TECHNICAL EDUCATION IN AN INDUSTRIALIZING SOCIETY

The Need for Planning

The seminar noted that there is little or no policy regarding the importation of technology in most countries of Commonwealth Africa. Thus, not only are considerations not given to environmental hazards resulting from use of imported equipment but standards of equipment vary greatly. This situation makes the purchasing of spare parts and routine maintenance difficult and expensive, especially in the face of prevailing foreign exchange problems. It was suggested, therefore, that thorough planning should be carried out by each country before it begins to adopt any new technologies. The nature of the planning advocated by the seminar includes a survey of the needs of industries, availability of spare parts and the feasibility of setting up maintenance services.

It was noted that the needs of industry may run counter to the needs of the individual. This is particularly evident in training, safety and health. It was suggested that training should make the individual adaptable and able to carry out innovations when necessary. As regards individual choice of career, the meeting felt that the manpower planning machinery could lay special emphasis on areas of need where there are short falls, and on incentives, remuneration and status.

It was also felt that planning should be seen as a joint responsibility of government, industry and educational institutions. Unless close co-operation exists between these bodies, graduates of institutions are unlikely to be fit for the jobs offered by industry. Besides, lack of co-ordination could easily result in uncritical importation of unreliable or useless equipment.

Status and Remuneration

Reconizing that in general status and remuneration appear to be determined by the value system of society, the meeting noted that in most countries of the Third World, craftsmen and technicians are underpaid in relation to the contribution which these people make to the welfare of society and to the national economy. This situation has led to acute shortages of manpower at the technician/craft level, and the meeting therefore drew attention to the need for governments to devise suitable pay structures to remedy the situation. In connection with pay incentives, it was suggested that salary scales need not be made directly proportional to pay. By and large, status in member countries appears to be linked with paper qualifications, and jobs involving manual skills tend to rate low in salary determination and promotion prospects.

In order to give proper recognition and reward to technicians and craftsmen who normally operate at the lower levels of industry, a change in society's attitude is required. It was suggested that training programmes for all who work in industries should be designed in such a way as would give future management personnel a measure of experience at the shop floor

level. It was mentioned also that every encouragement should be given to workers to take pride in their work and hence to strive for a proper balance between job-satisfaction vis a vis status and remuneration. One way in which this could be done is by encouraging the formation of occupational associations and student chapters of national professional associations for example, the Institution for Civil Engineers, to develop pride in their profession.

Counselling

The meeting observed that there is confusion over the use of the term "engineer", a fact which gives rise to a number of difficulties when a technical student is faced with choice of a career. The meeting suggested, therefore, that career information should include details of work done by engineers, technicians, and craftsmen, the contribution which such personnel make to society, their career prospects. The meeting also recognized the importance of continuous guidance and counselling of trainees in technical institutions, and recommended such practices where they do not yet exist. Further, in counselling, students in industrializing, developing countries must be encouraged to see that while their individual needs should be recognized and respected, social needs may have to take precedence over their individual needs (especially in cases where the state bears the cost of training). National Manpower Boards should be set up, whenever they do not yet exist, to formulate the necessary control policy regarding training field.

Curriculum Development

Technological changes in manufacturing, distribution, marketing and services require changes in the skills required by the labour force. These changes in skills mean that if students are to be employable and are to perform satisfactorily, curricula in technological institutions have to be up to date and imaginative. To help achieve this, industry should be involved in the design and implementation of curricula which reflect the needs and resources (culture, technology, materials, human resources) of the community, and an exchange system involving staff of industry and education should be established. Teachers from institutions should be attached to industry for short periods and vice versa. This interchange should occur at all levels of training. Another way by which institutions could turn out the right type of product is to create opportunities for trainees to get involved in projects which stimulate real-life situations of entrepreneurship.

Education and Training of Technicians

Continuing education and training helps not only to update skills but stimulates interest especially in career technicians. It was suggested that both industry and educational institutions should be encouraged to realize the importance of retraining for the personal development of the individual and for economic development in general, and also for the creation of an appropriate atmosphere where technological personnel can acquire managerial and administrative responsibilities. Such retraining should, whenever possible, consist of short courses.

It was pointed out that scholarship policy regarding initial and further training by industries should be in line with government policy. Moreover, if trainees are to be sent for training outside the country, special effort should be made to ascertain the relevance of courses in host countries to national needs and the aspirations of the trainees. It was suggested that

certain agencies, such as a National Council for Science and Technology, should be set up to monitor the major skill shifts that have occurred in the various technologies.

The following additional recommendations were made:

(a) Member countries should be encouraged and, where necessary, assisted to organize training for trainees from other countries.

(b) A special fund should be created to enable trainees from member countries to acquire industrial training experience in other Commonwealth countries.

(c) A bulletin or directory should be published, giving technical education programmes offered in Commonwealth countries.

(d) The quality and standard of products should be safeguarded, one way being through consumer evaluation.

Areas of Growing Importance

The meeting identified a number of growth areas which should be considered in any attempt to formulate goals of technical education. These were:

(a) Technology related to utilization of the vast natural resources in member countries.

(b) "Tero-technology", or the technology of both preventative and curative maintenance of imported goods and machinery.

(c) Indigenous technology which satisfies the economic needs of the people and helps improve health and living standards of both urban and rural communities.

(d) Development of management skills, especially for leadership of small-scale industries, through such actions as the establishment of an Institute of Public Administration or Management Development Board in member countries to assist with the training of managerial and administrative personnel.

(e) The training of women and girls in technical education. Women in technical professions have proved to be as competent as their male counterparts and therefore more women and girls should be encouraged to undertake technician training. The two main constraints are cultural attitudes and the lack of basic opportunity, and the seminar therefore recommended that human and physical resources for the teaching of science in girls' schools should be of the same level as those in boys' schools.

(f) Changing attitudes towards women and girls in technical education. In this connection, the seminar suggested that campaigns to enlighten the public on desirable attitudes should be mounted.