaian society as a whole. The MOE, however, should play a leading role in developing new funding programs to support the TVET sector, in cooperation with the private sector.

(1) Skill Development Fund (SDF)

Skill Development Fund (SDF) is a funding program intended to support the TVET sector, and it was first introduced in Singapore⁵² in the 1970s (see section 6.4). The SDF

⁵¹ The enrolment in Universities has increased at an annual growth rate of 16 percent between 1990/91 and 1998/99, and the enrolment in Polytechnics has increased at an annual growth rate of 32 percent between 1996/97 and 1998/99.

⁵² See section 6.4.

in Singapore has been very successful in improving the skills for especially inexperienced workers. The employers participated in the SDF scheme collected levies from their employees whose technical and business skills are not adequate to earn a certain salary⁵³. The levy was originally 4 percent⁵⁴ of the salaries, and the government also provides some subsidies to the SDF. Thus, individual workers benefit from participating in training courses to improve or upgrade their skills. The mechanism of the SDF is illustrated in Figure 7.3.4. Currently, more than 40 percent of the total employees in Singapore participate in the SDF program.

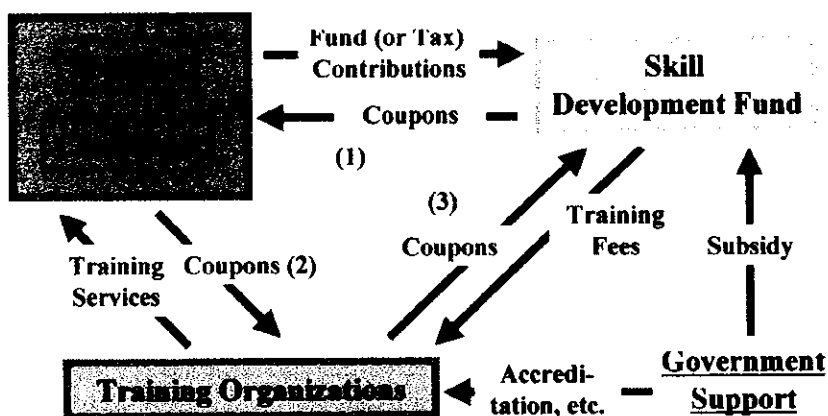


Figure 7.3.4 Framework of Skill Development Fund

In the case of Singapore, the government introduced the SDF scheme into a specific segment of industry, which was expected to be a driving-force in the development of the national economy. A similar scheme can be introduced in Ghana. For instance, Ghana Employers' Association (GEA), an organization that supports the activities of labor unions and human resources development, and Association of Ghana Industry (AGI), an organization to promote activities in industries, would play a leading role in identifying a specific segment of industry which would contribute to Ghanaian economy.⁵⁵ The SDF scheme would be useful for Ghana, because it encourages a linkage between the Government, the TVET sector, and the private sector.

(2) Ghanaian Emigrants' Fund (GEF)

One of the significant aspects in the current Ghanaian economy is the large amount of individual money transferred from abroad, as shown in Table 7.3.1. The amount of individual money transferred from abroad has increased from US\$263 million in 1995 to US\$472 million in 1999. It is assumed that most of the individual money transfers have

⁵³ current S\$1,500/month

⁵⁴ It is now only 1%.

⁵⁵ There are 14 industrial groups in GEA: (1) Agricultural/Fishing Interests, (2) Airways & Transport Interests, (3) Banking/Financial Interests, (4) Building & Civil Engineering Interests, (5) Commercial Interests, (6) Hotel, Catering & Tourism Interests, (7) Insurance Interests, (8) Manufacturing Interests, (9) Mining Interests, (10) Petroleum & Power Interests, (11) Press & Publishing Interests, (12) Shipping/Port Interests, (13) Timber Interests, and (14) Utilities.

in Singapore has been very successful in improving the skills for especially inexperienced workers. The employers participated in the SDF scheme collected levies from their employees whose technical and business skills are not adequate to earn a certain salary⁵³. The levy was originally 4 percent⁵⁴ of the salaries, and the government also provides some subsidies to the SDF. Thus, individual workers benefit from participating in training courses to improve or upgrade their skills. The mechanism of the SDF is illustrated in Figure 7.3.4. Currently, more than 40 percent of the total employees in Singapore participate in the SDF program.

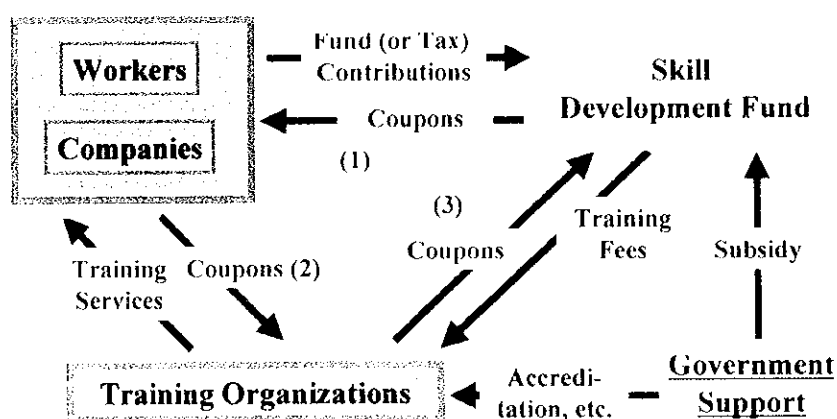


Figure 7.3.4 Framework of Skill Development Fund

In the case of Singapore, the government introduced the SDF scheme into a specific segment of industry, which was expected to be a driving-force in the development of the national economy. A similar scheme can be introduced in Ghana. For instance, Ghana Employers' Association (GEA), an organization that supports the activities of labor unions and human resources development, and Association of Ghana Industry (AGI), an organization to promote activities in industries, would play a leading role in identifying a specific segment of industry which would contribute to Ghanaian economy.⁵⁵ The SDF scheme would be useful for Ghana, because it encourages a linkage between the Government, the TVET sector, and the private sector.

(2) Ghanaian Emigrants' Fund (GEF)

One of the significant aspects in the current Ghanaian economy is the large amount of individual money transferred from abroad, as shown in Table 7.3.1. The amount of individual money transferred from abroad has increased from US\$263 million in 1995 to US\$472 million in 1999. It is assumed that most of the individual money transfers have

⁵³ current S\$1,500/month

⁵⁴ It is now only 1%.

⁵⁵ There are 14 industrial groups in GEA: (1) Agricultural/Fishing Interests, (2) Airways & Transport Interests, (3) Banking/Financial Interests, (4) Building & Civil Engineering Interests, (5) Commercial Interests, (6) Hotel, Catering & Tourism Interests, (7) Insurance Interests, (8) Manufacturing Interests, (9) Mining Interests, (10) Petroleum & Power Interests, (11) Press & Publishing Interests, (12) Shipping/Port Interests, (13) Timber Interests, and (14) Utilities.

been used for purchasing some luxury items such as cars and electric equipment, rather than spending on investments in domestic industries. The Study Team proposed a new funding scheme using some portion of the individual money transfers. This is called the Ghanaian Emigrants' Fund (GEF) that supports development of industries and the education sector, particularly the TVET sector.

Table 7.3.1 Money transfers from abroad

(million US\$)

Year	1995	1996	1997	1998	1999
Transfers from abroad (net)	523.2	481.7	560.0	733.9	620.0
By private individuals (net)	263.2	276.1	400.3	453.8	472.0
By official (net)	260.0	205.6	159.7	280.1	148.0

Source: Annual Report 1999, Bank of Ghana

In the GEF scheme, the Ghanaians living abroad can purchase one of three credits by a certain portion of their remittances. They are: 1) donations to create a micro-credit for improving education infrastructure and development of small-scale enterprises; 2) purchase of created portfolios (shares of listed companies) in the Ghana Stock Exchange; and 3) long-term financial facilities (loans or equity) to develop the domestic industries. The GEF will play an important role in assisting especially small-scale enterprises. As seen in the case of the micro-credit scheme through ITTU⁵⁶, even a few hundred dollars of support provide an excellent opportunity to start small-scale businesses for rural villagers.

The GEF scheme cannot be introduced by the efforts of MOE alone, but it needs discussions and agreements with all relevant stakeholders, including the Bank of Ghana, the Ministry of Finance, the Ministry of Trade and Industry, the Ghana Stock Exchange, and so on.

(3) Student Loans Scheme

The current student loans scheme was established in 1988 and has been administered by the Social Security and National Insurance Trust (SSNIT) under the Ministry of Finance. The purpose of the student loans was to provide financial support to the students at tertiary institutions, including universities, polytechnics and some specialized institutions. The current amount of the loan under the SSNIT was 1 million cedis per student per year, and it will increase to 1.5 million cedis in 2001. To obtain the loan, students need to find three guarantors who have contributed the SSNIT for more than five years.

⁵⁶ CIDA and EU are sponsoring micro-credit projects to give subsidized loans (over 1 year period) of 1 to 8 million cedis for working capital (raw materials) and 7 year loans, up to 28 million cedis for equipment. In addition, ITTUs teach entrepreneurial and technical skills for one to two weeks. (However, up until now there is no assistance by Polytechnics to ITTU for management and skill training on this micro-credit project and it is reported that financial management as good as Gramin Bank's micro-credit has not been achieved yet..)

Since its establishment, the SSNIT has disbursed the loan to 603,000 students⁵⁷. The demand for student loans is extremely high. In fact, almost all students at the tertiary institutions borrow the loan from the SSNIT. There are, however, some difficulties in sustaining operation of the loan scheme:

- Almost no restrictions apply for the loan, such as parents' income and/or students' academic performance, which caused a large numbers of students who are eligible to obtain the loan;
- Limited capability of the Government to pay interest of the loan due to the recent high interest rate of the treasury bill; and
- Low rate of loan recovery due to limited capabilities to collect payments from students after graduation.⁵⁸

Because of inefficient operation of the loan mentioned above, the MOE has introduced a new loan plan to provide financial support to students at all education levels, not only students at tertiary institutions. The Ghana Education Trust Fund (GETF) was established in August 2000 for this purpose. The major source of the GETF comes from the Value Added Tax, with the amount of approximately 60 billion cedis in 2001. The GETF will be used for a variety of purposes, including the development of academic facilities and infrastructure, grant provisions for selected students, operation of students' loan programs, training of prospective educators, research projects and so on. The disbursement of GETF will start at the end of 2001.

The Study Team made the following recommendations regarding student loan programs:

- The loan management should be subcontracted with professional agencies to improve loan recovery.
- Some certificates would be issued by the MOE to prove completion of payment so that graduates can present the certificate to apply for jobs.
- Students can apply for any loan amount up to a ceiling to be determined, so that they receive loans in accordance with their needs.

Figure 7.3.5 illustrates the concept of the student loans program. It has been recommended that the Government spend a larger portion of the budget on student loans students' loan, rather than direct subsidy to the TVET institutions. This scheme would encourage the students to perform better academic achieve to receive loan and also enhance the TVET institutions to select good students. Details of the students' loan scheme were shown in Appendix 7.2.

⁵⁷ The accumulated debt reached 322 billion cedis in 2000, in which 152 billion cedis belongs to the government and 170 billion cedis belongs to the students, according to Interview to Department Head of Student' Loan in the SSNIT

⁵⁸ 26 staff are handling the students' loan in the headquarter of SSNIT, together with at least one staff in 44 district offices over the country.

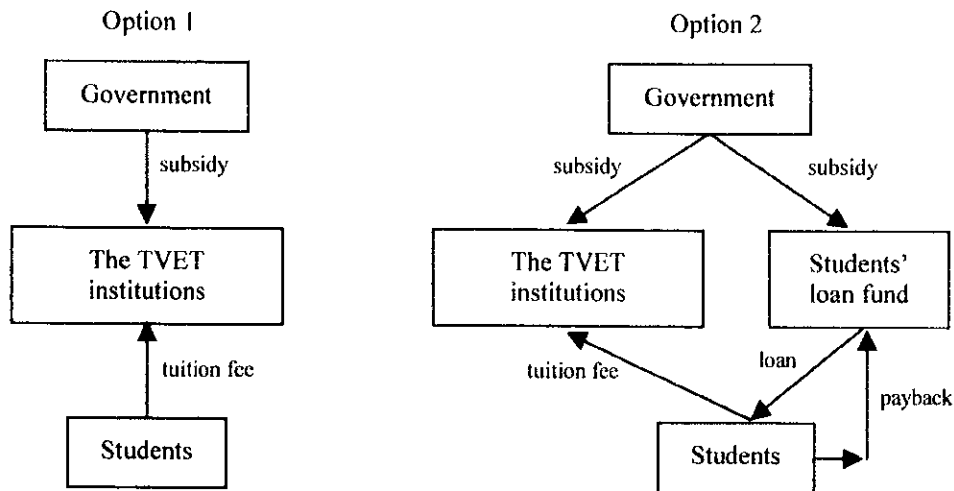


Figure 7.3.5 Conceptual scheme of the Government subsidy to the TVET sector

7.4 Organizational Development

7.4.1 Development of an Appropriate Implementation Framework for TVET Reform

One of the key recommendations in this Master Plan is to introduce a CBT approach as the central methodology of the TVET system in Ghana. CBT is demand-driven and requires that the industrial sector play a significant role. As illustrated in Figure 7.4.1, the Ghana National Training Authority (GHANTA) will be established under the support of Government and industry. A Ministerial Council will be appointed to coordinate inter-ministerial discussions and organization. This Council, together with representatives from the industrial sector, will appoint members of GHANTA. GHANTA will supervise the formation of ITABs, which will develop and set standards for TVET, which would then be instituted in all TVET institutions.

The National Qualification Authority (NQA) will be established to be in charge of the development of national qualifications, in line with competencies identified by the ITABs. All the TVET institutions provide systems for quality assurance of education and training programs by means of feedback in each accredited training organization (ATO) and through the NQA. In addition to the stated consensus on implementation among all the relevant stakeholders - Ministries related to TVET, industry representatives, and training organizations to work under the NQF - the following activities should be undertaken during the transition stage, in addition to developing the basis for the legal framework for the National Qualification Framework.

- Establish the Ministerial Council and GHANTA. Both could be ad hoc committees with members from the relevant organizations.
- Select a few areas to establish ITABs for applying the new management model. The suggested areas would be those emerging industrial areas in Ghana, such as tourism and food processing, where industries will need human resources with appropriate skills and knowledge.

- Courses currently offered across various TVET institutions should be mapped out to fulfill the qualifications set under the guidelines of the National Qualification Framework.
- Establish distinct guidelines for certification in any and all TVET institutions. The focus of these principles is to establish connections between the qualifications in the NQF.
- Establish systems to provide “Statements of Attainment” to verify the achievements of a person in relation to the completed part of a certification. In addition, these systems would institute methods of appropriate assessment that would determine already acquired proficiencies. Institutions would then give students credits based on these.

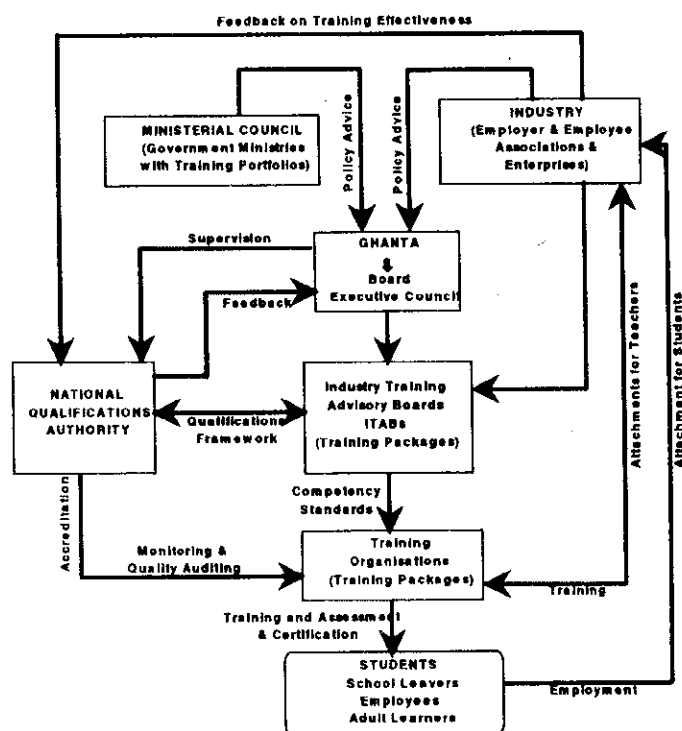


Figure 7.4.1 Indicative model for implementation of national TVET framework in Ghana

7.4.2 Roles and Functions of the TVET Organizations

(1) Ministerial Council

In Ghana, where several Ministries are responsible for the TVET (primarily MOE, MESW and MEST), it is necessary to form a joint body (the Ministerial Council) to represent the Government in the activities of the TVET sector. The Ministerial Council's chief function is to develop and implement policies and procedures. Setting up the Ministerial Council will be an important step to start discussion among all TVET-related Ministries. The Ministerial Council can be an inter-Ministerial committee, which does not need to have permanent staff.

(2) Ghana National Training Authority (GHANTA)

GHANTA will be formed to supervise TVET reform across all sectors in Ghana, and it would consist of a Board and Executive members. The Board should be composed of senior persons with substantial industry experience. The Executive members should be persons with training, industry and academic backgrounds. GHANTA will be responsible for advising the Ministerial Council on TVET planning and also for the administration of national TVET system. Training Packages in the CBT must be approved by GHANTA. In the short term, existing organizations (NCTE and NABPTEX) will be able to assist in setting up and recruiting appropriate people for GHANTA. GHANTA's operations need to be funded in the short to medium term by the Government. Industries will supply the services of a senior staff. In the long term, it is expected that the industries will fund the operations of GHANTA.

(3) Industry Training Advisory Boards (ITAB)

An ITAB will be an incorporated company with a board of directors, targeted for a specific industry sector. During the initial stage, some of the operations of ITABs will be funded by the Government through GHANTA. Industry will contribute by providing staff services for activities such as conducting occupational needs analyses and formulation of training packages. In the long term, the cost of operation of each ITAB will be met by the relevant industry sector.

ITABs will be composed of representatives of employers' associations, unions and representatives of small, medium and large businesses, whose expenses will be paid by the organizations they represent. ITABs will be responsible for developing their standards and assessment guidelines for the Training Packages.

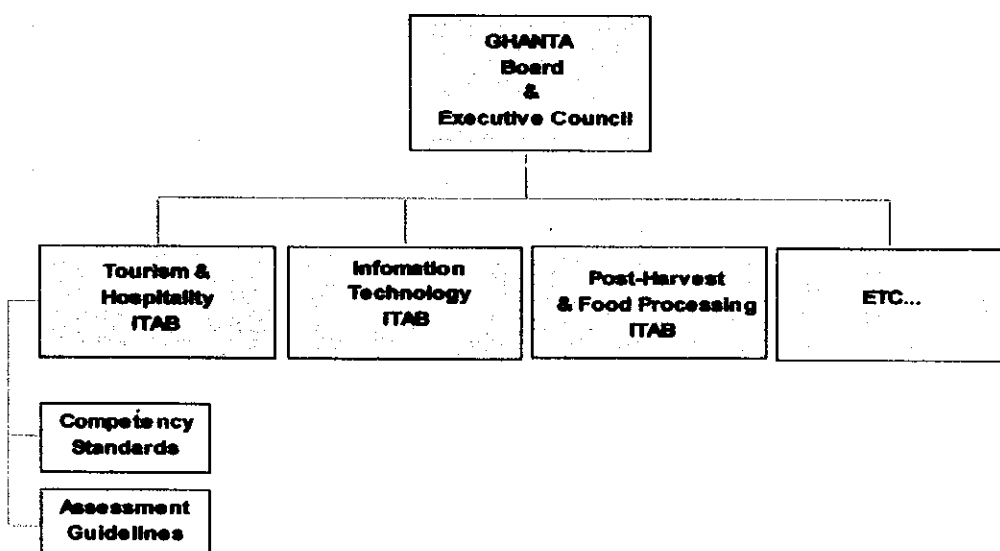


Figure 7.4.2 Working relationship between GHANTA and the ITABs

(4) National Qualifications Authority (NQA)

The NQA will collaborate with the ITABs in the formulation of a National Qualification Framework (NQF). A major shift in emphasis from the traditional TVET system to the

new model is that training organizations will be required to demonstrate the capability to undertake programs at each level for which they wish to be accredited. The NQA will be responsible not only for accreditation of training organizations, but also for monitoring and quality assurance. The current National Accreditation Board (NAB) could adopt the function of the NQA, as long as the dual functions of setting up and maintaining the NQF and providing institutional accreditation are appropriately incorporated. Funding for the NQA would come from the Government.

(5) Accredited Training Organizations (ATOs)

With the implementation of a CBT approach, all current TVET providers, and intending providers, will be provided with the Competency Standards, Assessment Guidelines and Qualifications for each industry sector. Providers (who will be referred to as “Training Organizations (TOs)” within the system) will apply to the NQA for accreditation to teach levels of courses they believe they are capable of offering.

Accredited organizations (ATOs), such as Polytechnics and Technical Institutes, will then be able to form partnerships with other “non-accredited” training organizations (TOs) to share conduct of courses. Training organizations in the non-formal sector will benefit, because they will be able to offer components (or modules) from national training packages. Completion of these modules can lead either to full certification or count towards full certification.

TOs will have to demonstrate that they have both the human resource and infrastructure capabilities to conduct the courses. TOs may or may not be accredited. Only accredited training organizations (ATOs) will be authorized to provide assessment and to issue qualifications as specified in the NQF. The training organizations may choose to conduct any or all levels of certified courses for which they are accredited. The model will encourage the formation of strategic partnerships in which non-accredited training organizations may provide services (training, assessment) to ATOs. Figure 7.4.3 illustrates possible arrangements between training organizations.

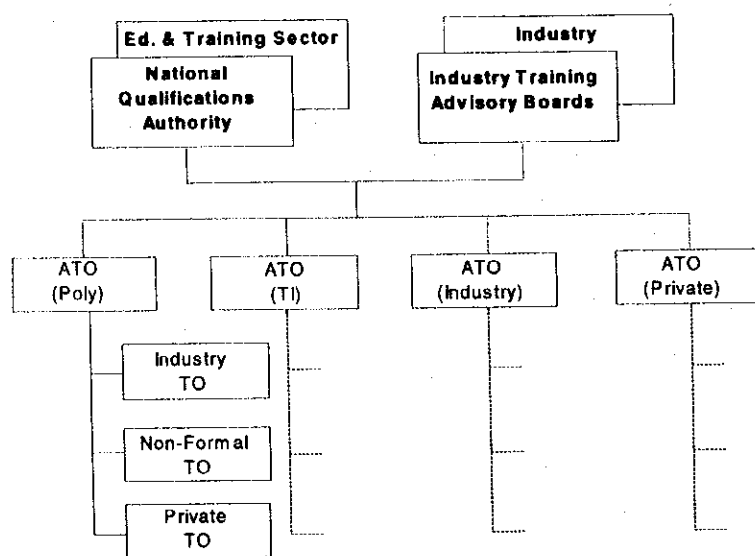


Figure 7.4.3 Possible arrangements between training organizations