

THE TECHNICIAN FROM THE D.T.C.

By: C.L. Abayo*

Many students who graduate from technician courses such as the old O.T.D. or the present full technician certificate course at the Dar es Salaam Technical College have suffered and are suffering various job misplacements and various misappropriations in industries. Some are placed in jobs that can only be performed efficiently by engineers; while some end up in trades that are meant for craftsmen and does not require the sort of training a technician undergoes. This article intends to enlighten the reader on who is a technician in Tanzania today and how he compares with both the science and educated engineer and the craftsman trained on the skills.

Technician is the mediator between the engineer and the craftsman. He is trained so as to be able to interpret engineering sketches into a language understood by craftsman who finally puts them into technical realities through his knowledge of skills. A brief historical sketch on technical education in this country will verify this difference.

Trade education started in Ifunda and later on in Moshi as early as 1948 enrolling successful Std. VIII (approximated to Std VII of today) for three year trade education in various crafts. Later on in 1957 Ministry of Works initiated a technician training programme which enrolled successful ex-std XII (equated to form IV) for three year technician education in Building and later on in Mechanical and Electrical fields. The graduates of this programme were employed as factory foremen, building foremen, etc. supervising several craftsmen. Then in 1964 University of East Africa initiated an Engineering education programme at its Nairobi campus enrolling for successful ex-form VI also for three years education in various Engineering disciplines. As for the Ministry of Works this categorization has been the major guideline for formulating the proper scheme of service for the technological personnel.

In the above sketch we can draw three main differences between the engineer, the technician and the craftsman.

*Principal, Dar es Salaam Technical College.

One is that there is a prerequisite of certain knowledge of the natural sciences to enable the student to understand the technology involved in each category. In other words, minimum knowledge of natural science is required for trade education and more sophistication on natural sciences in the engineering education. Secondly it is assumed from the sketch that concentration on manual skills also differ in each category: more on the trade education and less on the engineering education. Finally the emphasis on the technology also differ. While the trade scholar is given a clear- simple ready made technology, the engineering scholar is given intrinsic tools to be able to answer the "whys" and then the "hows" and finally the "whats" in technological problems. In many cases the less sophisticated "whys" and several "hows" and "whats" are covered in the Technician education.

The technician education at the Dar es Salaam Technical College is given under the emblem of Full Technician Certificate (F.T.C.) Course in Mechanical, Electrical Civil and Electrical and Tele-communication fields. This course resulted from the amalgamation of both Ordinary Technician Diploma and Higher Technician Diploma of the City and Guilds of London Institute, with more emphasis on Local industrial technological requirements. The students undergo basic curriculum in the first and second year and then take specialized option in the third year. For example in F.T.C. Mechanical Engineering programme all students take a common core in the 1st and 2nd year then specialize in Air Conditioning and Refrigeration option, or Automobile Maintenance and Repair Option, or production technology option. This is elaborated below for each department:

FULL TECHNICIAN'S CERTIFICATE

MECHANICAL	ELECTRICAL	ELECTRONICS, COMMUNICATION	CIVIL
<p>1st Year: Mechanical Engineering Science; Electrical Engineering Science Workshop Technology & Practice Engineering Drawing & Design Mathematics Physics English & Political Education</p> <p>2nd Year: Mechanical Engineering Science Electrical Engineering Science Workshop Technology & Practice Engineering Drawing & Machine Elements Mathematics Physics (Terminated in June) English & Political Education Power Production Automotive Technology and Repair Industrial Orientation</p> <p>3rd Year: Mechanical Engineering Science Engineering Drawing & Machine Elements Mathematics Power Production *Automotive Tehnology and Repair *Air Conditioning & Refrigeration *Production Technology & Practice *Options, one of which must be chosen by the student.</p>	<p>1st Year: Subjects: Electrical Engineering Science Mathematics Electrical Engineering Science Workshop Technology Engineering Drawing Political Education Physics and Chemistry English</p> <p>2nd Year Subjects: Electrical Engineering Science Mathematics Mechanical Engineering Science Workshop Technology Engineering Drawing Political Education Physics Power Utilization Power supply Switch/Control</p> <p>3rd Year: Subjects: Mechanical Engineering Science Mathematics Power Utilization Power Utilization Switch/Control Political Education</p>	<p>1st Year Subjects: Mathematics Physics Circuit Theory Elementary Telecomms Practice Engineering Drawing English Political Education</p> <p>2nd Year: Mathematics Circuit Theory Electronics Elementary Telecomms Practice Measurements Measurements English Political Education</p> <p>3rd Year: Mathematics Electronics Circuit Theory *Specialist Papers Economics (Subsidiary) *Specialist Papers: (1) Radar and Microwaves (2) Telephony and Telegraphy (3) Radio Transmission and Reception (4) Computer Engineering (5) Television Engineering (6) Acoustic Engineering (7) Industrial & Control Engineering (8) Measurements.</p>	<p>1st Year: Mathematics Physics & Chemistry Mechanics (Statics & Dynamics) Architectural Drawing Building Construction Properties of Materials Surveying Workshop Technology and Practice Political Education English.</p> <p>2nd Year: Mathematics Building Construction Properties of Materials Quantity Surveying Theory of Structures Workshop Technology and Practice Political Education English.</p> <p>3rd Year : Common Subjects: Mathematics Management and Supervision Industrial Orietation Political Education English</p> <p>Structural Option : Elementary Structural Analysis Structural Design and Detailing Reinforced Concrete Construction Building Construction Soils and Foundations</p> <p>Highways Option : Route Surveying Reinforced Concrete Construction Highway Dralting Soils and Foundation Geology and Drainage.</p>

Throughout the course work integration of theory and relevant practice is a desired ideal though not easily achievable due to many factors. One of the main factor is lack of training facilities at the College. This however, is being solved since the College is being expanded physically and by the end of 1975 the College will have adequate physical training facilities to graduate 250 technicians yearly.

Another major factor is that of Industrial participation in the training programme. Many industries in the Nation don't find it their responsibility to participate in the training programme. They only wait for ready made technicians and some are even courageous enough to demand tailor made technicians without employing any effort in the tailor-making process. This problem is also declining and several industries have already shown and are showing more interest in the training programme. Several are already members curriculum development committees in the departments of the college.

A certain ratio of students can be sponsored by organization as from the second year and quite a good number is left for the open pool to be allocated to the industries at the end of the course. To sponsor a student the industry first of all seeks an approval from the Ministry of Development and Planning and when the approval is granted, thus the request being in line with the national manpower development plans, the industry then sends application for available spaces to the Central Establishment. After the number of spaces is granted, the organization then calls at the College to interview prospective interested candidates for the sponsorship. The sponsor pays for the students tuition fees and accommodation and has the guarantee of having that student after his graduation. Another advantage of sponsorship is that the student is acquainted with or oriented to his future working place during vacational employments and industrial training sessions. This orientation is very helpful in the effective placement of the student after graduation.

These technicians should be appointed as technicians in the fields relevant to their course of study. They normally work under the direction and supervision of engineers. (Personal Managers and Officers should consult "International Standard Classification of Occupations, 1968" under major group O/1 Classification from O-32.10 to O-39.90 excluding O-33.40 for a more detailed description of various types of technicians). The City and Guilds syllabus

separated the technician education into two levels viz Ordinary Technician Diploma (O.T.D.) and the Higher Technician Diploma (H.T.D.) . This leads to two different salary scales and different remuneration schemes to the two levels. Duration covered by both levels was five years on sandwich or day release program. At the end of the final program the graduate was awarded Full Technological Certificate, of the City and Guilds of London Institute.

Dar es Salaam Technical College found no validity for the separate technician levels and initiated a combined training syllabus for both to be covered in three years full time program. This means that it took the highest level. In other words Full Technician Certificate of the Ministry of National Education is equivalent to the Full Technological Certificate of C. & G. of London Institute. This means that the Dar es Salaam Technical College is no longer graduating O.T.D. or H.T.D. This also means that the salary scale for the present college graduates should be similar to that of Full Technological Certificate Holder and not to O.T.D. holders. The college appreciates the organizations that have already realized this change, such as Radio Tanzania to mention only one and we hope that many organizations will soon realize this and begin going the TANZANIAN WAY.

One more feature to the Nations Technician program is that the curriculum is also geared for further studies. The writer is convinced that a good successful graduate of the F.T.C. program from the College is betterly prepared for an engineering degree than a good successful H.S.C. (form VI) with science subjects. Since this is rather controversial, I won't indulge too much on explaining how but welcome any criticism around a forum table.

This article is but a glance to the technician who comes out of the Dar es Salaam Technical College. Much effort and valuable time have been spent in trying to make his training programme a success. We hope you will also play your part in furthering his search for more technologies and contribute whenever possible to his training programme. The nation needs him badly - Play your part.