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ABSTRACT

Advice on the selection of suitable instructional materials to support the chosen method(s) of instruction is offered in this booklet. The first of four sections takes a brief look at the different roles that instructional materials can play in the three main instructional modes--mass instruction, individualized learning, and group learning. The second section reviews seven different types of instructional materials, describing the main characteristics of the various members of each group: (1) printed and duplicated materials; (2) non-projected display materials; (3) still projected display materials; (4) audio materials; (5) linked audio and still visual materials; (6) cine and video materials; and (7) computer mediated materials. Factors to be considered when choosing materials for a specific instructional purpose are discussed in the third section, and the fourth looks at different possible ways of acquiring or producing materials of the required type. A flow chart for identifying possible materials for achieving specific objectives and a table summarizing characteristics of various types of materials are included, as well as an annotated list of booklets in this series that address the production of various types of media. (MES)

This booklet was first published internally in Robert Gordon's Institute of Technology, Aberdeen as part of the Institute's staff development programme.

The booklet was written by Dr Henry Ellington of RGIT's Educational Technology Unit, who adapted it from material originally published in "Producing Teaching Materials", by Henry Ellington (Kogan Page, London; 1985)

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A Review of the Different Types of Instructional Materials Available to Teachers and Lecturers

Introduction

In the first booklet in this suite ("Educational objectives"), it is argued that the first key step in any systematic approach to course or curriculum design should be the establishment of a clearly-defined set of *objectives*. In the second booklet, ("A guide to the selection of instructional methods") it is shown how the second key step should be the choice of a suitable *instructional method* (or group of methods) for achieving these objectives. In this booklet, we will offer advice on how to take another important step in the process, namely, selection of suitable *instructional materials* to support the chosen method(s) of instruction.

The booklet is divided into four main sections. The first takes a brief look at the different roles that instructional materials can play in the three main instructional modes identified in "A guide to the selection of instructional methods" - mass instruction, individualised learning and group learning. The second reviews the different types of instructional materials that are available to the teacher or lecturer, showing how they can be divided into seven broad groups and describing the main characteristics of the various members of each group. The third offers guidance on how to set about choosing suitable materials for use in a particular teaching or learning situation. The fourth looks at the different ways in which it is possible to acquire or produce materials of the required type.

The different roles of instructional materials in different teaching/learning systems

As is shown in "A guide to the selection of instructional methods", it is possible to divide all teaching/learning methods into three broad groups, which may be loosely described as *mass instruction techniques, individualised learning techniques* and *group learning techniques*. Let us now see what roles instructional materials are capable of playing in each.

Mass instruction

Within the context of the various techniques that can be employed as vehicles for *mass instruction*, audiovisual and other instructional materials can play a number of roles. In some cases (e.g. the use of visual aids, handouts or worksheets in a lecture or taught lesson),

their role will probably be mainly supportive; in others (e.g. film or video presentations or off-air broadcasts) they can constitute the very essence of the method itself. In both cases, however, it is important that the materials be chosen because of their suitability for achieving the desired learning objectives, and not merely because they 'happen to be available' or because the teacher or instructor wants to 'fill in time'. Some of the specific ways in which instructional materials can be used in lectures and other mass instructional situations are given below:

- Forming an integral part of the main exposition by providing 'signposts', guidance for note-taking, illustrative material, work-sheets, etc;
- Providing supplementary material (background reading, remedial or extension material, enrichment material, and so on);
- Increasing student motivation by introducing visually-attractive, interesting or simply 'different' material into an otherwise routine lesson;
- Illustrating applications, relations, integration of one topic with another, and so on.

As we will see later, a large number of different materials can be used to fulfil these various functions.

Individualised learning

The role of instructional materials in *individualised learning* is radically different from that in a mass instruction system. In the latter, their role is generally supportive, with the main vehicle of instruction being the teacher or trainer in control of the class; in an individualised learning system, on the other hand, the *materials themselves* constitute the vehicle whereby instruction takes place. Thus it is particularly important that such materials should be designed and produced with the greatest care, for, if they are not, the system could (at best) fail to achieve all its instructional objectives and (at worst) break down completely. Some of the specific ways in which instructional materials can be used in individualised learning are given below:

- Providing instructions and/or guidance on how the learner should carry out a particular course or programme of study;
- Providing the actual material that has to be learned or worked on during the course or programme;
- Providing the learner with exercises for diagnostic or assessment purposes.

As in the case of mass instruction, a large number of different types of media and materials can be used to fulfil these various functions.

Group learning

The various methods that come under the general heading of *group learning* usually require no specialised hardware and (in many cases) very little in the way of courseware other than textual materials (booklets, briefing sheets, worksheets, etc.); indeed, the emphasis is usually very much on the *approach* or *technique* rather than a reliance on specific types of hardware or courseware. Nevertheless, it is vitally important that any courseware that *is* required for such an exercise should be very carefully designed, since it can play a key role in making sure that the exercise runs smoothly. Some of the specific ways in which such courseware can be used in group learning activities are given below:

- Forming an integral part of the group learning process by providing background information, information about roles, instructions, and so on;
- Providing supplementary or enrichment material;
- Increasing student motivation through visually-attractive or intrinsically interesting material.

As in the case of mass instruction and individualised learning, a large number of different types of materials can again be used to fulfil these various functions.

The different types of instructional material that are available today

Compared with his counterparts of even 30 or 40 years ago, the present-day teacher or lecturer has a vast and often bewildering range of instructional materials at his disposal. These can, however, conveniently be classified into seven broad groups, in order of increasing technical sophistication. These groups are:

(i) printed and duplicated materials;
(ii) non-projected display materials;
(iii) still projected display materials;
(iv) audio materials;
(v) linked audio and still visual materials;
(vi) cine and video materials;

(vii) computer-mediated materials.

Let us now take a broad look at these various groups, and identify the general characteristics of the materials that compose them.

(i) Printed and duplicated materials

These comprise all textual and other materials that can be run off in large numbers on a duplicator or printing machine for use by students. Facilities for the production of such materials are now available in practically every college, and they have become one of the most basic and widely used of all educational tools. Some of the more important types are listed below.

Handouts : these comprise all the different types of information-providing materials that are given out to students, usually in connection with a taught lesson or programme of some sort; they include sets of notes (either complete or in skeleton form), tables, diagrams, maps and illustrative or extension material.

Assignment sheets : these include such things as problem sheets, reading lists, lab. sheets, briefing sheets for projects and seminars, worksheets, etc; they can be used in practically all types of instructional situations.

Individualised learning materials : these comprise all the different types of textual materials that are used in connection with individualised learning; they include study guides, structured notes, textual programmed materials and textual support materials for mediated learning systems.

Resource materials for group exercises : these comprise all the various printed and duplicated materials that are used in connection with group learning exercises; they include background reading material, briefing material, role sheets, instruction sheets, data sheets, and so on.

Printed and duplicated materials are discussed at greater length in booklets numbers 11 and 12 in this series – "How to produce printed and duplicated materials", and "How to design programmed learning materials".

(ii) Non-projected display materials

As its name suggests, this category includes all visual display materials that can be shown to a class, small group or individual student without the use of an optical or electronic projector of any sort. It includes a number of the most basic – and most useful –

visual aids that are available to teachers and lecturers, some of the more important of which are listed below.

Chalkboard displays : displays that are written, printed or drawn on a dark-coloured surface using chalk; still one of the most widely-used of all visual aids, despite the fact that practically everything that can be done using a chalkboard can be done more easily, less messily, and (in most cases) more effectively using the overhead projector; probably most useful for displaying impromptu 'signposts', notes and diagrams during a taught lesson and for working through calculations and similar exercises in front of a class.

Markerboard (whiteboard) displays : displays that are written, printed or drawn on a light-coloured surface using felt pens, crayons or other markers; these can be used in the same ways as chalkboard displays, and have the advantage of being less messy and offering a wider range of colours; also, a markerboard can double up as a projection screen if necessary.

Feltboard displays : moveable displays that are produced by sticking shapes cut out of (or backed with) felt or some similar material to a board covered with felt, or to a sheet of felt pinned onto a wall; a comparatively cheap, highly portable and extremely useful display technique, especially in situations that require the movement or rearrangement of pieces (demonstrating table settings, carrying out sports coaching etc.)

Hook-and-loop board displays : similar to feltboard displays, except that the backing material on the display items possess large numbers of tiny hooks that engage loops on the surface of the display board; suitable for displaying heavier items than feltboards.

Magnetic board displays : displays consisting of items that are made of (or backed with) magnetic material or fitted with small magnets so that they stick to a ferromagnetic display board; can be used in much the same way as feltboard and hook-and-loop board displays.

Flipcharts : large sheets of paper hung from an easel of some sort so that they can be flipped forwards or backwards in order to reveal the information on a particular sheet or produce a fresh blank sheet on which impromptu information can be written or drawn; individual sheets can be posted on walls to stimulate discussion.

Charts and wallcharts : large sheets of paper, carrying pre-prepared textual and/or graphical and/or pictorial information. Such charts can either be used to display information during the course of a lesson or can be pinned to the wall of a classroom or lecture room in order to be studied by the students in their own time. Wallcharts, in particular,

can be extremely useful for providing supplementary material or acting as a permanent *aide memoire* or reference system for learners (e.g. the periodic tables of the elements that are prominently displayed in practically all chemistry classrooms).

Posters : similar to wallcharts, but generally containing less information – often simply a single dramatic image; useful for creating atmosphere in a classroom.

Photographic prints : enlarged prints made from photographic negatives may be incorporated into textual materials, wallcharts etc, and, in linked sequences with suitable captions, can form a useful instructional medium in their own right; such sequences are particularly suitable for use in programmes designed for individual study.

Mobiles : systems of two-or three-dimensional objects that are hung from the roof of a class by thread, thus producing a visually attractive display whose shape is constantly changing due to air currents; particularly useful for creating interest among younger children.

Models : useful in cases where three-dimensional representation is necessary (e.g. crystal structures, animal skeletons, etc) or where movement has to be demonstrated.

Dioramas : static displays that combine a three-dimensional foreground (e.g. a model landscape of some sort) with a two-dimensional background, thus creating an aura of solidity and realism.

Realia : displays of real items (e.g. geological or biological specimens) as opposed to models or representations thereof; extremely useful if such materials are readily available and easily displayed.

Non-projected display materials are discussed in more detail in booklet number 13 in this series – "A guide to the use of non-projected displays".

(iii) Still projected display materials

This category includes all visual display materials which do not incorporate movement and which require an optical projector of some sort in order to show them to a class or group or enable them to be studied by an individual learner. It again includes some of the most useful visual aids that are available to teachers, instructors and trainers, the most important of which are listed below

Overhead projector transparencies and similar materials : textual or graphical images on large acetate sheets that can either be displayed to a class or group using an overhead projector or viewed by individuals or small groups using a light box of some sort; probably the most useful and versatile visual aid that can be used to support mass instruction methods in the modern classroom. Detailed guidance on how to make effective use of the overhead projector and how to design and produce OHP software is given in booklet number 14 in this series - "A guide to the use of the overhead projector".

Slides: single frames of 35 mm photographic film mounted in cardboard, plastic or metal binders, often between twin sheets of glass *(compact slides)* or larger images roughly $3^1/_4$ inches square *(lantern slides* - now largely obsolete); one of the most useful methods of displaying photographic or graphic images to a class, small group or individual student using a suitable front or back projector or viewer - either singly or in linked sequences.

Filmstrips: these are simply strips of 35 mm film carrying linked sequences of positive images, each usually half the size of a standard 35 mm frame *(half-frame,* or *single-frame* filmstrips) but sometimes the full size *(full-frame,* or *double-frame* filmstrips*)*; they are a convenient and (when purchased commercially) comparatively cheap alternative to slide sequences, and can be used in much the same ways, using suitable filmstrip projectors or viewers for display or study.

Microforms: *microform* is a general term for any medium that is used to carry *micro-images*, i.e. photographically-reduced images of pages of text, graphic materials, etc; the most common types are *microfilms* (rolls of strips of photographic film carrying a linear sequence of such images), *microfiches* (transparent sheets of photographic film carrying a matrix of such images) and *microcards* (opaque sheets carrying similar matrices of microimages); all such microforms can be used to carry the frames of instructional programmes (e.g. *programmed learning* sequences), to act as highly compact data banks, etc., and can be studied using special magnifying viewers or projectors.

(iv) Audio materials

This category includes all the various systems whereby straightforward audio signals can be played to a class or group or listened to by an individual. It again includes a number of extremely useful - albeit often neglected - instructional aids, some of the most important of which are described below.

Radio broadcasts : educational radio broadcasts constitute an extremely useful free resource for teachers and trainers, and, although they are often difficult to incorporate into the timetable if listened to at the time they are actually transmitted, this can easily be overcome by recording them for later playback; note, however, that it is only certain designated educational broadcasts that can be so used without infringing the copyright laws.

Gramophone records : recordings of music, plays, etc. on gramophone records again constitute a relatively inexpensive and readily-available instructional resource in certain subject areas, and are suitable both for playing to a class or group and for private listening by individuals, although they are not so convenient to store, handle or use as tape cassettes.

Audiotapes : audio material recorded on an open-reel tape or tape cassette constitutes one of the most useful resources at the disposal of the modern teacher or lecturer; such material can be used in a wide range of instructional situations, either on its own or in conjunction with visual materials of some sort. Audiotapes are discussed in more detail in booklet number 15 in this series - "How to produce audio materials".

(v) **Linked audio and still visual materials**

This is the first of the two classes in which audio and visual materials are combined to form integrated instructional systems, and includes a number of media that are particularly suitable for use in individualised learning. Again, some of the most commonly-used systems are listed below.

Tape-slide programmes : audiotape recordings (usually on cassettes) synchronised with linked sequences of slides constitute one of the most commonly-used integrated audiovisual media, and one of the most useful; they can be used in a wide range of instructional situations, particularly individualised learning.

Tape-photograph programmes : these are basically the same as tape-slide programmes, except that sequences of photographic prints are used instead of sequences of slides; their range of applications is not so great, however, being largely restricted to individualised learning situations.

Filmstrips with sound : these are simply filmstrips that have an accompanying sound commentary, usually on a tape cassette; they can be used in much the same way as tape-slide programmes.

Radiovision programmes : this is a technique pioneered by the British Broadcasting Corporation whereby still filmstrips are produced to accompany educational radio programmes; the filmstrips can either be shown to a class during the actual broadcast or used with a recording of same.

Tape–text : combinations of printed or duplicated materials with audio recordings constitute an extremely useful individualised learning technique; the audio component can either be carried on a separate audiotape (usually a cassette) or carried on special strip or sheet that is incorporated in the medium that carries the text; the latter systems (known as *audiocards, audiopages, talking pages,* etc.) require specialised equipment to use them.

Tape–model, tape realia, etc : combinations of audiotapes (usually cassettes) and still visual display materials such as three-dimensional models, collections of realia (e.g. geological and biological specimens) and microscope slides; such hybrid systems can prove extremely useful vehicles for individualised learning.

Linked audio and still visual materials are discussed in more detail in booklet number 16 in this series – "How to produce linked audio and still visual materials".

(vi) **Cine and video materials**

This class includes all media that enable audio signals to be combined with *moving* visual sequences, thus enabling a further dimension to be added to integrated audiovisual presentations. The main systems that are currently available are as follows.

Cine films : such films have been in regular use in education and training for many years, and are available in a number of formats; the most commonly–used type is probably 16 mm, although 8 mm and Super 8 mm films are also widely used, since they are much cheaper to make and show.

Loop films : these consist of loops of cine film (usually 8 mm) mounted in special cartridges that enable them to be shown or viewed continuously using a custom–designed projector or viewer; such loop films are ideal for teaching single concepts that require movement to demonstrate them to full advantage, and, although they do not normally have an accompanying sound commentary, this can easily be added using a separate sound system.

Tape–film programmes : these are highly–sophisticated integrated systems that enable audio material to be combined with sequences of still *and* moving pictures; most systems of this type use separate

cassettes or cartridges to carry the audio and video components, and obviously require specialised equipment to show or view them.

Television broadcasts : as in the case of educational radio broadcasts, educational television broadcasts constitute an extremely useful free resource for teachers and lecturers; like the former, they are not usually transmitted at convenient times, but, thanks to the development of relatively cheap videorecorders, this limitation can now be easily overcome; readers should again note, however, that it is only certain designated educational television programmes that can legally be recorded for subsequent educational use, and that an appropriate licence is usually required even for this.

Videotape recordings : television sequences or programmes recorded on videotape now constitute one of the most useful and powerful instructional media at the disposal of teachers and lecturers, and can be used in a wide range of teaching/learning situations. Such materials are discussed in greater detail in booklet number 17 in this series – "How to produce video materials".

Videodisc recordings : although not yet as widely used as videotapes and videocassettes, videodiscs (in which the signal is recorded optically or electronically on the surface of a special disc) have a tremendous potential in education and training. They will probably prove most important in *interactive video* systems (see next section).

(vii) Computer-mediated materials

This final category includes all the various materials that require a *computer* of some sort to enable them to be displayed, studied or used. Arguably, the computer constitutes the most important single resource ever to become available to teachers and lecturers since the invention of the printing press, and may well have a similar revolutionary effect on the way education is carried out, bringing about the massive shift from conventional expository teaching to mediated individualised learning that some commentators are currently predicting (see booklet number 9 in this series "How computers can be used in tertiary education"). Whether or not this happens, there is no doubt that appropriate use of computers can be of tremendous assistance to the practising teacher or lecturer. Some of the main types of computer-mediated systems are listed below.

'Number crunching' and data processing packages : one of the most obvious uses of the computer in education is as a 'supercalculator' or data processor; it is now possible to acquire or produce software packages that enable virtually any calculation or data processing task to be carried out automatically on the computer, and, *when*

appropriately used, such packages can be of tremendous help to both teachers and learners.

'Substitute tutor' packages : another obvious use of the computer is as a vehicle for administering individualised learning, since it has the potential to provide a degree of interaction and feedback that no other system (apart from a real live tutor) possesses; thus, 'substitute tutor' computer-based learning packages seem certain to become one of the most important tools available to lecturers and students.

'Substitute laboratory' packages : a third important instructional application of the computer is as a vehicle for providing, through computer-based simulations, access to a far wider range of educational experiences than has ever been possible before; again, such 'substitute laboratory' packages seem certain to become increasingly important tools for lecturers and students of all types.

Data base systems : as well as being used to process information, the computer can be used to store it, and to help retrieve it when required; thus, teachers and lecturers can now use computers to create data bases that can be used in a whole range of instructional situations.

Computer-managed learning systems : a fifth major application of computers in education is their use in an administrative or managerial role, e.g. in the overall administration of the system, timetable planning, budgetary control, and the management of the actual teaching/learning process; here again, software packages that enable these various things to be done are likely to become increasingly widely used.

Interactive video systems : such systems, which probably constitute the most powerful and potentially the most useful mediated instruction system yet developed, use a computer to gain access to video material stored in a random-access videorecorder in the context of a fully-interactive computer-based learning programme.

Detailed guidance on how to produce computer-mediated materials of different types is given in booklet number 18 in this series – "How to produce computer-based learning materials".

Selecting suitable materials for specific purposes

Let us now consider some of the factors that should be taken into consideration by a practising teacher or lecturer when choosing materials for some specific instructional purpose. In all too many

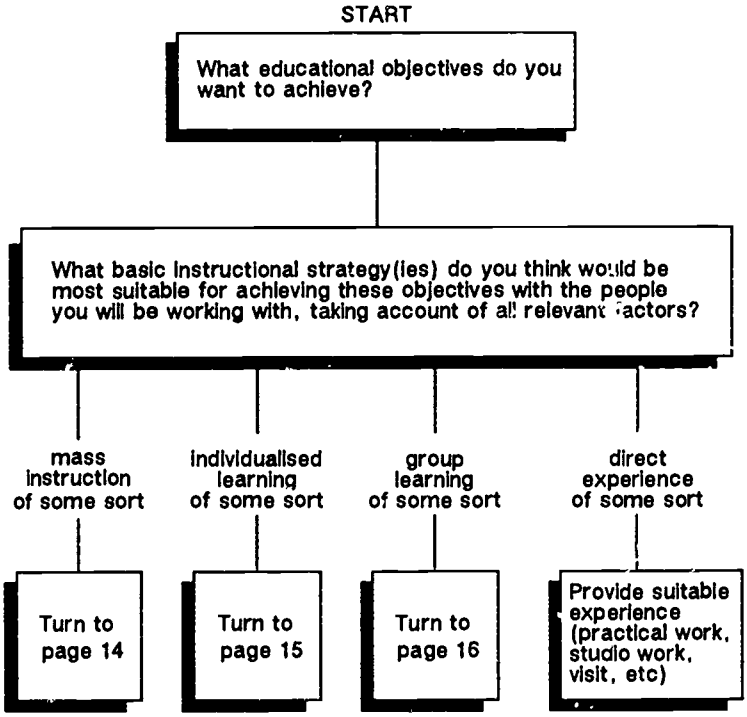
cases, such selection is made purely on a basis of personal preference and availability, with little or no thought being given to the suitability of the materials for helping to achieve the desired instructional objectives. Inevitably, this often leads to the use of inappropriate materials, with a resulting reduction in the effectiveness of the instructional process.

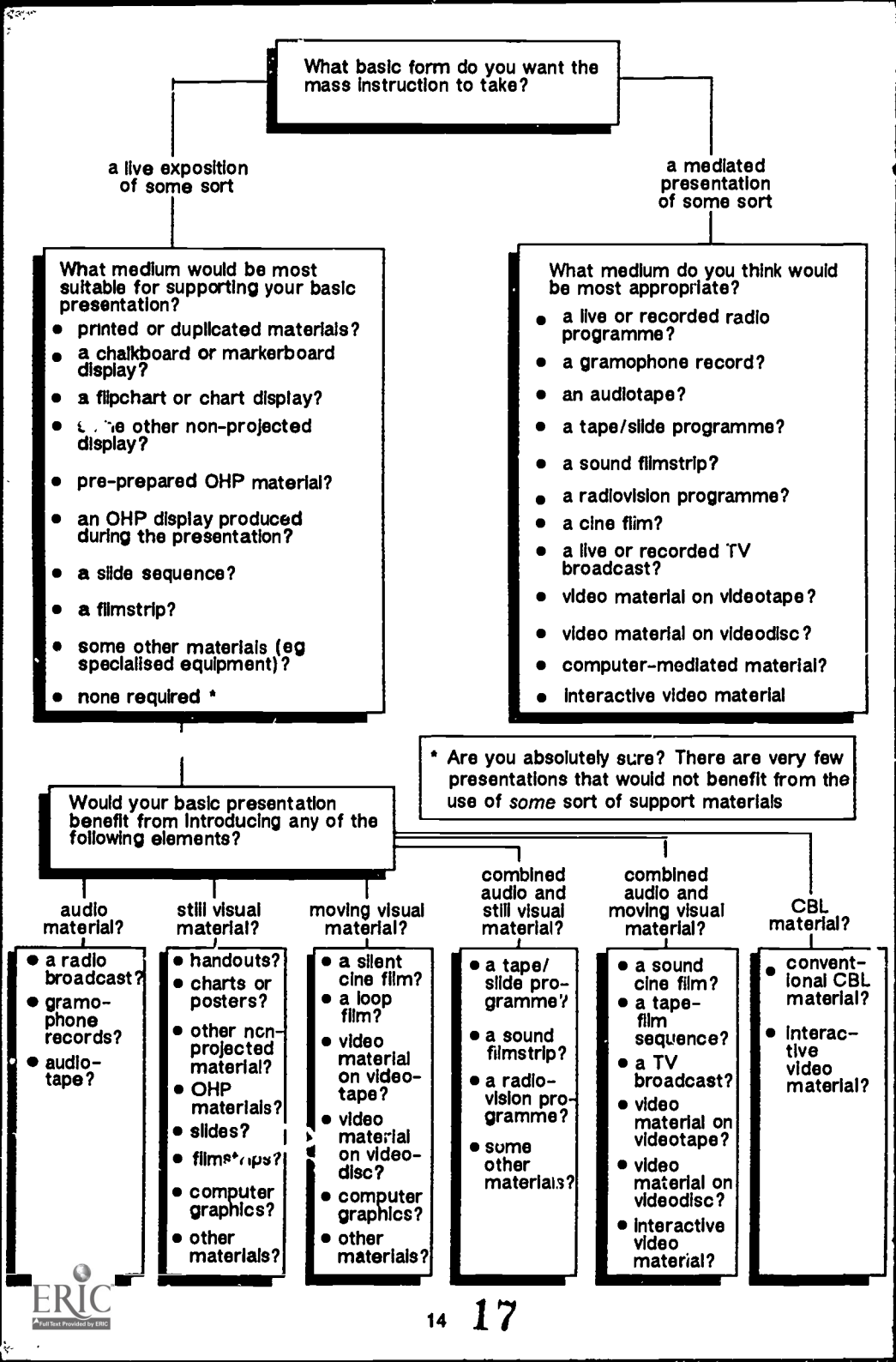
A large amount of basic research has been carried out on the relative effectiveness of different types of materials in different instructional situations. This shows that most media can perform most instructional functions to a certain extent, but that some are better at doing certain things that others, with no single medium being best for all purposes. Thus, it is possible to adopt what is at least a 'semi-objective' approach to the selection of instructional materials, based on consideration of the particular instructional strategy that is to be employed, the specific tactical methods to be used within that strategy, and the characteristics of the materials that can be used to support or implement these methods. The algorithm given on pages 13 to 16 (which it is hoped readers will find helpful) has been developed using such an approach. This should be used to identify possible materials for achieving specific objectives, with the final selection being made after other factors such as availability or ease of production, availability of necessary equipment, cost, convenience and personal preference have been taken into account. The information given in the table on pages 18 and 19, which summarises the characteristics of all the various materials described in this booklet from the point of view of the user and would-be producer, should be of help to readers in making such a final selection.

Acquiring or producing the required materials

Once you have decided what type of teaching materials you would like to use to implement or support a particular instructional scheme, it is obviously necessary to set about acquiring such materials. This should be done as follows.

1. Carry out a *thorough* investigation to see whether materials of the type you require are already available within your own establishment. If suitable materials *are* available, acquire and use them.
2. If suitable materials are not available within your own establishment, find out whether it is possible to obtain them 'ready made' from an external source, e.g. by buying commercially-available materials or by begging, borrowing or buying


START
What educational objectives do you want to achieve?
What basic instructional strategy(ies) do you think would be most suitable for achieving these objectives with the people you will be working with, taking account of all relevant factors?
mass instruction of some sort
individualised learning of some sort
group learning of some sort
direct experience of some sort
Turn to page 14
Turn to page 15
Turn to page 16
Provide suitable experience (practical work, studio work, visit, etc)


What basic form do you want the mass instruction to take?
a live exposition of some sort
a mediated presentation of some sort
What medium would be most suitable for supporting your basic presentation?
printed or duplicated materials?
a chalkboard or markerboard display?
a flipchart or chart display?
some other non-projected display?
pre-prepared OHP material?
an OHP display produced during the presentation?
a slide sequence?
a filmstrip?
some other materials (eg specialised equipment)?
none required *
What medium do you think would be most appropriate?
a live or recorded radio programme?
a gramophone record?
an audiotape?
a tape/slide programme?
a sound filmstrip?
a radiovision programme?
a cine film?
a live or recorded TV broadcast?
video material on videotape?
video material on videodisc?
computer-mediated material?
interactive video material
* Are you absolutely sure? There are very few presentations that would not benefit from the use of some sort of support materials
Would your basic presentation benefit from introducing any of the following elements?
audio material?
a radio broadcast?
gramophone records?
audiotape?
still visual material?
handouts?
charts or posters?
other non-projected material?
OHP materials?
slides?
filmstrips?
computer graphics?
other materials?
moving visual material?
a silent cine film?
a loop film?
video material on videotape?
video material on videodisc?
computer graphics?
other materials?
combined audio and still visual material?
a tape/slide programme?
a sound filmstrip?
a radiovision programme?
some other materials?
combined audio and moving visual material?
a sound cine film?
a tape-film sequence?
a TV broadcast?
video material on videotape?
video material on videodisc?
interactive video material?
CBL material?
conventional CBL material?
interactive video material?

What are the basic features of the learning experience that achievement of your objectives requires?

involves only verbal and/or mathematical abstractions

Which basic materials would be most suitable for overtaking your objectives?

- direct study of textbooks or other available material?
- self-instructional textual materials of some sort?
- microforms?
- gramophone record(s)?
- audiotape(s)?
- tape-text?
- computer-based learning materials?
- Some other materials?

requires sensory or vicarious experience

requires direct experience of some sort

Which of the following would be most suitable for overtaking your objectives?

- a combination of self-instructional text and direct experience?
- a combination of audiotape and direct experience?
- some other audiovisual materials & direct experience?
- a computer-managed learning experience of some sort?
- a system for providing mediated feedback or self-evaluation?

What type of sensory experience is required?

audio only

- a radio broadcast?
- gramophone record(s)
- audio tape(s)
- tape-text?

still visual only

- models?
- realia?
- trans-parencies?
- photographic prints?
- slides?
- a filmstrip?
- microforms?
- computer-generated graphics?
- some other materials?

moving visual only

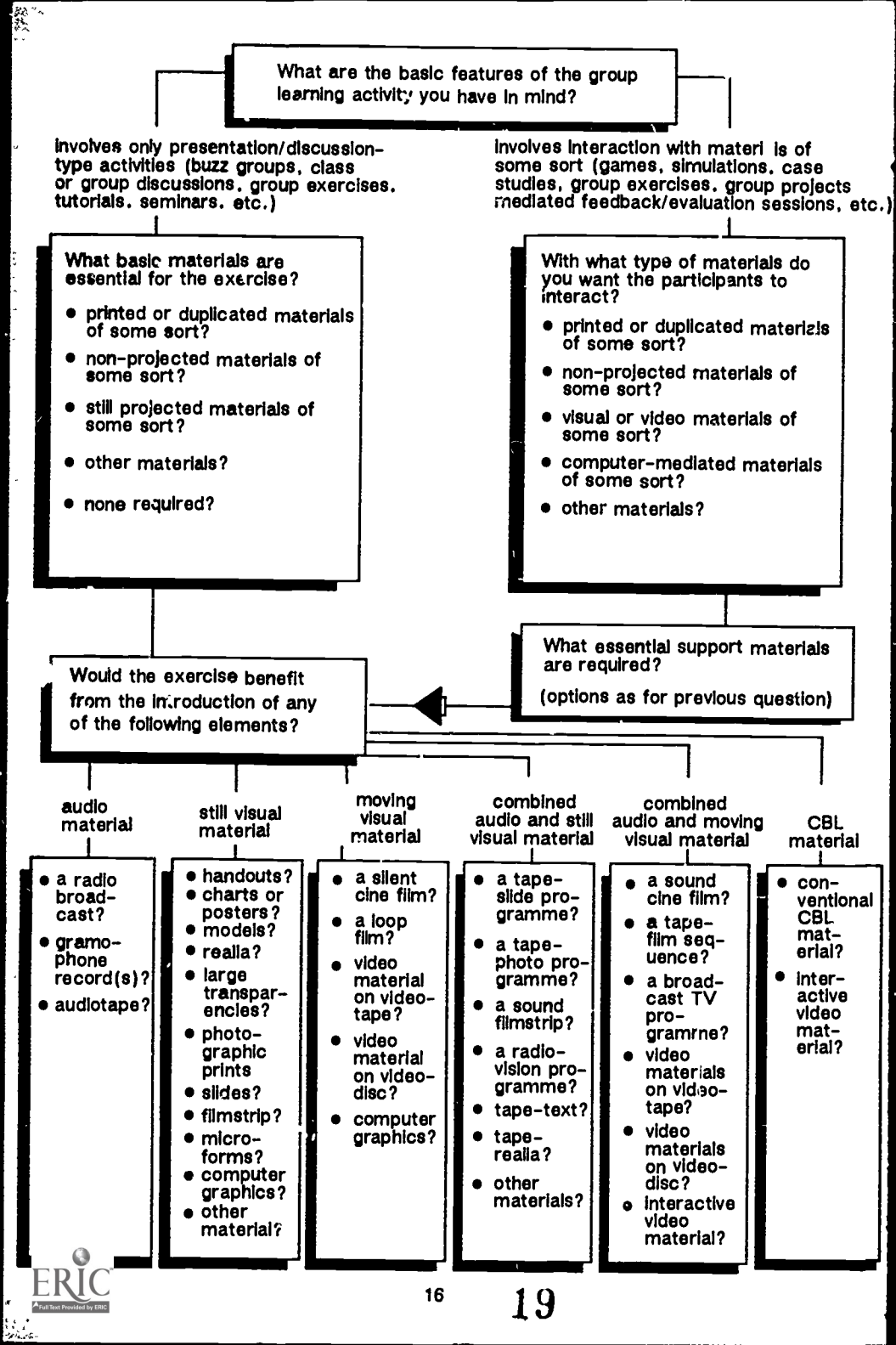
- a silent cine film?
- a loop film?
- video material on videotape?
- video material on videodisc?
- computer-generated graphics?
- interactive video?

combined audio and still visual

- a tape-slide programme?
- a tape-photo programme?
- a sound filmstrip?
- a radiovision programme?
- tape-text?
- tape-model?
- tape-realia?
- some other materials?

combined audio and moving visual

- a sound cine film?
- a tape-film programme?
- a broadcast TV programme?
- video material on videotape?
- video material on videodisc?
- computer-generated graphics?
- interactive video?


What are the basic features of the group learning activity you have in mind?
involves only presentation/discussion-type activities (buzz groups, class or group discussions, group exercises, tutorials, seminars, etc.)
involves interaction with materials of some sort (games, simulations, case studies, group exercises, group projects mediated feedback/evaluation sessions, etc.)
What basic materials are essential for the exercise?
• printed or duplicated materials of some sort?
• non-projected materials of some sort?
• still projected materials of some sort?
• other materials?
• none required?
With what type of materials do you want the participants to interact?
• printed or duplicated materials of some sort?
• non-projected materials of some sort?
• visual or video materials of some sort?
• computer-mediated materials of some sort?
• other materials?
What essential support materials are required?
(options as for previous question)
Would the exercise benefit from the introduction of any of the following elements?
audio material
• a radio broadcast?
• gramophone record(s)?
• audiotape?
still visual material
• handouts?
• charts or posters?
• models?
• realia?
• large transparencies?
• photographic prints
• slides?
• filmstrip?
• microforms?
• computer graphics?
• other material?
moving visual material
• a silent cine film?
• a loop film?
• video material on videotape?
• video material on videodisc?
• computer graphics?
combined audio and still visual material
• a tape-slide programme?
• a tape-photo programme?
• a sound filmstrip?
• a radio-vision programme?
• tape-text?
• tape-realia?
• other materials?
combined audio and moving visual material
• a sound cine film?
• a tape-film sequence?
• a broadcast TV programme?
• video materials on videotape?
• video materials on videodisc?
• interactive video material?
CBL material
• conventional CBL material?
• interactive video material?

materials from another establishment. If suitable materials are available, acquire and use them if at all possible.

3. If no suitable ready-made materials exist, see whether it would be possible to *adapt* existing materials that are available internally or externally to meet your particular needs. If it *is* possible to produce materials of the type you require in this way, do so – this is generally much easier than 'starting from scratch' and producing your own.

4. If it is not possible to adapt existing materials to meet your needs, see whether it would be feasible for you to produce your own materials. The information given on pp 18–19 should be of help in making such a decision.

5. If you do decide to go ahead and produce your own materials, see whether any of the other booklets in the suite could be of help to you in this task. A list of the relevant booklets is given below, together with summaries of their contents.

- Booklet number 11 "How to produce printed and duplicated materials" (This gives detailed guidance on how to set about designing paper-based materials of all types, including handouts, worksheets, individualised learning materials and support materials for group learning activities, and on how to produce multiple copies of such materials.)
- Booklet number 12 – "How to design programmed learning materials" (This forms a sequel to booklet number 11, giving basic guidance on how to write programmed texts – both of the linear and of the branching type.)
- Booklet number 13 – "A guide to the use of non-projected displays" (This booklet shows how non-projected displays can be used in different instructional situations and gives detailed guidance on how to design and produce non-projected displays of different types.)
- Booklet number 14 – "A guide to the use of the overhead projector" (This booklet provides practical hints on how to make effective use of the overhead projector in teaching and how to design and produce OHP software.
- Booklet number 15 – "How to produce audio materials" (This booklet looks at how audio materials can be used in different instructional situations, gives a basic introduction to sound recording and editing, and gives detailed guidance on how to design and produce audio materials for specific purposes.)
- Booklet number 16 – "How to produce linked audio and still visual materials" (This booklet looks at how linked audio and still visual materials can be used in different instructional situations

Type of Materials	Instructional Mode(s) For Which Materials Are Most Suitable	Can Materials Be Produced On-Site By Teachers And Trainers
printed and duplicated materials	all modes	yes
chalkboard and markerboard displays	mass instruction ; group learning	yes
feltboard and similar materials	mass instruction ; group learning	yes
magnetic board materials	mass instruction : group learning	yes
flipchart displays	mass instruction ; group learning	yes
wallcharts and posters	mass instruction ; group learning	yes
photographic prints	mass instruction ; group learning	yes
mobiles, models etc.	all modes	yes
realia	all modes	yes
OHP transparancies	mass instruction ; group learning	yes
slides	all modes	yes, but technical support may be needed
filmstrips	all modes	not easily
microforms	individualised learning	not easily
radio programmes	all modes	not without professional support
gramophone records	all modes	no
audiotapes	all modes	yes
tape-slide programmes	all modes, especially individualised learning	yes, but technical support may be needed
tape-photo programmes	all modes, especially individualised learning	yes, but technical support may be needed
sound filmstrips	all modes	not easily
radiovision programmes	all modes	not without professional support
tape-text programmes	individualised learning	yes
tape-model and similar materials	individualised learning	yes
cine films	mass instruction ; group learning	yes, but external processing required
loop films	all modes	yes, but external support required
tape-film programmes	all modes, especially individualised learning	yes, but external support required
TV broadcast programmes	all modes	not without professional support
video materials (on videotape)	all modes	yes, but technical support may be needed
video materials (on videodisc)	all modes	no
conventional CBL materials	all modes, especially individualised learning	yes
interactive video materials	all modes, especially individualised learning	only if specialised facilities are avail

s Production of Materials Require y Specialised Skill(s) Other Than ructional Design Skills?	Does Production of Materials Require Any Specialised Equipment?	Is Any Specialised Equipment Needed To Use The Materials?
ic graphic skills	printing or duplicating equipment	no
ic graphic skills	chalkboard or markerboard	chalkboard or markerboard
ic graphic and craft skills	no	suitable display surface
ic graphic and craft skills	no	suitable display surface
ic graphic skills	no	suitable support system
ic graphic skills	not necessarily	no
ic photographic skills	appropriate photographic equipment	no
ropriate craft skills	not necessarily	no
	no	no
ic graphic skills	no	projector and screen, or light box
ic photographic and graphic skills	appropriate photographic equipment	projector and screen, or viewer
cialised photographic skills	appropriate photographic equipment	projector and screen, or viewer
ropriate photographic skills	appropriate photographic equipment	suitable viewer
essional production skills	studio equipment	radio receiver
rnal support required	studio and manufacturing equipment	record player
ic recording and editing skills	basic recording and editing equipment	audiotape player
or slides and audiotapes	as for slides and autiotapes	audiotape player & projector or viewer
or photographs and audiotapes	as for photographs and audiotapes	autiotape player
or filmstrips and audiotapes	as for filmstrip and audiotapes	as for filmstrips and audiotapes
essional production skills	as for filmstrips and radio	as for filmstrips and radio
or textual materials and audiotapes	as for textual materials and audiotapes	autiotape player
or models, etc. and autiotapes	as for models etc. and audiotapes	audiotape player
ic cine production skills	cine camera & sound equipment	suitable cine projector & screen
rnal support required	cine camera & special equipment	special projector or viewer
or cine films, slides and audiotapes	special equipment raquired	special projector/player
essional production skills	TV studio facilities	TV receiver
c TV production skills	basic video production facilities	audiotape player & TV monitor
rnal support requirad	highly specialised equipment	videodisc player & TV monitor
c programming skills	access to suitable computer or authoring system	suitable computer
gramming skills, video production s	video production facilities; CBL authoring and interface facilities	computer, random-access videorecorder TV monitor

and gives detailed guidance on how to design and produce different types of materials, including linked tape and textual materials, 'tape-slide' and 'tape-photograph' programmes, and other systems such as 'tape-model' and 'tape-realia'.)

- Booklet number 17 – "How to produce video materials" (This booklet looks at how video materials can be used in different instructional situations, gives a basic introduction to video recording and editing, and gives detailed guidance on how to design and produce video materials.)
- Booklet number 18 – "How to produce computer-based learning materials" (This booklet is a sequel to booklet number 9 in the series – "How computers can be used in tertiary education"; it gives detailed guidance on how to design and produce CBL materials of different types.)

6. If you find that materials of the type you require are *not* available within your establishment or from an external source, and that it is *not* feasible to adapt existing materials to meet your needs or produce your own materials 'from scratch', you should carry out a radical re-think of your instructional strategy. In other words, you should see whether it would be possible to achieve your objectives in some other way, using different materials. You may have better luck next time!