

PRACTICAL LABORATORY SESSIONS

Objective

To provide workshop experience in designing and producing materials locally for teaching science at low cost.

Programme

There were 11 laboratory sessions. The following four-fold approach was adopted:

- (a) Four sessions were devoted to a study of the Kenya School Equipment Production Unit (SEPU).

Participants were briefed on the history of SEPU and on its present organization, pointing out SEPU's links with the Ministry of Education, the Kenya Institute of Education, and Kenya's teacher training colleges. The manufacturing facilities of SEPU were described, and the three basic kits for physics, chemistry, and biology were demonstrated. During the fourth session, participants carried out a circus of experiments using the SEPU kits.

- (b) During the next five sessions, attention was focused on designing and developing equipment, and on drafting manuals.

Participants were divided into four groups. The functioning of each group was to simulate an educational system in which a science equipment production unit might be expected to operate.

Each group appointed two of its members to select a discrete area of the school science syllabus (syllabus organizers/curriculum developers). Another sub-group of two members (science teachers as experiment designers) was asked to outline student experiments and/or teacher demonstrations to illustrate topics within the area of a specified syllabus. The remaining members of each group surveyed the facilities (materials, tools, printed safety instructions etc.) of the work place.

Each of the original four groups reassembled to discuss plans for the production of an item or items of equipment to enable them to teach different specific topics. Construction of equipment and production of related manuals were subsequently carried out.

- (c) The next laboratory session was devoted to the presentation of the equipment and related manuals produced by participants. Presentation was done by representatives of each group in turn. The equipment produced included two versions of an electric motor, apparatus concerned with the application of forces for lifting purposes (inclined plane, levers, pulleys, hydraulic press), solar-powered water pump, linear expansion demonstration apparatus, electro-magnetic attraction apparatus, model periscope, steam turbine, and

solenoid (for plotting magnetic field).

(d) The last laboratory session was devoted to evaluating prototype equipment and related manuals, together with brief accounts of equipment centres in Ghana and Nigeria, and discussing their products and services.

Evaluation of Laboratory Sessions

Questionnaires were answered relating to the general layout of the laboratory programme, and the following information was obtained:

(a) 70% of the answers revealed that sessions dealing with SEPU were interesting or very interesting to participants. The allocation of the available time was acceptable.

(b) 40% of the answers showed that participants found the work of designing and manufacturing science equipment interesting or very interesting. They would have preferred to have had more time allocated to it.

(c) 55% of the answers indicated that the work of drafting manuals to accompany equipment was less popular, and that more time should have been devoted to this activity.

(d) The most popular of the 11 sessions was that which was concerned with the presentation of the finished equipment; 95% of the answers showed this to have been interesting or very interesting.

One of the invaluable suggestions put forward for improvement was that in future participants should be divided into smaller groups for practical work.