

**WORLD HEALTH ORGANIZATION
TECHNICAL REPORT SERIES**

No. 538

The Selection of Teaching/Learning Materials in Health Sciences Education

Report of a WHO Study Group

This report contains the collective views of
an international group of experts and does not necessarily
represent the decisions or the stated policy of the
World Health Organization.

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* * *

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WHO STUDY GROUP ON THE SELECTION OF TEACHING/LEARNING MATERIALS IN HEALTH SCIENCES EDUCATION

Geneva, 10-16 April 1973

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- Professor T. I. Francis, Department of Medicine, University of Ibadan, Nigeria (*Vice-Chairman*)
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THE SELECTION OF TEACHING/LEARNING MATERIALS IN HEALTH SCIENCES EDUCATION

Report of a WHO Study Group

A WHO Study Group on the Selection of Teaching/Learning Materials in Health Sciences Education met in Geneva from 10 to 16 April 1973. Opening the meeting on behalf of the Director-General, Dr T. Lambo, Assistant Director-General, welcomed the participants and representatives of other Organizations. He emphasized that a principal concern of WHO today was to help developing nations in planning and putting into effect a system of health care delivery that could bring the benefits of good health to every family, even in the most remote areas. Good health services are dependent upon the availability and proper deployment of good health staff, who in their turn demand an efficient and rapidly expanding programme of training adapted to the tasks that they must perform. A serious obstacle to progress is the shortage of teachers, especially experienced teachers, to meet the needs for basic and continuing education of all members of the health team, professional and auxiliary alike. There is now ample evidence that carefully prepared teaching/learning materials, especially in audiovisual form, can help both teacher and learner by reducing the basic instruction load of the former and by making the subject matter clearer and more vivid and interesting for the latter.

Large institutes in industrialized countries can draw on immense technological resources in the preparation of materials for their own use. It is relatively easy for their staff to obtain advertised or listed materials for preview, in order to assess their suitability for specific teaching/learning situations. Paradoxically, there is relatively less need for such information and materials in these countries where there is often no serious staff shortage and where most requirements can be met from their own resource. In most developing countries, however, the situation is quite different. There are few resources, and expertise in the preparation and correct use of audiovisual materials is limited. Although catalogues may be available, the items they list have rarely been assessed and the teacher cannot decide on their suitability from the information given. Preview is usually impossible, as few distributors will send audiovisual materials long distances on approval. Apart from the time and expense involved, there are all the hazards of customs delays and damage in transit. As a result, the teacher is unable to make a reasoned selection. As he has little or no production facilities of his own, his students and he are deprived of the potential

assistance that educational technology can afford in the learning situation.

In general recognition of the fact that catalogues and lists of teaching/learning materials need to contain more constructive information, national organizations and professional associations in several countries have independently embarked on programmes of assessment. These efforts have been largely for internal use, so that again the teacher in the developing country does not benefit. In addition, would-be assessors have come up against difficulties in evaluating non-printed materials since there is little previous experience to guide them.

In view of the present situation and in conformity with a recommendation made in a previous report,¹ this Study Group was convened with the following general aims : (1) to review the needs for and difficulties inherent in the assessment of teaching/learning materials, and (2) to recommend a programme of action for such assessment and subsequent dissemination of information on an international scale.

1. INTRODUCTION

In the programme of WHO in the broad field of educational technology,² a number of areas have been identified in which the application of new methods and approaches might be expected to contribute towards the better education and effectiveness of the health team. One such area, the local development of high quality teaching/learning materials for basic and continuing education in priority subjects for which teachers are in short supply, has already formed the subject of discussion by a previous WHO Study Group.³ A second and closely related area is concerned with the need for assessment of quality of the great range of existing teaching/learning materials, whether produced by institutes or by commercial enterprise. An information service, not only on the availability of screened materials but also on their appropriateness for different teaching and learning situations, would greatly assist the teacher in making a reasoned selection for his own particular use.

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1972, No. 489, p. 28, recommendation (2).

² Since the meaning of "educational technology" may be variously interpreted, it is defined for the purposes of this report as the application of scientific knowledge about the teaching/learning process in order to organize and facilitate instruction offered by the use of methods and media of education. It therefore covers two quite separate aspects : technology of education and technology in education. The first is concerned with a systematic, analytical process of decision-making, implementation, and assessment based on the specifications of learning objectives that define what a student will be expected to do in order to demonstrate that he has learned successfully. The second is primarily concerned with the means of attaining an educational goal ; it is concerned with educational materials and associated equipment. Thus this second aspect of educational technology is dependent on and supports the first.

³ *Wld Hlth techn. Rep. Ser.*, 1972, No. 489.

It is evident that teaching/learning materials cannot be considered in isolation, as they represent only one component in the whole educational process. A simple statement of content in an information document would be of little assistance to the teacher who must be able to judge whether or not listed materials would be of direct service to him or to his students in the context of the local curriculum and educational pattern. Section 2 of this report, therefore, outlines the information that the user (who may be either teacher or student) would need to have to make a reasoned choice of material. Section 3 describes the various types of assessment that will be needed to supply this critical information. As a result of an assessment programme, an information service might be organized for the user. Section 4, therefore, considers the problems involved in the dissemination of information. Section 5 deals with methods of keeping such a service dynamic in a constantly changing situation and explores the problem of transference and acceptability of materials across national and cultural barriers. The last section suggests an action programme and makes recommendations for its implementation.

1.1 Definition and categories of "teaching/learning materials"

It was considered that a broad term should be used to describe the materials to be included in the programme of selection. The term "teaching/learning materials" embraces the whole range of materials produced for use by teachers or learners, from the simplest teaching aid to the most complex learning package. In addition to what is usually described as audiovisual material (audio and video tapes, films, microforms, projection slides, wallcharts), the term includes programmed learning materials, models for demonstration or simulation, games and similar innovative devices, computer-assisted learning programmes, test questions and problems, and any combination of these with supportive or descriptive texts that together make up the "multi-media packages" of today. Printed material in its various forms (textbooks, journals, manuals, etc.) constitutes the commonest form of learning material, and is already covered by well-established procedures of assessment and subsequent information to the potential user. Non-printed materials, however, present a greater problem. Methods and criteria for their assessment and for the dissemination of adequate data on teaching/learning materials must be greatly improved before the user can make an informed selection. The emphasis of the report is thus concentrated on non-printed materials, although new developments in the design of books and journals are likely to bring them within the scope of this document.

In order to assist in the identification of materials, it was considered useful to divide teaching/learning materials into two broad categories,

according to the degree to which they have been designed to fit into a teaching/learning context.

Type I

Materials that are elements for use in instructional systems ; they can be adapted and used for different purposes, situations, and types of student—e.g., a set of projection slides illustrating aspects of dermatology.

Type II

Materials that are systems in themselves ; they cannot easily be modified or changed in their content, order, method of presentation, or method of use—e.g., a programmed text or a multi-media package on endocrinology for medical students.

2. WHAT THE USER NEEDS TO KNOW

Books and journal articles can be obtained and examined with relative ease for their potential usefulness in teaching or learning. However, other teaching/learning materials may not be available quite so readily. Any one item may exist in only a limited number of copies. Once a copy has been obtained, inspection may require specialist equipment, and detailed examination will be conditioned by the length of the programme and its form of presentation (e.g., film, videotape, audiotape), or multi-media package). It is, therefore, highly desirable and, indeed, essential that the prospective user (teacher or student) should be able to make an informal, provisional selection from printed information on available teaching/learning materials. This will increase the chance that his selection will contain materials that are likely to fit his needs when he comes to make his final choice through actual inspection.

The following questions are those most likely to be asked by a potential user in search of teaching/learning material.

- (1) What is available in a particular subject area ?
- (2) Can it assist in specific educational aims ?
- (3) Can it be used with a specified category of students who are at a particular stage in their education ?
- (4) Can it be used within the constraints of the existing educational system, staff, time, space, equipment, and finance ?
- (5) How acceptable and effective has it been elsewhere ?
- (6) How can the materials be obtained ?

TABLE 1. INFORMATION REQUIRED BY A POTENTIAL USER *

Data	Type of material ^a	
	I	II
Subject area	x	x
Type of teaching/learning material (type I or II)	x	x
Learning objectives	—	x
Learning situations	—	x
Learning methods	—	x
Type of student and level of studentship	—	x
Study prerequisites	—	x
Pre-tests and post-tests	—	x
Guide to the use of materials	—	x
Country of origin, languages, and date of production/release	x	x
Description of content	x	x
Specific activities involving staff/students	x	x
Preparation/study time	—	x
Additional materials to be provided locally	—	x
Copyright constraints	x	x
Technical details of the materials and associated equipment, including any special storage conditions	x	x
Responsible authority for subject and educational design/production	x	x
Assessment of educational usefulness	x	x
Title of material	x	x
Conditions and cost of distribution	x	x
Name and address of distributor	x	x

* Further information on some of the items listed is given in the Annex, p. 24.

^a For definitions, see section 1.1, p. 8.

These questions call for the information that is outlined in Table 1. It will be apparent that less information may be required for materials classified as Type I (see section 1.1). The items of desirable information have been listed in relation to the above questions and not in the order in which they might appear in a catalogue.

This list is not intended to be exhaustive but it should serve to underline the need for a wide range of information. However, it would be unrealistic to insist that all these and possibly additional data should be available from a primary information source (e.g., computer bank, catalogue). It is suggested, therefore, that a primary source should provide only limited data (see Table 2). This assumes that additional details towards a final selection would be available from an information service when a limited number of possible materials have been isolated by the user. The information service would be expected to store additional information from the producers and to assemble reports of actual user experiences as well as further assessments that may have been carried out in different countries.

TABLE 2. ESSENTIAL INFORMATION ON TEACHING/LEARNING MATERIAL
TO BE PROVIDED BY A PRIMARY INFORMATION SOURCE

Data	Type of material ^a	
	I	II
Title, whether part of a series, technical details of material and associated equipment ^b	x	x
Conditions of copyright and distribution	x	x
Country and date of origin, language(s)	x	x
Scientific/educational authority and distributor	x	x
Intended audience (type and level)	—	x
Learning objectives	—	x
Intended learning situation	—	x
Summary of content (with any cultural constraints)	x	x
Assessment with responsible authority and date	x	x

^a For definitions, see section 1.1, p. 8.

^b As proposed in: American Library Association (1970) *Anglo-American cataloging rules*, Chicago.

2.1 Recommendations

There is no reliable information on the users' actual requirements for information in relation to the selection of teaching/learning materials and little is known about the processes of selection adopted by users. It is therefore recommended that pilot studies should be undertaken to determine :

- (1) which items of information are found most useful for the selection process ; and
- (2) which items of information are most likely to ensure continued use of materials once they have been selected.

3. THE ASSESSMENT OF TEACHING/LEARNING MATERIALS

The purpose of assessment of materials is to help prospective users to make an informed choice. Since there are many problems in the selection of materials, it is natural for users to look for advice and guidance. Existing sources of information are, however, uncoordinated and many of the basic items are used in ways that are confusing to producers and users alike. There is a serious need for systematization in order to prevent wasted effort. For the purposes of this report the following terminology has been adopted. *Assessment* is used to connote any or all of the processes of estimation and measurement of the effectiveness of materials.

These processes are divided into 3 categories—*appraisal*, *validation*, and *evaluation*—which are defined below.

3.1 Appraisal

Appraisal constitutes a limited prediction of the likely usefulness of teaching/learning materials based upon judgment of the quality rather than measurement of the effects on learners. It is the simplest and most readily carried out form of assessment of teaching/learning materials and is usually made by a panel of individuals that judges the materials according to criteria that have been determined in advance. While direct measurement by means of empirical trials in teaching/learning situations does not form part of assessment by appraisal, the panel will take account of trials carried out by the producers or by others, and may entertain the opinions of users of the materials.

3.1.1 *Composition of appraisal panels*

To ensure a high degree of objectivity in judgment it is important that the composition, procedures, and aims of panels be given a framework. Panels should consist of at least 3 members serving under a convener. In making up a panel, the convener must make sure that its members are well chosen for each appraisal task. He will also be chairman of all the appraisals in order to ensure stability and uniformity of standards. At the same time his preparation for this role will ensure that he can provide adequate training and guidance for panel members.

The panel should include a specialist in the subject matter of the material to be appraised, who will not only be familiar with the content of the discipline and with current research in the field but will also have had experience of teaching that discipline to the audience for whom the materials are intended. If the teacher is not a specialist in the field, however, there must be an additional panel member who is. Another member should be an educational technologist with a sound background in the design, production, and appraisal of teaching/learning materials, who will be responsible for appraising the educational and technical aspects of these materials. The panel should also include one or more students who should be from current or recent classes to whom the materials are addressed, and will therefore be capable of judging the acceptability of the materials.

3.1.2 *Criteria in appraisal*

The criteria used in appraisal concern 3 aspects of materials : content, educational and technical factors, and acceptability.

Content criteria include the accuracy of the content, the degree to which it reflects current knowledge in the field, and the degree of authenticity (all three being relative to the educational level of the intended audience).

Educational and technical criteria. The major educational factors are : the degree to which materials permit the attainment of stated learning objectives ; their appropriateness for the intended audience ; the effectiveness of their educational design (paying attention to cues, reinforcement, continuity, sequence, pace and rate of development) ; and the appropriateness of the instructional techniques employed (including such factors as learner-participation). Technical considerations include : the aptness of the medium employed, the quality of audio and visual components and the appropriateness of these components to the subject matter content.

Criteria of acceptability relate to : evidence of student and faculty involvement in the educational planning and design of the materials ; their capacity to maintain the interest of users ; the adequacy of accompanying materials ; and the degree to which materials can be modified or changed.

3.1.3 *Training for appraisal panels*

The degree of objectivity of panel judgment will depend on the establishment of criteria and the standardization of procedures. In order to ensure uniform application of procedures, both within and between panels, some training of panel members is necessary. As this will normally be a responsibility of the convener, his own training will be of primary importance.

3.1.4 *Limitations of appraisal*

The judgments of appraisal panels, since they invoke the knowledge and experience of their members, will be limited in applicability to those educational contexts that the judges combine. It will not therefore be possible for a user in a different context (e.g., a different country or region) to assume that such appraisals will take account of his particular educational requirements.

Although the appraisal process is protected against the personal bias of individual judges, it could benefit from research both on the best methods for maintaining uniformity and standards and on ways of enhancing its usefulness to panels and users in other countries.

3.1.5 *Extent of appraisal*

It is anticipated that most assessment activities will be at the level of appraisal, since this is the simplest form of assessment and the most feasible given the current training and manpower conditions in health sciences education.

3.1.6 *Recommendations*

It is recommended that experimental studies be conducted on the various factors involved in the process of appraisal, in view of the priority