

**REFORMING TECHNICAL AND VOCATIONAL EDUCATION: THE
ROLE OF NACTE ON ASSESSMENT AND CERTIFICATION OF
TECHNICAL EDUCATION IN TANZANIA**

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Abstract

It is acknowledged that the provision of technical education and training is regarded as one of the essential pre-conditions for the socio-economic growth and development of any country. In Tanzania, like in many other developing countries, the number of children completing basic education as a result of Universal Primary Education (UPE) programme has increased. However, the majority of these pupils who complete primary education are not selected for further education nor do they join vocational education and training. Consequently they return to the informal sectors where, however, they fail to undertake effective self-employment.

Part of those who excel in vocational education and training and further education (secondary) get admission to technical education sub-sector. For the country to be able to benefit from such an investment there is a need to introduce substantial education policy reform, so that technical and vocational education programmes developed provide the knowledge, competencies, skills and attitudes required in current formal and informal workplaces for the socio-economic national development.

This paper discusses the role of the National Council for Technical Education (NACTE) in coordinating the provision of technical education and training in Tanzania. The paper tries to expound on the NACTE's assessment and certification procedures which aim at assessing and certifying the outcomes (competences) that are needed in the world of work. The reformation aims at producing technical personnel with requisite competences required by the labour market or self-employment to ensure sustainable socio-economic national development.

Introduction

It is acknowledged worldwide that, attaining a faster economic growth requires accelerated development of technical education and training. Therefore, developing countries need to emphasize on the technical education and training as it is an essential element in capacity and competence building for the socio-economic growth and development.

In Tanzania, the number of children completing basic education as a result of Universal Primary Education (UPE) programme has increased but the majority of the graduates are not selected for further studies. These graduates who are still young, need life skills to enable them engage in income generating livelihood. The Tanzania government has decided to direct more investments towards the development of vocational and technical education and training in order to absorb the majority of graduates from UPE programme. The government believes that vocational and technical education assist to build local capacity needed for socio-economic development through the provision of the required skills. To effectively embark on this, the government requires a substantial education policy reform; so that technical and vocational education programmes developed provide the required knowledge, competencies, skills and attitudes in current formal and informal workplaces.

However, in most of the developing countries including Tanzania, technical institutions find themselves subjected to various kinds of pressures. For example, there has been substantially increased participation of private finance in technical institutions. In some countries this manifests itself in a growth of private colleges operating as profit-making enterprises. The growth of such institutions, if unchecked, leads to erosion of quality of technical education. In some African countries, public and private technical institutions have been providing technical education and training using outdated training curricula that do not meet labour market needs. Mushrooming of technical institutions without any central coordinating statutory body is likely to result into poor quality of provision of

technical education and training which is not embracing quality control and quality assurance mechanisms. Consequently, technical institutions will be operating under poor academic management characterized by improper assessment procedures. The list is not exhaustive.

For the case of Tanzania, the National Council for Technical Education (NACTE) has been established by the National Council for Technical Education Act, 1997 (No. 9 of 1997) as a government agency under the Ministry of Science, Technology and Higher Education to bring order to the pattern of qualifications and facilitate the required coordination and consolidates the achievements of technical education and training sector.

Technical Education and Training for Sustainable National Development

The objective of education and training is to impart, mainly in young people, the knowledge and skills necessary to enable them contribute effectively to the socio-economic development of their communities, and ultimately that of the country. In Tanzania, majority of its people are semi-educated. As long as the majority of Tanzanians remains without adequate knowledge and skills that can be used to develop the various sectors of the economy, underdevelopment will prevail. Education and training is thus a necessary prerequisite to sustainable development.

For education and training to ensure sustainable development, it must be responsive to needs of the society, technological progress and globalization trends. Design of training programmes must therefore be based on thorough and proper training needs assessment.

In order to ensure that technical education and training develops to the extent of adequately subscribing to national development, the following must be in place:

- (i) Enhanced delivery of the training;
- (ii) Enhanced training facilities;
- (iii) Mechanism for assessing training outcomes;

- (iv) Enhanced opportunities for graduates; and
- (v) Enhanced link with higher education systems.

Enhancement of the delivery of training includes; having proper staffing, flexible curricula, adequate and proper instructional materials, stakeholders/ employers involvement, etc. while enhancement of training facilities on the other hand requires provision of training tools, adequately equipped workshops/production units, libraries and other training resource centres. Assessment of training outcomes entails carrying out; training needs assessment and labour market studies. In order to enhance opportunities for graduates, training should embody; business aspects, commercial and service sector, apprenticeship placement and support, technical support and skills upgrading/updating. And, in order to enhance link with higher education systems, technical education programmes should lead to higher qualifications, while encouraging research and offering high-level of specialization.

In the light of the above propositions, it is therefore necessary amongst others; to make sure that technical institutions have appropriate mechanism for assessing training outcomes to facilitate a necessary strategy for empowering people to contribute to sound sustainable national development through their occupations and other areas of their lives in the face of the fast changing technology.

The Tanzania Education System

The formal education and training system in Tanzania starts at primary education level and continues through Ordinary level secondary school education, Advanced level secondary school education, and ends at University level. Learners, who fail to follow this academic ladder, for-example those who end at primary or secondary Ordinary level, might join vocational education and training leading into a certificate in vocational education. Part of those who join vocational education and further education get admission to technical education. A study conducted by Eastern and Southern African Universities Research Programme ESAURP in 1993, shows that there is an increasing tendency for Ordinary level students who miss a chance to join Advanced level

secondary education to join vocational education and training from where they can progress upwards in the profession.

In the early seventies, the Government of Tanzania committed itself to provide primary education to all young Tanzanians. However, the majority of students who complete primary education are not selected for further education nor do they join vocational education and training, so they return to the informal and rural sectors where, however, they fail to undertake effective self-employment. This results into increased rate of unemployment for young people.

In its effort to reduce un-employment problem, the government took a comprehensive programme towards employment creation. The approach recognizes the immense ability of the informal sector to create employment opportunities, and the need to encourage and promote self-employment to reduce high unemployment rates existing in Tanzania. Thus, for the country to be able to benefit from such programmes much efforts must be made to include enhanced vocational and technical education and training skills in the curricula in order to equip young people with skills, expertise and know-how relevant to work/life requirements. Adequate and proper education stimulates development and generates employment opportunities.

Background to Reforms in Assessment System and Certification of Technical Education

Before the establishment of NACTE, individual institutions in Tanzania were offering technical education and training without any central coordinating organ. The situation has resulted into mushrooming of tertiary technical education institutions offering similar course programmes and in some cases with overlapping of disciplines. Institutions have been offering awards ranging from certificates to advanced diplomas. However, a diploma from one institution for example, was not necessarily comparable in standard to that offered by another. Hence, lack of uniformity in the standards of the awards offered led to lack of a nationally recognized and transferable set of qualifications. Standards describe the skills, knowledge and values required for a person to perform effectively in

the workplace. Standards portray quality and help both the training provider and the learner to be focused in their training bearing in mind that whatever the learner does in the classroom/workshop or laboratory, will be assessed against the established standards. The lack of uniformity in standards of awards therefore, brought confusion to various stakeholders in many ways.

Students, for instance, find that the qualifications obtained in one institution are not recognized by another, frustrating their desire to progress from one cognate area of study to another or to higher levels of achievement. Employers, on the other hand, had difficulties in interpreting the capability of graduates from various institutions. The problem has made recruitment of respective graduates even more complex, making it necessary for the establishment of a central body to guide the creation of a coherent set of awards.

Furthermore, technical institutions have been offering same course programmes for same level without uniform training curricula. Every institution developed its own curricula for the established course programmes at various levels. Most of these curricula are static and do not meet needs of current growing market economy. Also, they were developed without undertaking any analysis of the skills needed in the occupational sector. Consequently, it made assessment of technical education and training face the problem of meeting the required training in relation to labour market demands. Curriculum reviews and reforms are virtually critical elements in coping with the dynamism in global environment. Continuous monitoring of the curriculum during its implementation is vital in order to ensure that the curriculum remains relevant in respect of market demands. A good curriculum therefore is that which is updated routinely and periodically to satisfy changing market demands.

Assessment procedures established by most of the institutions have been focusing on traditional knowledge base, whereby more emphasis was put on didactic teaching methods. Students therefore, were treated as empty-slates who mainly needed to reproduce what they learnt from their teachers during their final examinations. As a result, technical institutions produced graduates who were not capable to testify as to

what they could do in the world of work. The subsequent sections discuss about NACTE efforts on reforming assessment and certification of technical education with specific to technical institutions (tertiary non-university institutions) falling under its ambit.

Reforms in Assessment and Certification of Technical Education and Training

Upon its establishment, NACTE, among other things, was given legal mandate within the public sector and other interested private sectors, to approve curricula, examinations, and awards for autonomous non-University institutions and to conduct and set examinations for other non-autonomous institutions; confer certificates, diplomas, degrees, and other related awards to students who have completed and passed their courses.

NACTE defines technical education “as education and training undertaken by students to equip them to play roles requiring higher levels of skills, knowledge and understanding, and in which they take responsibility for their areas of specialization”. NACTE is thus a multi-disciplinary and multi-sectoral body empowered amongst others to:

- (a) Ensure overall coordination of technical education and training in Tanzania;
- (b) Establish and institute systems of quality control and quality assurance in all technical education and training institutions;
- (c) Ensure the relevance of technical education and training to labour market demands; and
- (d) Bring order to the pattern of qualifications offered by technical education institutions by establishing a national system of awards.

NACTE has within its scope all tertiary education institutions, other than universities and their affiliated colleges, delivering courses at technician, semi-professional and professional levels. NACTE complements two other bodies with the responsibility of education and training which are Higher Education Accreditation Council (HEAC) that deals with universities and their constituent colleges and Vocational Education and Training Authority (VETA) that caters for skills provision (crafts) at post primary level.

In discharging its statutory functions pursuant to its establishing Act, NACTE has established a framework towards the creation of modular curricula to reform the existing curricula. NACTE intends to make sure that the curricula become flexible and meet the major function of ensuring the availability of appropriate programmes related to occupational needs. The curricula will run the modules on semester bases and will consider a credit-based system, which will allow flexible assessment, based on smaller units of work.

Establishment of Competency-Based Assessment Approach

Assessment practice to be valid, reliable, consistent and fair, should testify to what a learner can do after acquisition of the required knowledge necessary to apply the competence or skill flexibly.

NACTE is aware that the challenges facing technical education today under the current globalization of the economy and increasing labour market competitiveness demand competence based training rather than the existing traditional knowledge based. The basic reason to this move is that technical awards essentially should testify as to what a person can do to enhance his/her national development. The awards should also demonstrate that a qualified person possesses knowledge necessary to apply the competences or skills acquired flexibly to the standards required in employment (the competency-based approach of assessment). The competences should be based on occupational standards. The standards should form the basis of the awards that will be offered and the nature of assessment undertaken. The standards should also be based on the nature of the main occupations within each of the areas of study. The occupational standards in the form of units/modules based on occupational roles should therefore specify competence-based performance and the level of knowledge and understanding required in employment.

NACTE is mandated by its establishing Act to set and administer examinations for the non-autonomous technical institutions and to approve examinations set and administered by autonomous institutions. However, the two systems will result in awards that will be

approved by NACTE. The subsequent section outlines NACTE's mode of examination assessment and course delivery.

Mode of Assessment and Course Outlines

NACTE examinations focus on assessing smaller units of activity that can be credited towards the final award at any given level. NACTE believes that such certification of individual units will encourage updating of skills when a student or employee needs to acquire the skills or knowledge contained in one or a group of units rather than a complete course. Two types of modules which will allow the competencies required by the occupational standards to be demonstrated will be developed and these are:

- (i) Ordinary Modules for theory and practical examinations that will be assessed by individual institutions (as per regulations set by NACTE), in a form of College/Institution-based Assessment or Continuous Assessment (CA); and
- (ii) Applied Modules that will need students to demonstrate their abilities to apply the acquired underpinning knowledge and skills in problem solving/work situations. These modules will be examined by NACTE through final examinations.

The two modes of assessment were developed in order not only to measure the academic or professional achievement of students but also to ensure that there exists an appropriate procedure to monitor and enable improvements to be made on the quality of teaching within the departments as well as across the institution. NACTE believes that it is through both Continuous Assessment and final examinations results that decision makers can be able to measure objectively students' attainment.

Performance on college/institution assessment (CA) will determine whether the student should be promoted from one year of training to the next, whether he/she should repeat certain module(s) or a year, and whether he/she should be discontinued from studies. In

realizing the significance of the continuous assessment, NACTE has prepared general guidelines on the conduct of CA that will be used by technical institutions. The guidelines set the minimum requirements; but it is left to teachers to apply their professional knowledge and experience to add some more inputs. The CA scores obtained by each candidate in each module from various modules assessed will be recorded in special forms that will be supplied by NACTE. After compilation of the CA, institutions will be expected to submit them to the Council. It should be noted that the supreme purpose of such crucial undertaking is to ensure that graduates of technical training programmes possess requisite knowledge, abilities and skills which will measure up to acceptable levels of achievement in a particular profession and therefore, be marketable in the world of work.

Establishment of National Technical Awards (NTA)

In the light of the absence of equitability in similar qualifications for the workplace, NACTE has initiated efforts to bring order to the pattern of qualifications in the tertiary technical education and training and to ensure its relevance to labour market demands.

So far, NACTE has established a range of awards to be conferred to successful students for various fields of technical education and training. The awards are known as the National Technical Awards (NTA). The NTA are competence based, to enable the holder to testify as to what he/she can do after a successful completion of all modules in a course undertaken. In order to allow flexibility and maintain student's progression, NACTE has the opinion that the time spent on a course should not be the main criterion for achievement, rather assessment procedures, which can demonstrate those measurable levels of competence and knowledge achieved. Furthermore, the NTA are designed to testify that the holder of an award possesses the requisite knowledge necessary to flexibly exhibit competences or skills in the relevant occupational sector.

The NACTE award system has seven levels and is linked to the three levels of the Vocational Education and Training system coordinated by the Vocational Education and Training Authority (VETA). The linkage between the two systems is meant to enable an

individual to progress from the lowest National Vocational Training Award (NVTA) level in the VETA system to the highest National Technical Award (NTA) level in the NACTE system over a period of time. In other words, one should be able to progress from the VETA system through the NACTE system upwards. Thus the holder of the VETA highest level is able to progress to the NACTE system and be able to obtain the highest level in the respective qualification system.

Undoubtedly, to face the global development challenges, countries will need people equipped with the necessary knowledge, skills and values to adjust readily to multiple career changes. Under NACTE awards system, people whose careers were blocked because of their previously acquired informal knowledge and skills or through work experience, who were not recognized for admission to further learning opportunities, or for employment purposes will have the access to denied opportunities. Consequently, the mobility within education and training will be achieved.

Qualification linkages enable individuals to move from one qualification to another in more efficient and effective learning pathways. Qualification linkages also provide a mechanism for creating more open and accessible opportunities; and encourage the provision of more and higher education and training that normally meet workforce requirements and vocational/technical needs, thus contributing to national economic performance.

For the Primary school leavers to join the NACTE system they will have to go through the VETA system successfully or through Ordinary Level Secondary School system before they can join the NACTE system at NTA Level 4, as illustrated in the table below.

Table 1: NACTE’s NTA Levels Synchronised with VETA’s NVTA Levels to Provide Framework for Progression through the Eight Levels

Type	Award Level	Minimum Entry Level	Title of Award
Vocational (NVTA)	Level I	Standard VII	Trade Test Grade III
	Level II	Level I	Trade Test Grade II
	Level III	Level II	Trade Test Grade I

Technician	Level IV	Form IV/Level III	Pre-Technician Certificate
	Level V	Level IV	Technician Certificate
	Level VI	Level V	Ordinary Diploma
Semi-Professional and Professional	Level VII	Level VI, FTC, or Ordinary Diploma	Higher Diploma
	Level VIII	Level VII	Bachelors Degree (e.g. B. Technology)
	Level IX	Level VIII	Masters Degree (e.g. M. Technology)
	Level X	Level IX	Doctorate Degree (e.g. D. Technology)

Through the above intended NTA levels synchronization one should be able to progress from the vocational level through the technician level to the professional level.

The National Technical awards are competence-based. Competence is associated with clear ability to successfully carry out some occupational activities and is described in terms of skills, attitude, and knowledge as well as typical context and level that a person who possesses such competence could work in.

Each NTA level has specific Competence Descriptor. The descriptors set out the characteristic generic outcomes of learning for the level of award. They provide a general, shared understanding of each level and allow broad comparisons to be made between qualifications. They are not intended to give precise or comprehensive statements with regard to particular subject areas and it is not expected that each qualification or programme should have all of the characteristics.

NACTE assessment system aims at assessing the competences sought for every NTA level as detailed below.

NTA Level 4: Pre-Technician Certificate

Learning Outcome: Competence involving application of skills and knowledge at routine level.

Wider Ability Developed: Holder of this qualification will be able to:

- Work alone or with others in directed activity;
- Work alone or with others on tasks with close supervision.

NTA Level 5: Technician Certificate

Learning Outcome: Competence involving application of skills and knowledge in a range of activities, some of which are non-routine.

Wider Ability Developed: Holder of this qualification will be able to:

- Work alone or with others in directed activity;
- Under general supervision and quality control;
- With some responsibility for guiding others.

NTA Level 6: Ordinary Diploma

Learning Outcome: Competence involving application of skills and knowledge in a broad range of work activities most of which are non-routine.

Wider Ability Developed: Holder of this qualification will be able to:

- Work alone or in a team in directed activity with some autonomy;
- Work under general supervision and quality checking;
- Work with significant responsibility for the quantity and quality of output;
- Manage limited resources within defined areas of work;
- Work with possible responsibility for the output of others.

NTA Level 7: Higher Diploma

Learning Outcome: Competence involving the application of knowledge and skills in a broad range of complex activities, a high degree of personal responsibility and some responsibility for the work of others.

Wider Ability Developed: Holder of this qualification will be able to:

- Work alone or with others in self-directed activity;
- Work under broad guidance and evaluation;
- Work with complete responsibility for quantity and quality of output;
- Work with possible responsibility for the quantity and quality of the output of others in defined areas;
- Exercise some initiative and independence in carrying out defined activities at a professional level.

NTA Level 8: Bachelors Degree

Learning Outcome: Competence involving application of knowledge and skills in a wide and unpredictable variety of context with substantial personal responsibility, responsibility for the work of others and responsibility for allocation of resources, policy, planning, execution and evaluation.

Wider Ability Developed: Holder of this qualification will be able to:

- Work alone or with others in self-directed and sometimes directive activity;
- Within broad general guidelines or functions;
- With full responsibility for the nature, quantity and quality of outcomes;
- With possible responsibility for the achievement of group outcomes;
- Possible responsibility for allocation of resources, policy, planning, execution and evaluation;
- Exercise autonomy and initiative in some activities at a professional level;
- Delegating functions to technicians and peers.

NTA Level 9: Masters Degree

Learning Outcome: Competence involving mastery of a complex and specialized area of knowledge and skills to conduct advanced technical or professional activity.

Wider Ability Developed: Holder of this qualification will be able to:

- Exercise ability of initiative, creativity and personal responsibility;
- Exercise substantial autonomy and initiative in professional and equivalent activities;
- Take significant managerial or supervisory responsibility for the work of others in defined areas of work;
- Take continuing account of own and others' roles, responsibilities and contributions in carrying out and evaluating tasks;
- Work in support of current professional issues in accordance with current professional and/or ethical codes or practices;
- Demonstrate originality or creativity in the application of knowledge, understanding and practice.

NTA Level 10: Doctorate Degree

Learning Outcome: Make a significant and original contribution to a specialized field of technology and demonstrating a command of methodological issues and accepting full accountability for outcomes.

Wider Ability Developed: Holder of this qualification will be able to:

- Exercise autonomy and initiative in professional or equivalent activities;
- Take full responsibility for own work and/or significant responsibility for the work of others;
- Demonstrate leadership and originality in tackling and solving problems and issues;
- Work in ways, which are reflective, self-critical and based on research;
- Deal with complex ethical and professional issues in accordance with current professional and/or ethical codes of practices;
- Recognise the limits of these codes and seek guidance where appropriate;
- Deal with complex ethical and professional issues and make informed judgments on issues not addressed by current professional and/or ethical codes and practice.

Given the necessity for new relationships between education, the world of work, and national development, NACTE would like to ensure that technical education exists as

part of a system of lifelong learning adapted not only for the needs of Tanzanians for their national development but also for the African community at large. In this regard, NACTE has established NTA system in order to:

- (a) Abolishing barriers between levels and areas of education, between education and the world of work and between school and society through:
 - (i) appropriate integration of technical and general education at all levels;
 - (ii) creation of open and flexible educational structures;
 - (iii) taking into account of individuals' educational needs, the evolution of occupations and jobs recognizing work experience as part of learning.
- (b) Improving the quality of life by creating a learning culture that permits the individuals to expand their intellectual horizons, to acquire and to constantly improve professional skills and knowledge and to engage positively in society to utilize the fruits of economic and technological change for the general welfare.

NACTE believes that technical education should begin with a broad base that facilitates horizontal and vertical articulation within the education system and between technical institutions and the world of work thus contributing to the national development. Although the proposed system of awards is mandatory to all technical institutions accredited by NACTE, it will be of benefit if all African institutions offering technical education similar certification system proposed in this paper so as to facilitate the mobility of graduates entering the labour market, whose qualifications will be recognized wherever they go.

Conclusion

If technical education and training is to contribute to the development of a country, it must be responsive to the needs, technological advancement and globalization trends. Training programmes must therefore be based on a thorough and proper training needs assessment. What NACTE is trying to do in its role of establishing proper technical

examinations and awards structure is to put in place a system to enable technical education institutions to produce graduates who will meet the demand of the labour market or enable them to become self-employed and thereby contribute effectively to the social and economic development of their country.

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