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EXPERT GROUP MEETING

Training to Popularize Scientific & Technological Culture

28th–31st May 1997
Singapore

sponsored by:
The Education Department
Human Resources Development Division
The Commonwealth Secretariat London
and
The Singapore Cooperation Programme
Ministry of Foreign Affairs
Singapore

coordinated by:
Asian Media Information & Communication Centre (AMIC)
Singapore
The importance of science and technology to modern societies, and the role of a technologically educated population in promoting economic and social development has been acknowledged worldwide. However, the past science and technology education practice of Commonwealth countries has evolved as a response to a variety of disconnected stimuli rather than steered by clear objectives. As such, science in schools has been isolated from scientific culture and has triggered rejection from large numbers of students.

The current generation will need a new flexible system of education that addresses issues such as nuclear energy and waste disposal, invasive technologies, the environment, food technologies and public health and other contemporary scientific developments.

In many developing countries exogenously introduced aid technologies have tended to neglect women's knowledge and failed to engage them in the design and use of new technologies. This has often discouraged women from taking an interest in science and technology subjects.

The complex relationship between the economy, society, the environment and scientific knowledge requires a multi-disciplinary approach to the development of society and calls for skilled communicators able to address technological issues. In the recognition that technological literacy is a major precondition for citizenship in a modern democracy, The Commonwealth Secretariat is initiating a programme aimed at training to popularize scientific education in Commonwealth countries.

This expert group meeting is the forerunner to a series of activities aimed at assisting Commonwealth countries in coordinating flexible science education for the future. The programme is jointly sponsored by the Commonwealth Secretariat and the Singapore Government under its Singapore-Commonwealth Third Country Training Programme. The meeting will be organised by the Human Resource Development Division of the Commonwealth Secretariat through the Education Department and will be coordinated by the Asian Media Information and Communication Centre (AMIC) based in Singapore.

The meeting will seek to obtain feedback from participants on the current status of the scientific and technological culture in their countries. It aims to operationalise the term scientific and technological culture, identify strategies, approaches and further training programmes to promote growth and development in this field.

At the end of the programme, participants will have:

- acquired a comprehensive appreciation of the international dimensions of the growth and development of a scientific and technological culture.

- identified programmes, strategies and approaches for promoting such a culture in the Commonwealth.

Certification of participation will be awarded to those attending.

The event is intended for experts in the promotion of science and technology in the Asia-Pacific region. They should possess a university degree or equivalent, preferably in science, and have a minimum of five years' related work experience. Prior exposure to the study and practice of communication skills is desirable. In line with the Commonwealth Plan of Action for Women and Development, nomination of suitably qualified women is encouraged.
The meeting will be jointly led by Dr Joan Solomon of Oxford University, Dr O J Jegede of the University of Southern Queensland and Dr Ved Goel of The Commonwealth Secretariat. Coordination will be provided by Mr Sankaran Ramanathan of AMIC Singapore.

The tentative programme is as follows:

Day 1
a.m. Introduction to the meeting; participants’ self-introduction.
p.m. Discussions on the operational definition of scientific and technological culture; Presentation of Country Reports/Profiles.

Day 2
a.m. Presentation of Country Reports (cont).
p.m. Identification of programmes, strategies and approaches for popularising scientific and technological culture.

Day 3
(whole day) Identification of programmes, strategies and approaches (cont).

Day 4
p.m. Wind up and closing ceremony; field visits in Singapore; dinner/get together.

This four-day programme will be conducted in Singapore from 28th-31st May 1997. Participants are advised to arrive in Singapore on or by 27th May.

The Government of Singapore, under its Singapore Cooperation Programme administered by the Ministry of Foreign Affairs, will sponsor the local costs of the meeting.

Travel and accommodation costs are to be borne by participants, except for a small number of special resource personnel to be notified by the Commonwealth Secretariat.

Participants will be responsible for any shipping expenses for relevant literature, etc., and are advised to obtain their own medical/accident insurance.

Applicants must be nominated by the official point of contact of the Human Resource Development Division in their country of origin.

All written applications endorsed by the point of contact should be forwarded to:

Dr Ved Goel
Chief Programme Officer
Science, Technology & Maths Education
Human Resource Development Division
Commonwealth Secretariat
Marlborough House, Pall Mall
London SW1Y 5HX, United Kingdom
Tel: (0171) 747-6282 Fax: (0171) 747-6287
Email: goelv@comsec.tcom.co.uk

A copy of the application should be sent to the Asian Media Information and Communication Centre:

Mr Sankaran Ramanathan
Coordinator, Special Projects
Asian Media Information & Communication Centre
Jurong Point P.O. Box 360
Singapore 916412
Tel: (65) 792-7570 Fax: (65) 792-7129
Email: amicline@singnet.com.sg

All applications/nominations should be received at the latest by 30th April 1997.

The final selection of candidates will be undertaken by AMIC and the Human Resource Development Division of the Commonwealth Secretariat in consultation with the Singapore Ministry of Foreign Affairs. Confirmation of acceptance of application/nomination will be made known to candidates by 16th May 1997. All enquiries pertaining to the programme may be made to the above addresses.
The Sponsors and Organiser

The Singapore Cooperation Programme is Singapore’s programme for technical cooperation with developing countries. It is founded on the conviction that human resource development is vital for achieving economic and social progress. Singapore had benefited in the early years because other countries had assisted in upgrading the skills of Singaporeans. Singapore in turn, through the Singapore Cooperation Programme, will continue to share its experience and expertise with other countries and help participants to upgrade their skills and make an active contribution to their countries’ development efforts.

Singapore’s collaboration with the Commonwealth Secretariat is one component of the Singapore Cooperation Programme. The collaboration between the Commonwealth Secretariat and Singapore has been a long-standing and fruitful one. Since the establishment of the CFTC in 1971 to promote technical cooperation among members of the Commonwealth, Singapore has received many fellowships and experts. At the same time, Singapore has provided training for over 500 Commonwealth trainees. In recent years, Singapore has also collaborated with the Commonwealth Secretariat to co-sponsor training programmes for participants from developing Commonwealth countries. Under this scheme, Singapore has provided training in the fields of systems development, export market development, productivity enhancement and the management of public enterprises.

The Education Department of the Commonwealth Secretariat, headquartered at Marlborough House, Pall Mall, London is actively involved in promoting skills and techniques in all levels of education, particularly science, technology and mathematics.

It targets its training at the specific skill needs of senior and mid-level officials in the various Commonwealth countries. Each year, about 3,000 people receive support for education and training in over 300 institutions, mostly in Commonwealth developing countries. Special attention is paid to providing women with increased opportunities for advancement.

AMIC is a non-profit mass communication organization serving Asia and the Pacific from its headquarters in Singapore. It is supported by the Government of Singapore and the Friedrich-Ebert-Stiftung, an independent organization in the Federal Republic of Germany. AMIC is engaged in communication research, documentation, training, consultancy services, institutional development, and publication. Membership is open to individuals and institutions involved and interested in the study and practice of mass communication. Since its inception in 1971, AMIC has conducted over 300 seminars, workshops, meetings, conferences and other training programmes. It publishes Media Asia, a refereed quarterly journal, the Asian Mass Communication Bulletin and various books/monographs in mass communication.
Expert Group Meeting for Training to Popularize Scientific and Technological Culture in the Commonwealth

Dear Participant,

Welcome to Amic at the School of Communication Studies Building, Nanyang Technological University, Singapore.

Herewith are some housekeeping announcements:

(a) For All Participants

All meeting sessions will be held at the School of Communication Studies Building, with the main sessions held in the Master’s Programme Room and the small-group sessions in the same room as well as the Conference Room on the opposite side (level 2). If other rooms are utilised, you will be notified.

Lunch and tea/coffee breaks will be served at the ground floor, beside the benches. Vegetarian food is available.

Please do not smoke in the building, as this may trigger off the smoke alarm.

While the programme may be determined on a day-to-day basis, we shall endeavour to adhere to the draft programme, as printed in the brochure.

If you need secretarial assistance, please contact me or Alice Simon.

(b) For Non-Singapore Participants

Please ensure that you fill in the two forms as required by the Ministry of Foreign Affairs and return them to the Secretariat as soon as possible.

© For Singapore Participants

We would appreciate your input for the Singapore country report that is being coordinated by Associate Professor Chua Siew Keng. Any other suggestions are welcome.

I wish you a pleasant stay and meeting over the next three days.

Sankaran Ramanathan
Project to Encourage and Support the Growth of Popular Scientific and technological culture in the Commonwealth

Background Paper

Introduction

The importance of science and technology (S&T) to modern societies and the role of scientifically and technologically educated population in economic and social development can hardly be questioned. But S&T can only effectively contribute to the society in which it is embedded. The manner in which science was introduced in many Commonwealth countries, it has not yet become the integral part of their culture. As a result S&T is still viewed as something foreign/western carrying its cultural and social baggage. Moreover the selection role of S&T educational achievements in Commonwealth countries has isolated science in schools from scientific culture and has triggered rejection from large fraction of students. Besides the way S&T has been packaged in the school curriculum without due consideration to local cultural patterns and values, such courses have not been acceptable and understandable to the community. Furthermore, most of the science and technology curricula, examples and exemplars, portray the work of women which has resulted in the marginalisation of women. This view has been supported by Hynes (1989)

"In most developing countries, women tend woodlots, do substitute farming ans are responsible for water supply and waste disposal, yet development aid and technologies exogenously introduced into these countries have ignored women's knowledge and failed to engage them in the design and use of new technologies (p 11)

This lack of emphasis on gender equality has also developed and reinforced sexist attitudes that have discouraged women from taking an interest in S&T subjects.

Recognising the importance of scientifically and technologically educated population and absence of S&T as a part of culture, many Commonwealth countries have made the development of S&T culture as an objective in their national S&T policy. According to the National Science & Technology policy for Tanzania (1996)

"In order to inculcate a scientific and technological culture adherence the various science and technology talents among Tanzanians, it is necessary to establish mechanisms for popularisation of science and technology..." (p 48).

Similarly the National Policy on Science & technology of Malawi (1991) states that

"enhancing a science culture and creating among Malawians about the value and the role of science and technology as tools of improving the welfare of the people" (p 7)

Scientific and technological culture and local culture

Bullivant (1981) regards culture as

"----the knowledge and conceptions, embodied in symbolic and non-symbolic communication modes, about technology and skills, customary behaviours, values,
beliefs and attitudes a society has evolved from its historical past, and progressively modifies and augments to give meaning to and cope with the present and anticipated problems of its existence" (p 19).

Seen in this context, scientific culture consists of aggregated knowledge, which combines all the communication, tools, technology, skills, ways of thinking and learning, behaviours, values and mores that govern the universal practice and use of science in all environments (Jegede, 1996).

In the case of S&T education, although science itself is universal in nature, educational developments should be based on national priorities and should be relevant to local situations. It is therefore not so much of a new curriculum which is required as a new kind of teaching which inspires life-long interest in the processes and results of science & technology and also the capacity to relate this to their community's way of living, with respect for and understanding of their own inherited values.

There is a tendency on the part of scientists and other professionals to underestimate current local practices. Old and traditional practices are not necessarily bad and inefficient. As a sound approach an inventory of these practices should be made, identification of advantages and disadvantages, particularly regarding needed inputs, and alternative solutions worked out and tested. In this way local practices could be improved and S&T adapted and built on existing conditions.

This kind of approach has been envisaged in the National Policy of science and technology of Malawi when it says:

"---the sustainable application of science and technology is contingent on the existence of an indigenous capacity to identify problems and promote pertinent solution within the framework of the country's social and cultural traditions" (p 6).

Aims of the Project

1. To improve scientific and technological education which would enable it to enrich the everyday living of citizens without damaging local culture by drawing on the full range of educational resources and means available to the community: systematic instruction, information and popularisation.

2. To stimulate the production of new resources which will harmoniously combine modern knowledge with the significant contributions of traditional knowledge.

3. To take measures to raise the S&T literacy amongst female which will reduce drudgery and increase comfort for women and make women active partners in the use adaptation and development of science and technology.

4. To develop strategies to educate young people and citizens to build a common basis for understanding global issues in science technology and environment education which could be accessible to all Commonwealth citizens enabling them to act individually, and along with their communities.
Guidelines for writing Country Reports

1. What is the structure of school education?

2. At what age science education begins at primary level and in what way:...
   - investigations
   - local environmental studies
   - local agricultural studies
   - simple physics, chemistry, biology etc.

3. At what age does secondary education begin?
   - What proportion of the age cohort (separately for boys and girls) take it?
   - What compulsory science is included and up to what level/age group?
   - At what age/level specialisation begins, if at all.
   - Do students have option not to take mathematics with science subjects?
   - Are there vocational science courses available in school?

4. School and Community

   Parents in and out of school
   - Are parents keen for their children to study science?
   - Are parents keen for their children to do well in science?
   - Do parents help their children learn science?

   Local Community
   - Are there school links with the local community?
   - Are there links between science education in schools with local industry, local agriculture, ways of living etc.

   Cultural relevance
   - Do the content of the science curriculum fit well with the local environment and interests?
   - Is the science curriculum such that it attract both boys and girls?

   Political anxieties and movements for change
   - What, if any are the parents worried about science education?
   - Who wants change and in what way?
5. **Popularisation of science**

Are there programmes aimed at popularising science amongst masses? If yes please give details.

Are there programmes at popularising science amongst women? If yes please give details.

What kind of non-formal science education programmes exist?

The report should be brief and to the point not exceeding 1500 words. The participants will be requested to give a presentation of not more than 10 Mt giving the highlights of the country report. It will therefore be useful if you could prepare not more than 5 transparencies to capture the main ideas of your report. Please bring one hard copy of your report and one on a floppy disk.