
UNIT 1 COURSE DESIGN

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1.0 OBJECTIVES

By the end of this unit, you should be able to:

- explain how and why the curriculum for distance education may differ from that used in conventional education;
- describe different ways of assessing educational needs, and explain the importance of carrying out such an assessment;
- describe the process of curriculum planning for distance education;
- describe the systems approach to course planning and explain each stage in it;
- use this approach to develop a course outline; and
- describe and discuss problems commonly encountered in the process of course planning.

1.1 INTRODUCTION

In conventional education, when we talk of 'a course', we usually refer to a subject and the level at which it is studied - standard chemistry, primary-level maths, undergraduate biology and so on. In distance education, the term 'course' means more than this. It is used to describe the teaching materials and other components of study. A typical open university course will, for example, consist of a number of texts, usually called units, audio, and video components, contact sessions, assignments and correspondence teaching, library work, laboratory work and project work. A course outline will show how these components are used, and will indicate how much time is allocated to each of them. It will also indicate, usually in the form of a numbered list of unit titles, the sequence in which topics are taught.

The word 'course' is, thus, used for software, hardware and teaching materials. To complicate matters, it is frequently used loosely but conveniently to refer to the course text alone. Such a misuse of the term draws attention to a major shift in perspective that teachers must make when planning to teach at a distance instead of face-to-face. Traditionally our planning is subject-centred; we think in terms of the topics to be covered. In distance education, we have to consider the methods to be used alongside the subject to be taught. In addition to this, the special nature and requirements of distance learners further complicates planning. Course design, the subject of this unit, is a complicated and lengthy process. We have presented to you a number of ideas and possible ways of approaching the task, which will help you in practice.

We should warn you, however, that even experienced distance educators find the job difficult and demanding, so you should not expect to find any single easy option in what follows.

In this unit, we introduce you to the principles of planning and designing a course for distance education. We will do this first by making some comparisons between conventional and distance education, and then by discussing some of the techniques that distance educators have adopted to help with the specific research and planning which distance education requires.

1.2 DEVELOPING A CURRICULUM

The term 'curriculum' is normally used to refer in the broadest sense to what is learnt in a particular course or programme. It covers both learning that is planned and intended and learning that is unplanned and incidental [Our course ES-316 which is part of our M.A. in Distance Education Programme looks at curriculum in greater detail.]

In face-to-face education, only a part of the learning is planned by the teacher. S/he will choose which topics to cover, how to treat them, and the order in which they will be presented. Often, the subject matter is prescribed in a syllabus, and all the teacher needs to do is to develop ideas for presenting the topics in class. If necessary, the teacher can change the content of a lesson or a lecture on the spur of the moment, and discard the planned presentation.

In a normal class or lecture, a large number of unplanned events occur. A good teacher will encourage students to ask questions, to discuss new concepts, and to debate issues. Such dialogue, which may take place within the classroom or outside it, is an important part of education, though its content and conclusions are obviously unplanned.

Students are also encouraged to work individually, completing projects or assignments, through which activities they develop their personal understanding of a subject, develop essential skills and grow in competence and maturity. In other words what the student learns is often something that the institution or the teacher does not *intend* to teach or say but which is there in the curriculum, so that much of what our learners learn will be '*caught rather than taught*'. For example, the way a doctor or a physician speaks or reacts to various situations, is a characteristic of their *future roles* which does not form part of the students' formal learning but is very important to their socialisation as members of a profession. Every teacher expects such learning to happen, but does not usually articulate/teach the need for them, and does not specify in the plans for a course, events and processes that relate to what is often called the *hidden curriculum*.

Distance education is different since there is no hidden curriculum, and everything is open. We can place very little reliance on unplanned learning. Let us consider what this means.

1.2.1 Teaching the hidden curriculum

A course taught at a open university and through system of distance education, must include the deliberate teaching of all those areas covered informally in conventional education, which the course planners must incorporate in their plans.

What are those areas that a course planner should incorporate in his/her plan?

Learning objectives

We saw in Unit 1, Block 1 of this course that there are three important categories of learning objectives: cognitive, affective and psychomotor. A conventional curriculum usually restricts itself to considering only cognitive learning. A curriculum for distance learning must have a wider range and should cover objectives concerned with affective and psychomotor learning,

which need to be included specifically in the curriculum, since otherwise they might be overlooked.

Dialogue

The text cannot literally speak to the learner in the way a teacher can, but it can have an interactive tone. Let us elaborate on this. The writer may include questions or activities in the text or present the materials in a conversational style which may provide a substitute for the teacher's voice in a classroom. The comments written by the teacher on *assignment-responses* and the voice of a teacher on audio cassettes and video presentations can also help the learners feel that they are interacting with the teacher. Thus the sense of loneliness which otherwise curbs the enthusiasm of the students may be eradicated. Holmberg (1983) has called this 'guided didactic conversation' and considers it an essential feature of distance education.

Consider what Holmberg has to say about a problem-solving approach. He suggests in the following extract that the distance educator may need to consider presenting the subject matter in a way different from the usual approach.

"My theory implies that the character of good distance education resembles that of a guided conversation aiming at learning and that the presence of the typical traits of such a conversation facilitates learning. The distance-study course and the non-continuous communication typical of distance education are seen as the instruments of a conversation-like interaction between the student on the one hand and the tutor/counsellor of the supporting organisation administering the study on the other. There is constant interaction (conversation) between the supporting organisation (authors, tutors, and counsellors), simulated through the students' interaction with the pre-produced courses and made real through the written and/or telephone interaction with their tutors and counsellors...."

"Both the presentation of learning matter in a printed or otherwise pre-produced course and the two-way communication brought about by assignments (or otherwise) serve the purposes of didactic conversation. Whereas the former can show the way/set the *pace* for profitable interaction with the study material and thus represents a kind of *simulated* communication, the communication between the student and the tutor or counsellor in writing on the telephone or by other means represents *real* communication. The two together constitute the kind of didactic conversation possible in distance education. It is this simulated communication that is above all studied in this presentation of the guided didactic conversation in distance education.

"So-called self-checking exercises, review questions with model answers, inserted questions and similar components often stand out as important elements of simulated communication. They are not always necessary, however, useful as they are in many contexts. If a problem-learning

approach is applied in the sense that the whole learning is based not on what we now know but on the problems asked by scholars of earlier times and by any serious student, then the discussion of how to put the questions, what paths to take and what procedures to use to come to a conclusion may include the conversational elements.”

In Block 2, Course Es-311 we have presented what Holmberg considers features of guided didactic conversation. The seven features listed there should be seen as an attempt to describe the essential traits of good distance education and thus to represent, and promote an understanding of, its basic character. However, it is also a prescriptive theory in that it suggests procedures effective in facilitating learning.

Personal development

You will have noticed that in distance education texts, it is normal to address the reader as ‘You’. This helps the student to feel involved in the course and to gain the sense that it is meant to help develop his/her ideas.

There are other ways in which courses are planned to cultivate individual development. A learner may be asked to apply skills or relate ideas to his/her own environment, or he/she may be asked to discuss examples drawn from personal experience. Such activities make learning relevant to each individual.

Face-to-face interaction

As you know, distance education includes some face-to-face learning. It is not possible, however, for debates to take place naturally and informally at any time, as happens in the classroom. Meetings between learners, even if regular, will normally take place infrequently and where debate is necessary it can only take place on such occasions. You can see that this situation has implications for the order in which certain topics are presented and the pace of presentation. For example, ideally, in a course on philosophy, written essay assignments are never attempted until a seminar has taken place to discuss the topics. Other courses too require some face-to-face sessions. For example, while teaching science courses, it is often necessary for teachers to give practical demonstrations. Course planners might need to consider postponing the introduction of certain topics until such face-to-face sessions can occur.

Developing competence in study skills

A classroom student observes his/her fellow students and talks to them regularly. Through such informal contact he/she learns what kind of standards are expected, what techniques and strategies other students use, how they approach their assignments, and which books are the most useful. The distance learner, however, usually has to sort out such matters unaided by his/her peers. The distance educator, should therefore, try to help the learner by hints and guidance built into the study materials.

In essence, wide-ranging objectives, dialogue, personal development, face-to-face interaction and competence in study skills are the features of distance education which help to ensure that the learning experience is as good, and at times even better for distance learners as for conventional students.

1.2.2 The nature of the students

Formal education is a continuous process, neatly divided into stages. A young person completes school, passes an exam, and moves straight on to the next stage — a university course. The new undergraduates are all about the same age, have similar qualifications and a similar (rather limited) experience of life. Their aspirations and expectations will therefore also be largely similar.

As far as distance education is concerned, the learners may be of any age - young or old. Entrants into a particular programme may have broadly similar qualifications, but they may have acquired them at different times, perhaps while following different syllabi. The education of distance learners has usually been interrupted at some stage. Older learners will only remember partially what they learnt at school. Distance learners will thus have varying experiences of life, and different ambitions and expectations, while they will study the same course.

Such factors may affect what is taught. First, with older learners it is often possible to go deeply into a subject quite rapidly. Adults often have experience and a maturity of outlook which more than compensate for the lack of formal education.

Secondly, adults may not remember various things that they have been taught at school. This means that refresher material has to be incorporated into courses, particularly in the early units, so as to ensure that everyone starts at the same level.

Lastly, it is difficult to decide what that level should be. For this reason, it is advisable to conduct research into students' needs (see section 1.3). Such research will help to define the content of the curriculum.

1.2.3 National considerations

We have described above how distance learners may as individuals, have objectives that differ from those of conventional students. Institutional objectives may also be influenced by external factors to a greater degree than happens in conventional education. A national system of formal education tends to have broad and comprehensive objectives, whereas distance education, particularly for adults, is expected to be more functional. Conventional universities, for example, tend to offer degrees in a wide range of subjects, while distance education universities often provide only a small range of largely functional courses, related to national manpower needs and

We have seen that the curriculum of a distance education course may differ in content, objectives and presentation from that of one in conventional education.

Before we discuss these educational needs in detail, let us work on the following exercise.

State, in not more than 10 lines, the differences between the curriculum in distance education and that in conventional education.

This image shows a full page of dot grid paper. It features a series of evenly spaced horizontal dots forming lines across the entire page. A vertical column of dots runs down the center, creating two equal-width columns. The paper is otherwise blank, with no handwriting or other markings.

1.3 ASSESSING EDUCATIONAL NEEDS

Heterogeneity in student-population, among other factors, demands careful scrutiny of the educational needs of the students. The courses should be designed in such a way as to cater to individual needs. To elucidate the point, consider that eighteen-year-olds entering university come straight from school, having gone through more or less identical courses. On the contrary adults starting a degree under a distance education scheme, or any other course, will have widely different backgrounds, experience and aspirations. When we are planning distance education, we can guess at the common factors — and indeed as we shall see below, adult learners do share several characteristics — but we will plan more effectively if we conduct some research to verify our assumptions.

In what follows we have suggested some general guidelines for identifying the 'needs' of students.

1.3.1 The characteristics of adult learners

The points that follow are generalised ones, and exceptions can be found to each case. The generalisations, however, provide useful guidelines for planning.

Adults bring experience and maturity to their studies. By relating new information to their experience, adults can often understand and learn more quickly than younger people. Maturity can result in wiser judgement and better decisions.

Most older people learn just as effectively as young people, but they may learn with less ease. Affective learning which involves a shift in opinions is particularly difficult, as with increasing age, our attitudes become more fixed. In courses for adults with a substantial affective component, opportunities for discussion and debate are crucial.

Adult learners are often strongly motivated. Usually, they have made a conscious decision to study, have paid for their course, made arrangements to find time for their studies, and in the process given up other activities. Such people have a different attitude to learning from young people, who are often simply following the general rule or obeying their parents' wishes by attending school or university.

Many people turn to distance study because they have missed out on educational opportunities earlier in life. Some will have been prevented from continuing with formal education by economic or environmental factors: perhaps when they were young they had to learn to support their family, or perhaps there was no university nearby. Others are school drop-outs with an incomplete education, people whose school-leaving marks were

not high enough to allow them go on to the next stage, or even first time failures.

In an ideal world, such people would be given a second chance right at the point of failure; in practice, the formal system rejects them. Naturally, they turn to distance education. They approach their study tentatively and with little confidence, because of their inadequate educational background and previous lack of success. They need constant support and encouragement if they are to persist in their studies. Such learners may be in a minority but they deserve special attention because of their courage and determination to try again. We can be sure that if they dropout or fail a second time, they will not return, so we must design our materials and support system to try and prevent this.

Those who completed their formal education some years ago will have forgotten some of what they learnt at school, unless they have been studying part time regularly. They will need some guidance in revising certain elementary aspects of the subject they have chosen and they will also need help with study skills. Those who are out of practice find it difficult to organise note-taking, to plan and compose essays and to find and use reference material. Our courses for adults should, therefore, help with the process of study as well as provide the required content.

Having touched upon the general 'needs' of adult learners, we shall now talk about how specific needs may be assessed. Before that we shall consider the extract below. It raises important questions about the way adults learn, and has implications for the design of the curriculum. Consider how far these ideas might affect your own.

"Most developmental psychologists were acknowledging a new body of descriptive and experimental evidence which indicated that cognitive (i.e. thinking) decline was *not* a necessary consequence of ageing. This evidence and the research methodology which produced it constituted an effective challenge to a much larger body of psychological evidence which had supported the socially persistent stereotype of inevitable and irreversible decline with advancing age. The psychologists had formulated a more complex and sophisticated research design, in order to correct recognised biases in the designs which were normally used to produce descriptive evidence of development. What they found was that whether or not individuals' cognitive or thinking abilities decline, remain stable or continue to develop over the years of adulthood, depends on the interplay of many factors. Psychologists began to recognise that development, or the lack of it, during adulthood was inextricably linked to the degree and quality of individuals' interactions with their social and historical contexts. Since such interactions could fluctuate, the pattern of development could do so as well. This model of development has been called the 'plasticity' model.

This evidence may complicate our thinking about adult development, it does make it quite clear that people have a 'potential' for continuing development across the entire life-span, and this idea has revolutionised our thinking about adults. To say that the 'potential' of adults is for lifelong cognitive

development contradicts the prevailing view that adulthood is a stable period of life at least until what were believed to be 'the inevitable consequences of aging' cause a decline in cognitive functioning. This 'non-development' concept of adulthood was the only one available to adult educationists until the mid-1970s. Directly and indirectly, it has affected the practice of education for adults. If we expect adult learners to have fully mature and stable cognitive structures, then it is quite reasonable to define the developmental objectives of an educational experience with a somewhat limited framework. In other words the differences between a child and an adult are considered similar to the difference between a novice and an expert. Children (like novices) and adults (like experts) perceive things differently because adults are able to attend to different details of a problem with the help of their different perceptual – cognitive templates. This is why adult educators have thought of development as either the further elaboration or accumulation of knowledge or the growth of self-knowledge and understanding. Both of these functions focus upon types of content or knowledge and assume that the processes and thought structures which deal with this content are unchanging. The revolution in our thinking about 'adults' potential for lifelong cognitive development requires that we re-examine our practice of adult education and discuss whether it is fulfilling its role in enabling this potential for continuing development to be realised. This values what adult learners bring to a course from the time they enter. For example, in business studies, adult learners can make worth-while contributions as a result of the experiences from the jobs they had. Even if there is no direct application of the experience to the future job, adult learners bring with them experience of life, and maturity. This puts much of the responsibility for designing a course in distance education. The course writer should provide *constructive* situations for the adult learners, as the learner is actively constructing both the knowledge acquired and the strategies to acquire it when constructing his or her own unique experience. It is this *constructivist approach* he/she then uses to deal with any new experiences in that field."

Constructivist approach to course design

Most conventional text books deal with objectivist approaches in designing their chapters, content and tasks or activities. They are concerned with the *transmission of knowledge* and facilitating the process of learning of that knowledge. But *constructivist* approaches put at the centre of the course design, the learners, and the knowledge they bring to the learning situation. This approach is based on the following principles.

- Learners are a legitimate source of knowledge, and must be encouraged to learn to trust themselves and their knowledge.
- Learning is not a passive exercise that consists of absorbing knowledge (information) developed and transmitted by experts. Learning is a matter of the learners creating meaning from the materials and interactions that are available to them as resources.

- Learners are encouraged to take control of and initiate their own learning.
- Ambiguity and contradiction are not problematic. They can be helpful in pushing the learner towards a problem-solving, or problem-posing, approach to learning.

In designing materials using this approach, the course designer's role is that of a collaborator, not just with regard to the subject expert but to the learner as well.

When viewed together, our reconceptualisations regarding the nature of development during adulthood hold profound implications for the adult educationist. It seems indisputable that whenever in life there is some potential for development the function of education is to enable it; and to achieve this function, the educationist must understand both the nature of what might be realised as well as the process by which development proceeds. However, it is worth noting that there is a fundamental difference between enabling the development of youth and the development of an adult. The teacher of children and adolescents will be enabling the learner to develop competencies, ideas and cognitive structures which the teacher has already developed. The enabling process where adults are involved demands a different perspective on development, because enabling in this context pertains equally to teachers and students. This difference alone would appear to require essentially different relationships between teachers and learners.

1.3.2 Assessment of specific needs

A new institution will normally make a broad assessment of educational needs before planning its first courses. At its foundation for example, the Indira Gandhi National Open University commissioned a study from Educational Consultants India Ltd. (New Delhi) to inform decisions to be taken on its first courses. The survey found a demand for general undergraduate courses, and also a specific demand for management and computer-related courses. In addition, there was a strong demand for courses on rural development, the improvement of writing abilities, the special needs of women, and teacher training. The survey strongly influenced the initial programme of the university.

When it comes to planning individual courses, general surveys often need to be supplemented by a specific survey to clarify needs. Rowntree (1990) has mentioned at least *seven* major questions we need to ask in planning a self-learning course or lesson.

1. Who will the learners be?
2. What are the aims and objectives?
3. What is the subject-content to be?
4. How will the content be sequenced?

5. What teaching methods and media will be used?
6. How will learners be assessed?
7. How will the course or lesson be evaluated with a view to improvement?

A survey will need to consider the following:

- i) Identifying the target group,
- ii) Collecting information about their background and experience, and
- iii) Identifying their needs

We have elaborated on these items (i, ii and iii) below.

Who will the learners be?

A course in a particular subject is normally aimed at a specific group. For example, a course on an educational topic may be aimed at all teachers, or only at experienced graduate teachers, or trainee non-graduate teachers. The nature of the target group will affect the content and objectives of the course. Sometimes, a course is designed with a target group in mind, while in other cases, a subject is chosen, such as any particular aspect of management, and then efforts are made to identify the kinds of people who would be interested in taking it up. To some extent, most courses can be flexible; to some extent, all learners must do some adjusting on their own. If you wish to emphasize flexibility, you may need to build in alternative content or treatment to suit individual differences. If you need to rely on learner's adjustments, you will need to think of selection tests – what competencies do learners need before they can begin work on the materials?

There are six types of information you might need about the perspective learners. In other words the characteristics of open and distance education learners can be considered in these different terms:

- Demographic
- Motivation
- Learning factors
- Subject background
- Resource factors
- Typical problems

Let us see below the various components associated with each factor.

Demographic factor

How many learners are there? What age range do they belong to? Do they include members of both sexes? What is their family status and employment or occupation? There are also questions about the learner's geographic locations, previous education and knowledge of various languages.

Motivational factors

Why are the distance learners going to take a specific course/programme? How does this programme relate to their life and work? What do the learners want to get from the programme? Why do they choose self-learning? What are their expectations and fears?

Learning factors

What are the distance learners beliefs about the learning experience, and hopes from it? What learning styles do they prefer? What learning skills do they have? What experience do they have of distance learning or have they had prior experience with self-learning at all? Do they have adequate time and facilities available for study?

Subject background

What knowledge, skills and attitudes do learners have? How do the distance learners feel about the subject or course? What personal interests and expectations are relevant?

Resource factors

Where, when and how will learners be learning? How will they be paying their fees and expenses? How much time will they have to study? How much access will they have to the required equipment and human support?

Typical problems faced by distance learners are

- family pressures
- worries about work and money
- lack of access to books and libraries
- lack of own study pace
- isolation from peer group/other learners
- lack of transport (in some places)
- lack of confidence
- lack of time required to attend tutorials

From the above discussion you may infer that such information may help the course designer to decide the ways that the subject/course may provide encouragement through useful anecdotes, examples and analogies. The above factors also emphasize that with a self-learning course when learners are studying at a distance, one needs to obtain information about the distance learners before the course begins. Other wise knowledge of the learners cannot affect the teaching as much as it should.

What will the target group be like?

Course planners need some information about the background and experience of the target group. The following are the essential questions to which they should find adequate answers:

- What kind of educational qualifications do they have?
- Have they all reached the same standard of knowledge, or are they at different levels?
- What languages did they use for their earlier studies?
- If they used other languages from the one now proposed what standard of language performance can we expect?
- How long ago did they study?
- Is their subject-knowledge likely to be out of date?
- What do they want or need to learn?

What do they want or need to learn?

Often, some of the aspects of a syllabus are already well-known to adults. Therefore, we need to first ask how much our potential students already know. We may find we can treat lightly certain topics which might need fuller coverage for younger people. There will be other cases where students will want to pay special attention to a topic, or will need extra help, for example, adults often forget some of the basic mathematical techniques learnt at school, and thus need help revising those techniques which are perhaps needed to study science. The conventional student, on the other hand, retains the competence acquired even a year ago and can thus concentrate on the scientific content. In yet other cases, adults may have particular objectives and these are sometimes impossible to guess. For example, would other workers, being interested in computers, prefer to start with a course in computer appreciation or to start by learning some practical application? We can only answer this question by asking them and following the opinion of the majority.

There are many examples of courses which have failed because such simple questions have not been asked.

Check Your Progress 2

If you were to conduct research to assess educational needs, what are the steps you would follow?

- Note:** a) Space is given below for you to write your answer.
b) Compare your answer with the one given at the end of this unit.

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1.4 THE PROCESS OF CURRICULUM PLANNING

We have discussed at length possibilities for developing the curriculum and the constraints we might face while doing so. Planning is only complete when decisions concerning the objectives have been reached. How can this stage be achieved? There are no set rules but the strategies described below are common practice.

First, it is usual to convene a group. This will include senior faculty or editorial staff from the institution which offers the course, and outside experts including subject specialists and representatives of those industries or agencies which will absorb the graduates of the programme. This group may itself develop the curriculum or it may simply consider proposals put to it.

The curriculum may be developed in several ways. One of these is to use an existing syllabus as a model and adapt it; or a group can start from 'scratch', using the technique of brainstorming to generate ideas; another method is to collect ideas through research, which it must be admitted, is rather a slow process; finally, we can adopt a combination of all or any of these methods.

Whatever approach is chosen, we should not be rigid in its implementation, and should be prepared for curriculum planning to take time and to require several meetings. It is unsuitable for an individual to undertake such a task without reference to a large group. A planning group can be quite large, bigger than a writing team, so long as the members are prepared to give constructive advice. As for the course outline, we shall consider it when we examine the systems approach to course planning.

1.5 THE SYSTEMS APPROACH TO COURSE PLANNING

Distance education should be systematically planned, and the system shown in Figure 1 provides a framework for planning. Note that the order of

events given here is not always followed strictly, and in practice some stages occur simultaneously, or overlap with each other.

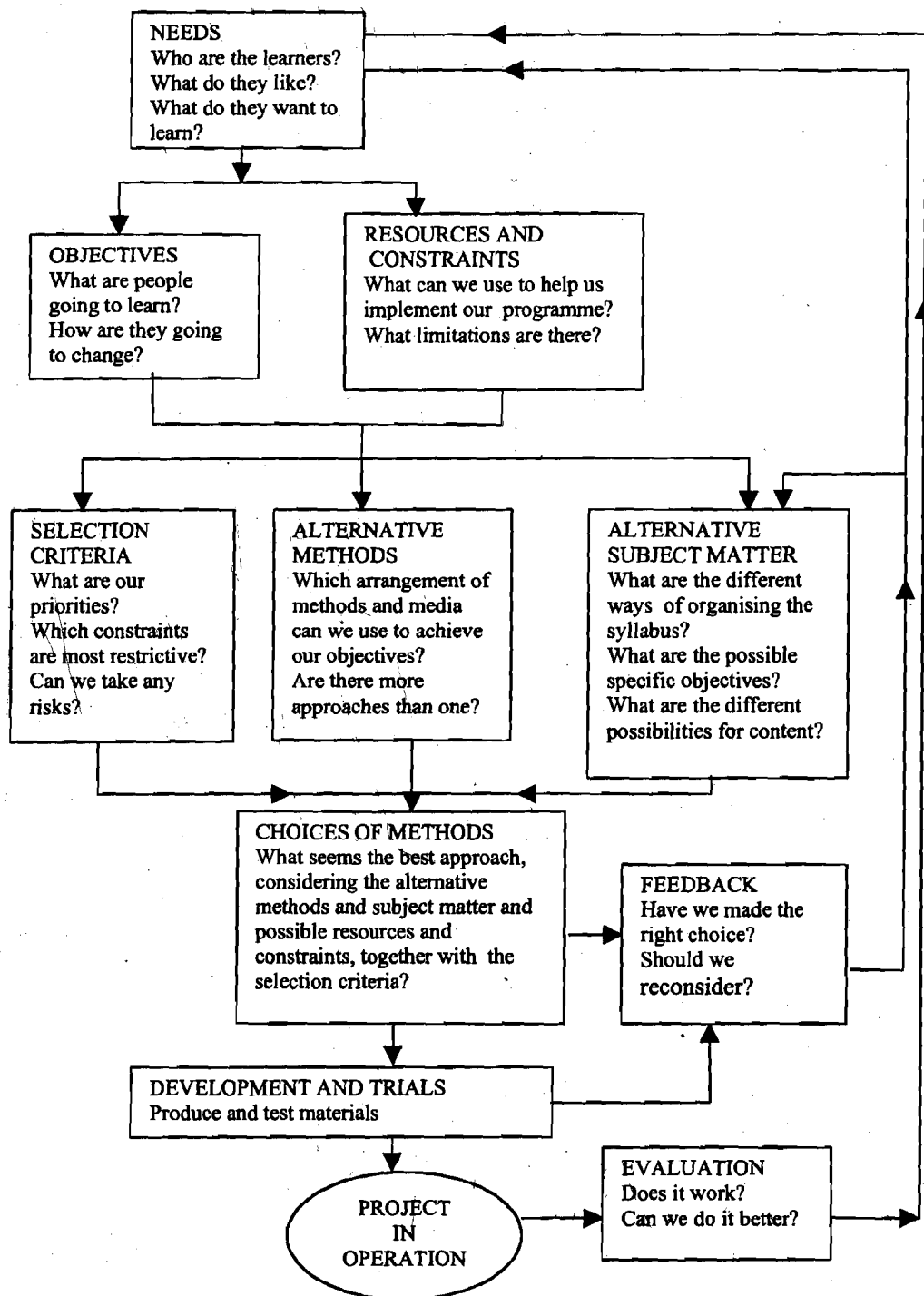


Fig. 1: Course planning - A Systems Approach

Source: Janet Jenkins, Materials for learning, London: Routledge and Kegan Paul, 1981.

Now we shall describe each stage of the process here.

1.5.1 Educational needs

There is no need for further comment on this, except to stress that a consideration of educational needs must precede all other stages of planning. A wrong judgement about level of learning required, a poor choice of content, or a mismatch between course objectives and student aspirations can condemn a course to failure even before it is written.

1.5.2 Defining objectives

From a definition of needs, we arrive at broader *aims*. These provide a *general framework*. But for detailed planning, we need greater precision, and we can acquire this by defining objectives. A *statement of course objectives describes what learners will be able to do at the end*. Objectives will cover cognitive, affective and psychomotor learning as required. For example, courses for managers will normally have a number of affective objectives, arising from the need for managers to develop skills in managing personnel, as well as cognitive objectives concerned with learning about different theories and practices of management.

1.5.3 Resources and constraints

Once we have defined the objectives, we can make decisions about methods, in the light of the resources available to us and the constraints on their use. In figure 1 (see p. 22) 'resources' and 'constraints' are set beside 'objectives' to indicate that they are to some extent interdependent. Sometimes, course planners decide on all the objectives and then consider methods; at other times, certain constraints will exclude particular methods or objectives from consideration.

The resources and constraints to consider include the following:

The learners and their environment

We should already by now have sufficient information about the educational background and aspirations of the learners. We also need to know a little about their 'material' circumstances. Do they personally own audio-visual equipment? Are they likely to own cassette players, radios or television sets? Will they be able to bear the cost of buying textbooks if such a suggestion is given? How many hours a day are they likely to be able to set aside for study? What kinds of places do they live in? Are there facilities within easy reach which can be used as study centres? Are there local resource persons who can at a later stage, become supervisors of the study centre? Are there accessible libraries or laboratories?

If you consider a subject like medicine you can see how important such questions are. Let us suppose you are planning to offer a distance education postgraduate diploma in a subject like immunology. If all the candidates are in urban areas they will have access to every facility, and you can plan to use a variety of idea and methods. If your target group is doctors in rural areas, the picture is quite different. Each doctor may have to travel for hours to reach the nearest hospital for supervision and laboratory work. Power supplies may be available only during working hours, which could make part-time study difficult, as the learner needs good light. For a mixed group or urban and rural doctors it would be a difficult task indeed to choose the best method of learning.

Access to media

We need to list all the media available: print, broadcasting, video, audio programmes, teleconference, computer assisted learning or Internet etc. What are the constraints on their use? Are they available to all our potential learners? Are they within the range of our budget?

Keeping in view the resources and constraints, the design of any learning material in a course needs to take into consideration at least the following seven factors: time factor, learning skills, appropriate workload, optimal learning activities, levels, technology and cost. The above seven factors, one considered as the key parameters for designing materials. Let us discuss them one by one.

- *Time factor* – The course writer has to consider how much time distance learners have to devote to their studies. Is there assistance available for students to develop time management skills, should they need it? Is there any opportunity for relaxation, family, social life?
- *Learning skills* – Distance learners have to learn the basics of ‘how to learn’ at a distance. The experience of previous learning in classroom may hamper the learning process so they have to develop independent learning skills.
- *Appropriate workload* – What is an appropriate workload for a distance learner? With full-time on campus students the workload is usually balanced, but the translation of these same courses to a distance mode is not always so direct. In this translation, workload requirements may change.
- *Optimal learning activities* – What are the best activities which can best give students feedback on a wide range of skills? Is the assessment designed to be a learning exercise or will it be a formal evaluation of learning? What should the balance be? Is it more desirable to have a number of shorter exercises, each concentrating on a particular aspect of learning, or to select one or two exercises which encompass a number of the learning skills to be assessed?

- *Levels* – At what level is the learning? Are the students just beginning learning? Or is it at a second or third year level? Is it on an undergraduate level or more advanced?
- *Technology* – What are the best technologies to be used in student's learning? Print is the traditional mode but other modes may prove more effective. The potential for audio, video, broadcasts, computer networks and other technologies should be considered.
- *Cost* – What is the most cost effective balance which can be achieved between learning and teaching? What is the cost to the students? What resources can be made available by the institution?

Language

Which language do our learners use? How well do they know the language we will use in our course?

Finance

What is the budget for the course? Is this a fixed amount? Are there any services we can acquire free, or any existing materials that we can use at a small cost?

Distribution facilities

How shall we distribute our materials? Are the postal services efficient? Are broadcasting signals strong enough for our learners to receive our programmes?

Manpower and administrative facilities

How many potential writers, broadcasters, subject specialists, counsellors, supervisors do we have available? What can we expect them to do and at what speed?

The design of any learning material needs to take consideration of the following factors.

Time

How long do we have to prepare the course? If the available time is very short, we will have to recruit several writers to work simultaneously on different aspects of the course, and will have to streamline production, probably hiring at greater cost additional editors, designers and printers from outside. With more time, an institution can rely more on its own resources and avoid incurring extra costs.

1.5.4 Selection criteria

The examples above suggest the kinds of choices that have to be made, and indicate how selection criteria may determine choice. The last example shows that time may determine methods of production and costs. The earlier examples of medical studies given on pages 23 and 24 show how a concern for particular target groups could affect the method of choice and determine the focus on the method that reaches the largest number, or the one which can reach a particular target group most effectively.

1.5.5 Alternative methods of meeting objectives

Before we finally make up our minds, we can consider all the options for organising our course. Most distance teaching courses are printed, with texts as the main teaching medium. To a great extent, this is so for sound educational, financial and practical reasons, but there is also an element of habit in this arrangement. Perhaps, a certain course should have audio cassettes as the main medium. Or perhaps, objectives would be met more effectively if greater emphasis were placed on face-to-face practical work.

1.5.6 Alternative subject matter

We have already suggested that the curriculum for distance education may need to differ from the conventional curriculum. At the level of greater detail, the way the topics are presented may also need to be different. In science subjects, for example, standard experiments are often used in schools and universities to present particular topics. In distance education we usually have to devise different experiments which can be done at home without laboratory equipment, or with simple kits provided by the institution. Although many academics find this difficult to accept, it is unnecessary to insist that distance learners perform the same practical experiments as their counterparts in the formal system.

1.5.7 Choice of method

This stage is the end of curriculum planning and the point at which the course begins to take shape. The course planning group considers all the available information and ideas and then makes its decisions.

1.5.8 Development, production, feedback and evaluation

The units that follow will elaborate on these stages; our final task in this unit is to consider the development of a course plan or outline. This has been discussed in the next section.

Check Your Progress 3

Think about your own discipline. Imagine that you are planning to teach your subject at a distance. List the possibilities and constraints you foresee for course design? (If you already have some experience of distance education, use this experience in your answer).

Note: a) Space is given below for you to write your answer.

b) For this question, we haven't given you any model answer, as the answer varies depending on your chosen subject.

[illegible]

1.6 MAKING A COURSE OUTLINE

A course outline needs to:

- Specify the aims and objectives of the course;
- Describe how the course is divided into units, providing titles for each unit; and
- Describe the different media components of the course, indicating how each of them will be used.

The first two of these points should need no further elaboration. The third is peculiar to distance teaching, and an example may be helpful in understanding it. A typical undergraduate course at IGNOU, for instance, would have the following plan.

The Programme Guide to IGNOU's Diploma in Management provides a good example. The *extract* below gives the aims and objectives, the target participants, and the structure of the programme, and then indicates how the media are used (we have included the media components for only one of the seven courses). This Programme Guide passes on to the participants the same information that the course planners put together when they constructed the course outline.

Diploma Programme in Management

IGNOU has several schools directly responsible for imparting education in various fields and disciplines. The school of management studies is offering its first programme called a diploma in management. The underlying objective of this programme is to make you aware of the well-known methods, concepts, theories and practices of managing men, machines, money and materials for achieving staged organisational goals. Of course, the degree of your success as a manager will depend on how appropriately you assimilate, adapt and practise these educational inputs. The programme is designed to be general in nature, providing most of the required foundational inputs. It does not focus on the management of any particular type of firm or institution.

The School of Management Studies is, of course, designing a whole range of follow up programmes in management. We sincerely hope that you will benefit immensely from these courses.

Target Participants

The programme has been designed to cater to the needs of managers, administrators, officers and functionaries in terms of managerial knowledge, skills and attitudes.

Target segments are:

- Managers who have received little or no formal training and wish to update their knowledge; and
- Technologists, professionals and functionaries who are in various jobs and have not been able to avail of the facilities of management education.

1.7 PROBLEMS IN COURSE PLANNING

We have provided a description of the systematic process of course planning. In practice, however, it seldom works smoothly.

Often the information available on all the factors outlined above is insufficient, and decisions have to be made in the dark. While an institution may make every effort to collect enough information, it may particularly for a new institution prove to be an impossible task in the time available. In such circumstances, it is wise to insist that the resulting course is a trial or

pilot course. If it turns out to be unsatisfactory, the institution may then reshape it without losing face.

Another common problem is a conflict of views between the different members of the planning group. Many of the subject experts in the group will have no experience of distance teaching and its potential, and will mistrust its methods. Misunderstandings can arise when a new approach to teaching the subject is perhaps seen as an attempt to compromise or lower standards. Such reactions are to be expected from conscientious and experienced people — a planning group therefore needs a skilled and knowledgeable chairperson to steer it firmly past such obstacles.

1.8 LET US SUM UP

In this unit, we have tried to delineate the differences between designing distance education courses and conventional ones. We have focused particularly on the need to take care in deciding what to teach. The main points are as follows:

- i) Traditionally, the curriculum is subject-centred. In a distance education system it must be learner centred, and must also take account of teaching methods.
- ii) The educational needs of students must be investigated before the course is planned.
- iii) The characteristics of the students will affect the curriculum. Typically, distance students are mature in outlook and highly motivated, but lacking in confidence.
- iv) Curriculum planning cannot be completed hastily, and requires working in a group.
- v) Courses may be effectively planned using a systems approach which considers needs, objectives, resources, constraints and alternative methods.
- vi) A course outline consists of a description of aims, a list of topics and a plan detailing the various components of the course and how each of them will be used.

Check Your Progress: Possible Answers

- 1) The main points are given below:

The curriculum in distance education:

- i) provides a full and explicit statement of objectives;
- ii) includes areas not usually covered by the conventional curriculum;
- iii) is functional and related to national manpower needs;
- iv) is selective and related to the needs, experience and educational background of learners; and

- v) includes consideration of how the course will be taught as well what is taught.
- 2) To assess needs, you have to conduct a survey, which may be small and informal or formal and extensive. In either case, you will need to seek the advice of a social researcher. In the latter case, it would be advisable to employ a professional social researcher to conduct the survey.
- 3) You should approach the following:
 - i) Potential learners; these are the most important source in providing a balanced view of learning needs.
 - ii) Employers in various businesses, managers in relevant ministries, institution and concerns.
 - iii) Agencies representative of target groups, i.e., professional associations and trade unions.
 - iv) Academics and professional training organisations.

(You may have included others in your list; ours is not exhaustive. We hope this exercise helped you rethink the role of research in distance education.)

UNIT 2 UNIT DESIGN

Structure

- 2.0 Objectives
- 2.1 Introduction
- 2.2 Key Terms Used in a Distance Education Text
 - 2.2.1 Aims and objectives
 - 2.2.2 Units
 - 2.2.3 Assessment questions
 - 2.2.4 Essential and recommended texts/further readings
- 2.3 Key Features of a Unit
 - 2.3.1 Beginning a unit
 - 2.3.2 The body of a unit
 - 2.3.3 Ending a unit
- 2.4 Different Kinds of Self-Learning Texts
 - 2.4.1 Teach-yourself books
 - 2.4.2 Manuals and handbooks
 - 2.4.3 Programmed instruction
 - 2.4.4 Open learning materials
 - 2.4.5 Correspondence units
 - 2.4.6 Study guides/Wrap-up materials
 - 2.4.7 Distance education units
- 2.5 Let Us Sum Up

2.0 OBJECTIVES

In this unit, we concentrate on course texts, describe different types of texts used for distance education, and discuss the circumstances in which each of them may be used.

By the end of this unit, you should be able to:

- recognise and use the specialised terms commonly used to denote the features of distance education texts;
- describe those features of a unit which are essential and desirable and explain why they are so; and
- evaluate different kinds of self-learning texts.

2.1 INTRODUCTION

It is hardly surprising that given the long evolution of distance education, a number of different forms of text presentation now exist. Those among these, to which we have referred are correspondence lessons, study guides, and programmed learning texts. Each form has distinctive features, and we shall look into these in this unit. However, all have some features in common, which make them suitable for distance education. We shall discuss these characteristic features of distance learning texts, but first we shall spend some time classifying terminology, a tricky matter in a new discipline. We will relate our discussion of terms to the educational theory discussed in the first block of this course, so that by the time you have completed the unit you should be fully aware of how the shape of the course units has evolved following educational principles rather than merely by chance.

Having discussed *course design* in the first unit, here we turn to *unit design*. In the unit that follows we shall discuss how *content/subject* matter may be organised in such unit which goes to make a course.

2.2 KEY TERMS USED IN A DISTANCE EDUCATION TEXT

Some quite ordinary terms have acquired a specialist meaning in distance education. Let us start by considering some very basic terms — ‘aims’, ‘objectives’ and ‘units’.

Activity 1

Before you read on, give your own definition of aims and objectives. Write them down on a plain sheet, and then compare them with the notes below.

2.2.1 Aims and objectives

Dictionary definitions of the terms ‘aims’ and ‘objectives’ give the impression that the words are more or less interchangeable. This might be so in everyday usage, but educational technologists usually make a distinction between the two terms.

We use the term ‘aim’ to refer to broad and general educational goals. For example, one aim of this course is to make you a better distance educator. Objectives tend to be narrower and more specific. If you look at section 2.0,

you will see that we have specified three clear objectives for this unit, while our aim is to present an overall picture of the structure of distance teaching texts.

When a distance educator uses the term 'objective' he or she is in fact referring to behavioural objectives. That is, the objectives describe the behaviour that will result from learning, or what the students should be able to do at the end of the unit or course. This approach to learning assumes that reading and memorising facts are insufficient: learning has only occurred when people can put into practice or display what they have learnt.

Every system of education has objectives, and most educators acknowledge this. In conventional education, however, many teachers do not think overtly about objectives when they plan their courses or lectures. Distance educators must explicitly state their objectives in clear and operational terms. It is virtually impossible to plan a course effectively without formulating clear objectives, and in distance education everything must be planned in advance. Obviously, then, objectives are a vital planning tool.

It may occur to you that, while course planners and writers need to specify objectives it is not obviously necessary to list the objectives for the learners to read. It is however, normal to state in each unit the relevant objectives. Why is this so? The reason is that distance students are self-directed. They must work out what to do from the teaching materials, and must be sure that they are correctly interpreting the intention of their distance teacher. A statement of objectives helps them to understand the thrust of a unit and to organise their study accordingly. Objectives are, therefore, usually presented at the beginning of a unit. Sometimes they are given instead at the end so that learners can check whether or not they have covered the material thoroughly.

An excerpt from Rowntree (1990) is presented below as an example.

Aims (from different lessons/courses):

- To explain the concept and importance of energy; to provide practice in carrying out surveys and experiments relating to energy studies;
- To foster an appreciation of the novels of D.H. Lawrence;

Objectives – By the end of this lesson you should be able to:

- List the various forms of energy;
- Distinguish between energy and power;
- Relate Lawrence's viewpoint to your own experiences.

2.2.2 Units

The word 'unit' is used to denote part of a block. The contents of the unit decided upon either in terms of the theme or topic or the block is divided on the basis of the materials used to teach the topic. For example, in a science course a block on 'evolution' may contain a unit on 'natural selection'.

In its complete sense the unit includes all the material that covers the topic, and could include a text, an audio tape and a video programme all concerned with natural selection. However, in everyday usage, we have come to use the word 'course unit' to refer simply to the text. As this usage has become so common in distance education, you will notice that we, like others, normally use 'unit' as the equivalent of 'text'.

You should, however, be aware of other terms that are quite common. In some institutions, units are called 'lectures', 'lessons', or even 'letters'. Some use the term 'unit' for a book covering a group of topics, while 'lecture' is used for individual topics. We at IGNOU use the word 'block' for a group of units. So although our use of the word 'unit' is most common among distance educators today, when you read about or discuss distance education, be careful to check the meaning attached to the terms by the writer or speaker.

In distance education at the university level, confusion sometimes arises over the distinction between 'course units' and 'credit units'. They are not the same. In a degree constructed on the credit system, a credit unit usually corresponds to the period of time that a learner is required to spend on a unit. A single course may have a weightage of, say, four or eight credit units according to its length.

The number of 'course units' will usually be quite different. A course of *four credit units* might have *twenty course units*. It is unfortunate that 'unit' has come to be used in these two contexts, and it is as well to be aware of the potential confusion.

Material is divided into units not only because it suits the subject matter but also because it suits the learners. You will remember from Block 1 (ES-312) that learning theorists advise us to take learning in small steps. A division into units helps provide a framework for effective learning. You will find also that most units are subdivided into sections or parts for the same reason. Frequently, each section will correspond to a particular learning objective.

2.2.3 Assessment questions

In Block 1 (ES-312) we stressed the importance of reinforcement in learning. Learners need to test their performance and check their progress frequently if

they are to learn effectively. In a classroom situation, the teacher or lecturer stimulates reinforcement by asking questions or setting exercises. In distance education, the teacher is available only on restricted occasions and the bulk of reinforcement takes the form of self-assessment. Self-assessment questions have, therefore, become an important feature of distance teaching texts. A self-assessment question can take many forms, but it is always a question where the learner checks his/her own answer.

You may also come across the term 'in-text question'. An 'in-text' question does not necessarily have an answer provided or it may be a short quick-check question, with a single word answer. It may be a developmental question, which makes the reader think about a topic or relate a concept to his or her own experience. Course developers regularly use all these terms, and sometimes you will meet them in course units. However, learners cannot easily see the fine distinctions between types of questions and their functions, so sometimes you will find the term 'self-assessment question' used for all questions, or you may simply find the word 'question' or exercise. Feedback and reinforcement are also provided occasionally by correspondence tuition and the work to be marked by correspondence is usually called an assignment. Those institutions which have computer marking facilities may refer to computer marked assignments (CMAs) and tutor marked assignments (TMAs) which are the two types of assignment commonly used in the system.

In the past, work for the tutor was often called a/the 'worksheet' and some institutions still use this term. The directorates of correspondence courses in Indian University use the term 'response sheets.' (At IGNOU we use the term 'assignment-responses.')

2.2.4 Essential and recommended texts/further readings

Many courses require students to read some extra material in addition to their units. Some times a text requires 'readings' which must be obtained by all learners. Such texts are usually referred to as 'essential texts'. Some institutions call them 'set texts'. On other occasions, students are expected to read widely from a variety of books, but the readings are entirely optional. These books are referred to as 'recommended texts' or background reading. The distinction is important, as books are usually difficult to obtain and the availability and price of essential books must be checked before they are specified as compulsory. A course that has no recommended textbooks is known as a self-contained course.

Check Your Progress 1

Here are two questions taken from a distance teaching text. Which term introduced in section 2.2.3 would you use for each of them?

- Note:** a) Space is given below for you to write your answer.
b) Compare your answer with the one given at the end of this unit.

- I. Can you briefly recall, and list below, from the preceding unit, the legislations protecting the workers and the consumers?

Workers

1.
2.
3.
4.
5.
6.
7.
8.
9.

Consumers

1.
2.
3.
4.
5.
6.
7.
8.
9.

- II. Study the organisation chart of the Personnel Department of your organisation discuss it with the persons who can explain to you which factors were considered to make it what it is now, and write down these factors below:

1.
2.
3.
4.
5.
6.

Having adequately dealt with the terminology which might have confused us for want of explanation, we shall now touch upon the essential features of a unit.

2.3 KEY FEATURES OF A UNIT

The function of a unit is to teach. As our texts are for self-study, they must combine the functions of face-to-face teachers and supporting text books. In addition to covering the subject matter, they must provide the right process of students' orientation to the course, reinforcement and feedback, to encourage and direct learning. Each institution has its own style of presentation, but the features described below are common to all.

2.3.1 Beginning a unit

The function of introductory sections of a unit is to give an orientation to the learners. The reader needs guidance on how to approach the unit and what to expect from it. Introductory sections usually have the following components.

Contents Outline/Unit Structure

This enables the learners to see what constitutes the unit and to organise their study. While a text book normally has only one list of contents for the whole book, distance-teaching texts usually have such lists for every unit. Even if a unit contains only a few pages, it normally requires many hours of study spread over several days or even weeks. Incorporating a list of contents, therefore, helps the learners by providing a quick reminder of the contents each time they open their text. If, however, a course contains units only three or four pages long, the list of contents is usually omitted.

As indicated, content lists not only point to the contents of a unit but also to the framework in which they are presented. For this reason, expressions like 'unit contents', 'contents' and 'unit structure' have here been used synonymously, though the last one is most common these days.

Statement of objectives

This, as we saw above, provides learners with a description of the desired learning outcomes and enables them to approach the material in the right spirit.

An overview

This is a description of the unit which gives an idea of why the writer has chosen to present the material in a particular way, and hints at different points of view the reader may wish to take. That is to say, the overview encourages

the learners to look at the unit in a constructive and creative way, complementing the somewhat mechanistic emphasis of the objectives.

Study guidance (please do not confuse what is given here with what has been presented in subsection 2.4.6)

As we have seen, the course unit is only part of the study, and learners need advice on the other components of study and how they relate to the text. Such advice is usually given in the text, because in most distance teaching systems print is the main medium. Thus, the introductory pages of a unit may include:

- i) a note on the 'essential' or 'recommended' reading that relates to the unit,
- ii) information about related practical work and advance warning of equipment that may be needed later in the unit,
- iii) a mention of related audio or video materials,
- iv) an idea of the terms needed to study the unit, especially if course units are of different lengths, and
- v) any other practical information that could help in getting the best out of a given unit.

Without such guidance, learners may waste time trying to find materials or books at the last moment.

A note on other related units

In a long course of study, it often happens that several units are related to each other but are not necessarily adjacent. For example, the learners may study certain aspects of atomic theory in an early unit, and return to this topic several units later. In terms of time, this could be after two or three months. It is quite possible that some learners will not remember the original material very well, and others will not immediately recognise that the topic of the later unit follows from that of the earlier unit. It is, therefore, helpful to include in the introductory stages a mention of the related units, and perhaps also some suggestions for revision to ensure that learners recall the key points before they start trying to understand the new material. It may also sometimes be useful to mention units which are meant to follow and which may further take the subject forward.

How are we to arrange these features in our introductory pages?

We do not want to burden the learners with page after page of introductory material, and we do not need to include every point mentioned above in each unit. A common solution is to provide the following features:

- i) content list/unit structure
- ii) objectives, and
- iii) introduction

The introduction contains an overview of the unit and covers the other points as necessary.

The statement of objectives is probably the most important of the introductory features. An extract taken from a long article, 'Some Instructional Strategies for Improved Learning from Distance Teaching Materials', by Marland and Store (1982) discusses the issue of objectives in some detail. Read it carefully and then, in your own words, make notes on the usefulness of objectives.

Objectives

To those familiar with instructional planning and teacher education the next two statements will come as no surprise.

- The empirical and prescriptive literature on instructional planning is replete with advice and research reports about objectives, but in comparison other facets of planning are poorly served.
- Prospective teachers are generally required to spend numerous hours in pre-service courses learning about the virtues of objectives and how to formulate them.

"Both these conditions are symptomatic of a general obsession in educational planning with objectives. It emanates from a strong commitment to a model of planning which stresses the importance of rationality and ends-means logic and which asserts the primacy of objectives in planning for effective teaching and learning. Proponents of this model argue for a high level of precision in formulating objectives, with some advocating the use of behavioural objectives which represent the ultimate in precision.

"Their conviction about the need for clear, unambiguous objectives steams from two beliefs. The first is that precise objectives provide teachers with clear guidelines for selecting instructional means and evaluative criteria; and the second is that providing students with these objectives will increase their motivation and learning.

"The second proposition has been debated vigorously and has been tested in experimental research but the issue has not been satisfactorily resolved. Instead, the research has revealed the complexity of relationships between the use of objectives and learning and has raised many other issues requiring resolution. According to Macdonald-Ross (1979), this whole area is in a state of confusion which no simple summary can sort out. While such a warning cannot be overlooked, the practice of writing objectives into instructional text continue, so text writers will continue to look for answers to perennial dilemmas relating to level of specificity, location in text, number and distribution throughout the text; when to use them and even whether to use them at all. There is a need, therefore to review evidence and opinion about the effects, functions and value to students of objectives, and then to generate some guidelines on their use.

Research

Research and theories about instructional objectives from within two different research traditions will be reviewed. Those two traditions are:

- An experimental research tradition, owing much to behavioural psychology. Studies conducted within this, of which there are many, have been undertaken in contrived learning-from-text situations, involving mainly tertiary and upper secondary students;
- A descriptive research tradition with allegiances to ethno-methodology and a cognitive view of learning.

"Very little research relating to this second tradition has been reported but its goals are to assess student responses to objectives in natural study settings and to trace the actual processes engaged in by students when using objectives. As might be expected, these reviews lead to two sets of conclusions which are not easily reconciled.

"It was stated earlier that experimental research into the facilitative effects of objectives on overall learning (that is, intentional and incidental learning) is equivocal. This is the general opinion of most reviewers (see, for example, Faw and Waller, 1976; Hartley and Davies, 1976; Macdonald-Ross, 1979). If a simple vote-counting procedure were used, there probably would be a slight advantage for research showing positive effects from objectives (see, for example, Melton, 1978), but the result is certainly not clear or unambiguous. If the effects of objectives on intentional learning only were considered, the weight of evidence in favour of objectives increases but it is still not convincing.

"This failure of research to provide clear confirmation of a popularly-held belief about the value of objectives has prompted attempts to pinpoint reasons

for the unexpected result. Some blame has been attributed to flaws in research design and statistical techniques but many other plausible reasons have been advanced to account for the ambivalence in research results. Inferences about conditions when objectives could be effective aids to learning have also been generated.

“Research studies have explained a variety of complex conditions governing whether or not objectives enhance relevant and incidental learning. So far, few insights have been obtained into the precise combinations of conditions that must prevail for desirable effects to occur. One inference about a main effect which is set down with less hesitation and trepidation than are most in this area of educational research, is that specific objectives enhance relevant learning but decrease incidental learning (Duchastel, 1979. Faw and Waller, 1976). On this ‘finding’ has been built a selective attention hypothesis which proposes that objectives direct attention to objective -relevant material and away from material which is not related to objectives. It is also frequently claimed that objectives, assuming students accept them as helpful and know how to use them, provide students with clear goals which enable them to organise more efficiently their learning activities and reduce time spent on misdirected effort.

“It is also claimed that they offer a basis for student self-evaluation in the course. These attributions have not been confirmed by self-report data or other means, but enjoy a good measure of credibility at the moment due to circumstantial evidence from research studies and the intellectual appeal of the logic underpinning them.

“When we turn to descriptive research and the inferences generated from it, we see objectives from quite a different perspective. Though there is very little research to report, what there is indicates that, as with inserted questions, students do not use objectives as intended by those who have written them. The evidence from survey studies conducted at the Open University (UK) (Macdonald-Ross, 1979) suggests that students do not use objectives as attention-directors or as goal statements for solving problems solving, but as a means for assisting them to find their way about the instructional text. This, as a view of the student as an active and selective reader, has led to a radically different conception of in-text instructional devices. Objectives, like inserted questions and overviews, are seen as ‘access devices’, providing students with different points of entry to the instructional material and allowing them to chart their own way through it. Seen in this light, objectives would no longer serve as direct aids to learning and would not be fulfilling the role ascribed to them in the rational, ends-means model of planning.

“It might be though, then, that they need not be placed early in the text. However, if they are to serve effectively as part of the access structure they would still need to be in a prominent place and students would have to be alerted to their presence. Macdonald-Ross (1979) and, before him, Kaplan and

Simmons (1974) proposed that '(objectives) be placed at the end of the teaching material as a check list...with page numbers for back reference' (Macdonald-Ross, 1979:251). In that case they would appear to be duplicating the function of inserted questions or self-assessment checks. It then raises the question of whether they should be used in place of, or in addition to, either of the other two devices.

Guidelines

The foregoing analysis makes it abundantly clear that generating guidelines on the use of objectives for writers of instructional texts has many problems and pitfalls. There are no definitive answers from research, just a few clues or straws to clutch at, but even these lose much of their significance because of the disparities between research and study settings. The guidelines supplied here are therefore rules of thumb to be used cautiously.

- It would appear that objectives probably serve some useful functions for students provided they are clear and precise and so are worth considering as an instructional aid in distance teaching texts. This should not be taken to mean that they can or should be used all the time. Their use in conjunction with other instructional devices must still be justified in the light of specific conditions and requirements that apply in each case.
- It also appears that their use is more warranted when learning tasks are complex and difficult (that is, requiring high level cognitive skills) and/or when important learning tasks are not clearly distinguishable. At the same time there is no evidence that there are specific groups of learners for which, or specify subjects in which, objectives work best.
- Actual use of objectives by students is also likely to be, in some respects, different from and more diverse than, intended use. It is important for writers to recognise that such diversity of usage exists. One consequence of this diversity is that the location of objectives in a text in terms of a simple choice between the start and the end of teaching materials, becomes a non-issue because location in the text does not determine whether or how students use objectives. Students will use objectives, irrespective of their location, to suit their own purposes. There is, however, another aspect of the in-text location of objectives, arising from consideration about frequency of insertion or density of objectives. Dispersing objectives throughout the text in small sets in company with the relevant material seems to be a sensible practice to follow. Placing a large number may cause students to feel overwhelmed and frustrated and discourage them from using objectives.
- Another guideline which we believe has some merit concerns advising students on the purposes for which objectives have been inserted in the text

and how they might be used by students. It is assumed that writers who use objectives in texts do so with some clear preconceptions about how those objectives should be used. There are also good grounds for stating that students use them in those and other ways. Our position is that making explicit the intended and likely functions served by objectives could help students improve their study skill, thereby enabling them to derive greater benefit from the objectives and from the instructional material. Remaining silent about such functions would not achieve anything but it may account in part for lack of use of objectives by students and may impede refinements that could be made, in order to see objectives as an instructional device.

“Finally, a comment about objectives and incidental learning. Writers, if they plan to use objectives, would be well advised to consider the implications of the selective attention hypothesis mentioned earlier, which proposes that objectives cause students to be selective in their text processing and focus only on objective-relevant material. Writers could take two basic positions:

- Promote student attainment of prespecified objectives only, and accept the possibility of depressed incidental learning; or
- Adopt the view that prespecified objectives represent a common core of student learning which is to be extended wherever possible.

“Adoption of the second position would require the use of instructional strategies to consciously promote the extension of learning horizons beyond those represented by the prespecified objectives.

“Our position is that a policy of ignoring, discouraging or discrediting incidental learning is indefensible. Learning experiences will inevitably lead to unanticipated outcomes — sound or unsound, relevant or irrelevant, acceptable or unacceptable. Instructional science has not reached the point (perhaps it should not strive for it either) where it can control learning so that only some targeted objectives are attained and unanticipated outcomes, especially the unwelcome ones suppressed. Writers of distance teaching materials should acknowledge this and contemplate how they might monitor incidental learning, negate or counteract undesirable incidental outcomes and help students derive some benefit from the positive incidental outcomes. Conventional strategies could be used such as specially designated self-assessment items which test extended or allied objectives, that is, learning beyond the range of prescribed objectives. Writers might also encourage incidental learning by giving greater emphasis to expressive objectives, that is, unanticipated learnings which are ‘expressed’ from the educational encounters with the given instructional materials. For example, writers could indicate areas in which expressive objectives could seek evidence of learning attainment through self-reports or contractual assignments, and provide feedback”.

Check Your Progress 2

Consider the formulated aims and objectives in your subject. Do you foresee any particular requirements or difficulties?

Note: a) Space is given below for you to write your answer.

b) Compare your answer with the one given at the end of this unit.

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2.3.2 The body of a unit

This will normally consist of a number of sections, each of them presenting at least one new point. Usually each section relates to a different objective of the unit. The section contains presentation of the topic and exercises to check that the learners have understood the material. The exercises are normally self-assessment questions and/or in-text questions. Assignments usually occur only after a complete unit has been studied, though for operational convenience assignments are set to cover a number of units together, that is, a block, or even more than a block at a time. In this connection, see our response to self-check question 4, but only after you have written down yours. The body of the unit, therefore, normally consists of a sequence of text explaining a topic and self-assessment/in-text questions.

Most units require several hours of study and so students cannot work right through them in one study session. A division into suitable sections therefore, provides students with resting places. Clear organisation of the material is an imperative.

Within sections, headings or signs mark changes from text to exercise. Not every learner will want to read every word of the text and not every learner will work through it only once. The material will be exploited by learners in different ways, and a clear and consistent structure helps them to do so.

Check Your Progress 3

In the light of what we have said above, what functions remain for the end of a unit? What features would you expect to find at such an end?

- Note:** a) Space is given below for you to write your answer.
b) Compare your answer with the one given at the end of this unit.

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2.3.3 Ending a unit

The last section of any unit helps learners to check that they have completed all the necessary activities, understood and remembered all the material. This section may therefore have the following features.

Summary

This can take several forms. It may be a list of the key points that have been covered. Sometimes it is presented as a checklist which is a list of topics covered, with a request to learners to check off points they have understood. In other cases, the objectives are placed at the end of the unit, as a kind of checklist.

Sometimes there is an activity—an exercise or self-marked test—that quickly checks on the main points.

Assignments

The assignments consist of more demanding activities that check whether the learners have fully understood the material and can apply what they have learnt. They will be marked by a distance tutor. In some courses, assignments are given for every unit, while in others, assignments occur after a block of units. When assignments are infrequent, self-assessing summary exercises become more important and may include work on essay type questions to help learners develop their ideas in preparation for assignments.

Check Your Progress 4

In your own words, explain the functions of an assignment and suggest what factors may influence the frequency of assignments.

- Note:** a) Space is given below for you to write your answer.
b) Compare your answer with the one given at the end of this unit.

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Whatever the kind of self-learning text, the features we identified in this section (i.e., 2.3) are common to most units. Having said this, let us now look at the different kinds of self-learning texts.

2.4 DIFFERENT KINDS OF SELF-LEARNING TEXTS

Self-learning materials are designed for learners to use on their own, and can be classified, or divided into two groups:

- i) those which are designed for learners to use without assistance, and
- ii) those which require some kind of guidance or intervention from a teacher or counsellor.

The first group includes teach-yourself books, bazaar notes, manuals, handbooks and programmed instruction texts; the second includes open learning materials, correspondence lessons, study guides, and distance education units.

We will examine each of these in turn, but first let us consider a question which may have already occurred to you.

Is a textbook a self-learning text?

After all, almost all students, at onetime or the other, study textbooks on their own. University textbooks are designed for solitary reading, but under the guidance of a lecturer. School textbooks are designed largely for class use, and are teacher-centred. The teacher selects topics and exercises, not necessarily in the order given, and usually supplements the material with more explanations and exercises. Textbooks at both levels are not designed specifically with self-learning in mind. At higher levels many students are able to study independently, using textbooks on their own. In fact, the larger part of all learning among adults occurs in this way, that is, unorganised and invisible learning from books. But this fact does not imply that the books themselves are self-learning texts. Readers have to supply for themselves those elements necessary for self-learning which are missing from the conventional text book.

As this section proceeds, you will gain a clearer picture of these elements. Let us start by pointing out that self-learning texts should at least include:

- i) full coverage and explanation of each topic;
- ii) a carefully structured order of presentation
- iii) arrangements for reinforcement and feedback; and
- iv) advice on how to take matters further.

At this stage we would like you to turn back to Unit 3, Block 1 and relate what we have said above with what you read here.

For a clear understanding of the difference between the text and a self-learning unit, you can go through Figure 2 presented on page 48. Some textbooks do not incorporate active learning i.e., thinking, writing and doing. They only use one-way instruction. The learner reads what has been written but does not respond to the material. An effective instructional design in open and distance

education, however, usually consists of a two-way process. In other words, there is interaction between the course writer and the distance learner. The learner is therefore actively involved in the learning process. It is for this reason that the writer of distance education materials has a very different task from the writer of an ordinary textbook.

<i>Textbook</i>	<i>Self-Learning Material</i>
• Learner is passive • Structure is hidden • Teacher-directed learning • Lecture • Impersonal style • Little scope for application of knowledge and skills • No activities (in some cases at the end of the chapters) • Content arranged in chapters or large blocks • Dense content • No assignment pertaining to content • Little or no self-assessment • No feedback	• Learner is active • Learner is aware of structure • Self-directed learning • Dialogue • Friendly and personalised style • Learner applies new knowledge and skills • Activities and exercises presented throughout text • Content is divided into small chunks • Content unpacked • Assignments related to content grading/material • Emphasis on self-assessment • Feedback provided on learner's progress.

Fig: 2 Differences between textbooks and self-learning material

2.4.1 Teach-yourself books

At some time in every students' life, he/she gives in to the temptation to cram for examinations from revision notes. Have you ever done so yourself? If so, you can probably compose a list of the characteristics of such books. Stop for a moment and try to imagine what such a list would consist of.

These books (variously called bazaar notes, revision notes, teach-yourself books of study aids) are all published with one aim in mind—to make money for the publisher and the author. They are always bestsellers aimed at a ready market of anxious candidates who buy them on impulse. Teach yourself books aim to provide rapid coverage of a subject while revision notes are even more compressed, usually providing little more than a checklist.

Of course they do serve a purpose but a very limited one. The coverage of the subject is normally inadequate and concentrates on facts, not on understanding. There are moreover, very few exercises.

The main reason for offering a limited number of exercises is the reluctance of the publisher or the author to spend more time or money on paper or on the construction of purposeful exercises. Obviously, pedagogical benefits are in such cases either completely ignored or sacrificed for 'material' gains.

So these books deal largely with rote learning or low-level cognitive learning alone.

Often, the publishers make false claims, promising instant mastery of a subject. Such claims are anti-educational, giving the impression to the public that "learning" equals "learning by heart" and can take place almost instantly.

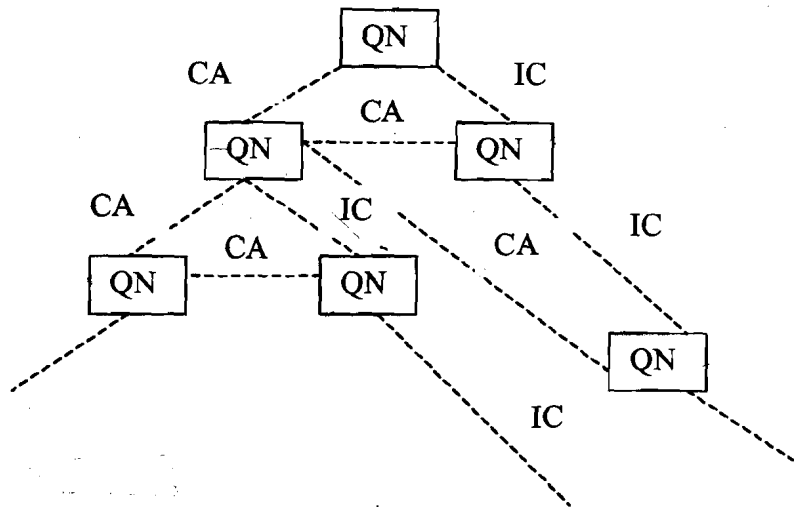
Notwithstanding the fact that such books have a bad reputation amongst educationists, a few manage to gain popularity. Most series of teach-yourself books include one or two good titles, where the publisher has commissioned work from an excellent and dedicated individual. There is also a new breed of teach-yourself and revision books appearing on the market. These books have clear objectives and plenty of exercises, and they are sometimes available in packs including audio tapes. The publishers of these books have in fact learnt some lessons from distance education, and the results are therefore excellent.

2.4.2 Manuals and handbooks

Manuals are self-learning texts that explain how to do something; a handbook can be a manual but may also be used for reference as well as instructions. Most distance education institutions produce manuals and handbooks: handbooks for students on course procedures, handbooks for tutors and counsellors, manuals for staff training or projects or experimental work. Manuals and handbooks deal with a single topic or a restricted set of topics, they tend to be highly organised and guidance and advice on procedures is offered. Practical manuals are often highly illustrated, and do not normally contain exercises, since they include direct instruction for certain activities, and additional exercises would be superfluous; training manuals, on the other hand, usually contain many exercises. Handbooks or manuals may be multi-purpose texts (see section 2.4.4 on open learning)

2.4.3 Programmed instruction

A programmed instruction text leads a learner in very small steps to a particular objective. It is the ultimate in self-instruction since it works with the intention that every eventuality be provided for. It works like this. The student learns a



Key: QN = Questions
CA= Correct answer given
IC = Incorrect answer given

Figure 2: Programmed Instruction Text: A Model

You can see how complex the branches get, especially if a student keeps making mistakes. A programmed learning text will, moreover, be bulky in size, but is a very effective teaching method, however, for certain kinds of topics. Usually it is only used for topics that can be covered briefly and systematically. It has a disadvantage in the sense that it is very time consuming to construct such texts.

The technique of programmed instruction was borrowed many years ago from computing and now that computers are more accessible it is more usual for students to learn at the computer, rather than study a text that simulates the computer. It may still be useful to use programmed instruction as an element in

some distance courses. However, the main importance of the technique for us today is its contribution to the development of distance education.

The guidelines we follow for designing texts are to a great extent derived from programmed instruction.

Check Your Progress 5

Mention some features of distance learning units that derive from programmed instruction

- Note:** a) Space is given below for you to write your answer.
b) Compare your answer with the one given at the end of this unit.

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2.4.4 Open learning materials

Open learning materials are not so much texts of a distinct type as texts designed for a particular mode of use. They are open in the sense that they may be used in any of several ways for individual learning outside the classroom, or by a teacher with a class. Their distinctive characteristics derive from their potential for multiple use; the texts are organised into short units, printed separately and often arranged in packs. The student or teacher selects appropriate material from the pack. Students generally need the help of a teacher or supervisor to assist them to make the selection, even if they study alone thereafter.

2.4.5 Correspondence units

This is a kind of distance teaching text where the main elements of the course are the lessons or units and tuition is provided by correspondence.

Because of the number of teaching features they contain, correspondence units are generally distinguished from textbooks or even teach-yourself books, by their length.

Check Your Progress 6

List, as far as you can, the main features of a correspondence unit.

Note: a) Space is given below for you to write your answer.

b) Compare your answer with the one given at the end of this unit

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2.4.6 Study guides/Wrap-up material

A study guide (otherwise called wrap-up material) is a form of correspondence unit that is linked to an essential text, which is the main means of instruction. The study guide provides instructions for reading the text book (in what order to tackle the chapters, or which pages to read for each topic), a framework for study (objectives and introduction) any necessary commentary or explanation of the book and self-assessment questions, answers and assignments as necessary. In other words, a study guide is a correspondence course with the main body of the text omitted, because this is covered in the essential text. Study guides usually have few pages. They are an economical way of developing a distance course, provided that a suitable text book is available. They are often used for high level small enrolment courses, where it would be expensive to develop a full self-contained course, and where students at an advanced level are better able to handle text books — whatever their imperfections — with the help of their study guides.

2.4.7 Distance education units

Our last two items have both been forms of a distance education unit. You will remember that one of the distinctive features of distance education is its feedback system, where learner support is provided by a variety of means —

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[illegible]

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the features we have described, and judge for yourself how far the unit is an effective self-learning text.

2.5 LET US SUM UP

In this unit, we have described the design of a course unit and explained what characteristics of self-learning texts we expect to find in it. Here are the main points.

- i) The terms 'aims', 'objectives', 'units', 'assessment questions', 'assignments' and 'essential texts' are used as technical terms in distance education, although agreement on their usage is not yet universal.
- ii) Units normally begin with a statement of objectives and an introduction.
- iii) The main body of the text contains the step-by-step presentation of topics, along with frequent reinforcement and feedback devices.
- iv) Units end with a summary and an assignment or a form of test.
- v) Distance education units form one group of self-learning texts.

Distance educational materials are characterised by requiring some form of contact with a teacher, tutor or counsellor, in that they are a component of the larger teaching-learning system. Some self-learning materials can, however, be used entirely independently.

Check Your Progress: Possible Answers

1.
 - i) Self-assessment question.
 - ii) Development question (this has no single correct answer, and makes the reader relate what s/he has read to his/her own experience).

(Both questions are taken from IGNOU Management Studies Courses).
2. It is more difficult to formulate objectives for humanities and the social sciences than for other subjects. Typically, objectives in the natural sciences can be very precise. In the humanities, however, it is often difficult to be so precise. For example, learners may develop an understanding of certain concepts only over several units. It would be boring and pointless to repeat the same objectives over and over. Sometimes, therefore, humanities units start with a description of aims and contents rather than with a formal statement of objectives.

3. A summary and a test. The test is often in the form of a tutor-market assignment.

Did the idea of a summary occur to you? If not, remind yourself that the distance learner normally takes several hours to complete each unit, and the study is usually spread over several days. Enough time has already passed for him/her to forget the first things mentioned in the unit. A summary is, therefore, important for the distance learner to remember the material.

4. Functions of an assignment
 - i) Testing understanding: the teacher monitors the students' progress.
 - ii) Applying what has been learnt and developing understanding further: the learner has to analyse and synthesise the material in the unit.
 - iii) Providing an opportunity for dialogue and personal assistance from the teacher: the teacher observes the areas where the student needs extra help and offers suitable comments. This includes guidance to weak students on additional remedial work, and guidance to strong students to help them extend their understanding beyond the given material.

Factors Affecting Frequency

- i) Educational needs, e.g.
Level: At higher levels learners are more self-sufficient and need less assignments. At lower levels they need frequent reinforcement.

Subject: Certain subjects need more frequent assignments than others. In maths, for example, the teacher must check the learners' understanding of certain topics before they move on.

Media Methods: If learners have plenty of opportunities for meetings in study centres, they need less assignments.

- ii) Availability of tutors: In some subjects, there may be very few tutors available and so fewer assignments can be included.
- iii) Costs to institution/learner: Someone has to pay the tutors. How much can be allocated per course?
- iv) Communication difficulties: If the postal system is very slow or unreliable, learners may find it frustrating to send in frequent assignments. They may prefer more extensive self-assessment questions and model answers and fewer assignments.

This exercise was intended to help you realise why assignments are not automatically included in every unit. You probably did not think of all the points we have mentioned — if you did, you must already have a lot of practical experience of distance education. But we hope the exercise got you thinking.

Principles of the text design

- 5)
 - i) Objectives
 - ii) Division into steps
 - iii) Frequent feedback
 - iv) Self-check questions and answers
- 6) You may have mentioned:
 - i) Clear organisation in steps
 - ii) Objectives
 - iii) Introduction
 - iv) Self-assessment questions and answers
 - v) A dialogue style, including in-text development questions
 - vi) Study guidance
 - vii) Clear language
 - viii) Assignment
- 7) Correspondence education is one form of distance education. Distance education is broader than correspondence education, using a variety of media for teaching and a variety of means for learner support. A distance education system provides for organised selection of such media and means of support. Correspondence education simply consists of two elements: correspondence units and correspondence tuitions. [Fuller discussions on the differences between them are given in course ES-311].

UNIT 3 ORGANISING THE CONTENT

Structure

- 3.0 Objectives
- 3.1 Introduction
- 3.2 Selecting Subject Matter
- 3.3 Criteria for Ordering Material
- 3.4 Modes of Presenting the content
- 3.5 Assessment and Feedback
 - 3.5.1 Forms of assessment
 - 3.5.2 More about self-assessment
- 3.6 Let Us Sum Up

3.0 OBJECTIVES

When you have finished this unit, you should be able to:

- list factors used to select materials;
- give criteria for ordering materials;
- describe and select different modes of presenting the content;
- describe the different mechanisms used for feedback and assessment in distance education;
- describe and differentiate between the functions of each kind of assessment;
- explain the importance of self-assessment; and
- examine and justify different forms of self-assessment questions.

3.1 INTRODUCTION

Having in the previous unit, discussed the key features of unit design we now turn to the 'content' which a unit is designed to convey.

This unit aims to develop your awareness of how and why distance education units are designed differently from other texts, considers how to select and organise the content or subject matter of a unit and describes the assessment system and how it is designed to support the distance learner. It draws particular attention to those features of a unit that help sustain learner's motivation and interest and reinforce learning.

3.2 SELECTING SUBJECT MATTER

When a teacher plans a lecture, he or she has to make choices about how to approach the topic and what materials to include. A teacher of law in England, for example, will use examples taken from English law while a teacher in India will emphasise Indian law. A teacher of Botany in the north of India may base lectures on plants commonly found in the northern region, while a southerner may choose different examples. The teacher, thus, tries to make the material relevant to the learners. The distance educator also takes relevance as the main criterion for selecting subject matter, and this requires imagination. The distance teacher has to predict what learners all over the country will find relevant. If the subject matter chosen does not seem relevant to the learners, they will not only find the material boring; they will also fail to learn effectively as there will be little stimulus to thought.

The choice of subject matter may also be affected by the aims of the course. A course in Zoology, for example, might be aimed primarily at veterinary surgeons and others who work with animals. While the syllabus of the course might be identical to that offered to undergraduates in many universities, the content chosen would be related to the needs of the clientele—perhaps where possible using farm animals as examples rather than wild forest creatures.

Another criterion for choosing subject matter is related to effective learning. There is, inevitably, a tendency for distance learners to become passive, to sit and read and learn by heart, without thinking. The course developer has to fight against this tendency always and one way of doing this is to select subject matter which stimulates thinking or which sets a problem to be solved. A science course concerned with energy, for example, might be constructed around the theme of a world energy crisis with individual units relating scientific knowledge to specific energy uses and needs in the home and village.

Check Your Progress 1

We gave an example of a course in Botany where it might be possible to vary subject matter for different regions in your country. Suggest how to do this in distance education.

- Note:** a) Space is given below for you to write your answer.
b) Compare your answer with the one given at the end of this unit.

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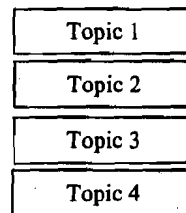
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3.3 CRITERIA FOR ORDERING MATERIAL

Teaching methods can be seen in terms of a continuum which runs from the highly prescriptive (the teacher gives out knowledge, which the students learn without questioning) to entirely student-centered (discovery learning). The kind of teaching method used affects the order of the material. Towards the more prescriptive end of the continuum, the teacher starts by providing definitions, presenting principles, listing main points and then goes on to provide examples. In discovery learning, however, the teacher may present the students with a simple problem or ask a single question, and then guide the students from this simple beginning until they have built up a thorough understanding of the principles.

Learner-centred methods are effective but time-consuming for both teachers and students. Teacher-centred methods are, however, inadvisable in distance education. The learner must be encouraged to think and learn actively rather than merely absorb facts. The passive learner is likely to fail or drop out. If we wish our distance education materials to be learner-centred the order in which we present the subject matter has some importance. We need a 'bottom-up' rather than a 'top-down' approach. Let us now consider some common approaches.

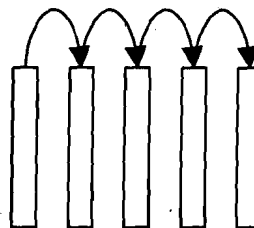
- *Topic-by-topic or parallel themes approach:* In this approach the topics are treated independently of one another and can thus be studied in any order.



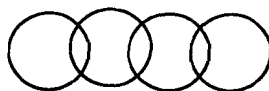
- *Chronological sequence or historical approach:* Here events happening over a period of time are presented in the same order in which they happened.



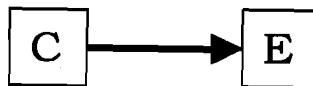
- *Place-to-place or adjacent places approach:* This is the spatial equivalent of the chronological approach. Presentation is from one place to an adjacent one. For example, in describing the structure of the human body, you start from the head, then move on to the neck and proceed down to the toes.



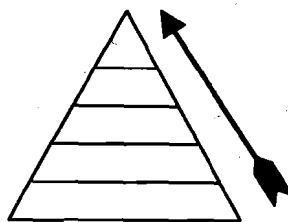
- *Concentric circle approach:* This is a variant of the place-to-place approach. Here one idea or concept is included in the next one, that is included in the following one and so on.



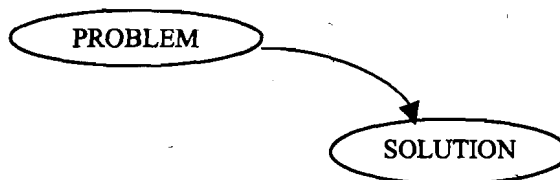
- *Casual or cause-effects chain approach:* Here content is presented in a cause-and-effect order. The student works through the chain of causes and effects for some event or phenomenon until he/she reaches and can explain the final effect, that is, the event or phenomenon itself. This approach is appropriate when your objective is that the students be able to work out and explain such relationships.



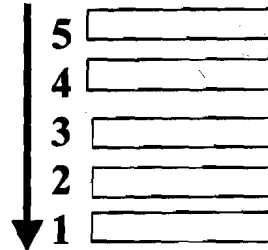
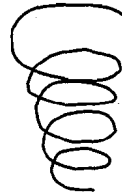
- *Structural logic or the discipline's own logical approach:* in this approach, the logical structure of the discipline dictates the organisation of content. In a discipline one topic sometimes cannot be learned without prior understanding of some other topic. For example, in basic arithmetic, multiplication cannot be learnt before addition, and, in language teaching, sound discrimination (listening skills) must precede imitative articulation (speaking skills).



- *Problem-centred approach:* In this approach content is organized in the form of concrete problems which are presented to the learner for exploration and solution. For example, in a course for doctors, one of the topics might focus on the problem of how best to deal with water-borne diseases in the children in a nomadic population.



- *Spiral approach:* Here the same topic is repeated over and over again as the course develops, each time at a more complex level.
- *Backward chaining approach:* This approach is applicable where objectives require the learning of sequences. In this approach the last step in the sequence is learnt first, followed by the second-last step and thus working backwards to the first step. For example, you would teach interpretation of research data before presentation of data and before collection of data and so on.



In our presentation of topics, we would use the following criteria for ordering material:

- moving from specific to general
- moving from known to unknown
- moving from simple to complex

Other procedures for organizing the material are:

specific	—	general
easy	—	difficult
basic	—	advance
simple	—	complex
familiar	—	unfamiliar

A teacher teaching in a classroom may find these criteria quite familiar. In higher education, however, a teacher who adopts these criteria may have to rethink quite radically his/her mode of presentation. For example, returning to the case of Biology teaching, a lecture course on forms of life at university level will often start with the classification of living things, and then move on to consider the different branches. This is a top-down approach, starting with the general and going to the particular. The distance educator may wish to rethink this, and start with examples of familiar species before moving on to the general picture.

3.4 MODES OF PRESENTING THE CONTENT

There has been some debate about the circumstances in which it remains best to start with definitions and generalisations. The best course for educators seems to remain open to alternative possibilities. Those used to

teaching in higher education or to reading or writing academic articles tend to veer automatically towards more traditional teaching approaches as these remain the norm. *When they enter distance education, they need to accept possible and effective alternatives.*

Material should always be arranged in a logical order, taking the student step-by-step through a topic. These steps must be made explicit and clear in distance education. A *roundabout* approach to a subject can be stimulating and effective in face-to-face situations with a skilled lecturer, but usually fails at a distance.

It is important to include numerous examples in the units. Explanations without examples are usually not enough. Very often a section of a unit will begin with an example which sets the learner thinking before s/he proceeds to the explanation of the topic.

We can in fact consider a number of alternatives to explanations, which may not only stimulate or maintain interest but may in some cases also be a superior form of presentation. For example, learning could be stimulated (rather than reinforced) by an activity in some cases. We might teach about nutrition by asking our learners to conduct a small survey of nutritional habits in their community, or we might introduce a Physics topic with an experiment done at home. Such activities set learners on the path to understanding. Other activities may also help them to assess how much they already know. For example, in Political Science, an activity could stimulate learners to gather and assess certain political ideas they already have, so that they are in a better position to follow up.

It is also often advisable to consider alternatives to prose. A process may be described better in a flow diagram, data may be better presented in a chart or drawing or a photograph may better illustrate a point. Graphical forms of representation are often useful or even essential.

There are also cases where texts are not well able to cope with educational demands. For practical demonstrations, case studies or debates, the audio and visual media are better; data may be presented better or accurately in a chart or flow diagram, and a drawing may be used in order to more easily represent a view/concept. There may even be some aspects of topics where face-to-face work is necessary, for example, skills training.

Check Your Progress 2

We have discussed above alternative ways of presenting materials. Suggest an example which can be presented in more than one medium, e.g., both print and audio?

Note: a) Space is given below for you to write your answer.

b) Compare your answer with the one given at the end of this unit.

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The extract below suggests that the task of writing material which will help learners to make sense of a topic is far more difficult than we might think at first. As you read, consider your own subject and then, when you have finished reading, try to find some examination questions from your own subject and evaluate them as Mason (1984) has done.

The world inhabited by academics is not always the same as that inhabited by students. No matter how rarefied or abstract the topic, from high energy physics through literary criticism and social theories to pure mathematics and philosophy, the material we present to student was designed by people who were themselves trying to make sense of some part of the world they then inhabited. Yet we frequently neglect to let students in on the secret of what spawned the subsequent abstractions, leaving them mystified as to what part of their world, if any, is being elucidated. The principle medium of academic instruction is words—spoken, written and recorded. The chief burden of words is generality. I cannot communicate directly with words about some experience because the words themselves indicate abstractions: classes of objects like ‘cup’ and ‘chair’, or classes of experience like ‘violence’ and ‘behaviour’, or more abstractly still like ‘meaning’ or ‘set’. Each listener or reader has to make the general particular by reference to their own experience, guided by definite articles, verbs, adjectives and adverbs which point towards interpretation. For example the phrase,

'the blue cup with the broken handle'

manages to restrict the inherent generality of 'cup' by qualifications and using the definite article 'the' implicitly asserts that no further restriction is needed.

In addition to the inherent abstraction of language, academic course material involves further abstractions which have been arrived at by a long process of questioning, and modifying it. The richness of meaning conveyed to a practitioner by jargon (for example 'social mores', 'electric current', 'oxymoron', $2\frac{1}{2}$...) is built up largely by trying to express what is seen and by both perceptions and expression altering in the face of examples and counter examples. It is in this sense that every student must research for themselves, guided by the articulations of others. Too often we present only a refined, articulate generalisation with one or two 'examples' to add substance, forgetting that an example is only clearly an example of something when it has been integrated with the generality which it exemplifies. Each discipline has peculiar and ritualistic ways in which specialising and generalising take place; indeed in many ways the characteristic quality of a discipline resides not in the actual content, but in the sort of stressing and ignoring which leads to generality.

3.5 ASSESSMENT AND FEEDBACK

Assessment in education is checking how well a student has learnt, while feedback is giving information on the quality of the work. Distance education uses the same forms of assessment as formal education, but differs in the ways in which they are used.

In formal education, teacher assessment is central. This includes the teacher evaluating the student's work, informally in class or more formally by marking essays or homework. The student receives feedback immediately or as soon as possible, depending on whether face-to-face content is immediate or takes place after marking.

In distance education, teacher assessment is no longer pre-eminent; it cannot be so since while the teacher may have regular contact with the learner by correspondence or even face-to-face in study centres, there is no immediate feedback and reinforcement. The learner must therefore learn to assess her/himself or rather, the distance-teaching materials provide questions and answers which enables the learners to evaluate their progress frequently and provide immediate feedback. The distance learner's assessment is typically separated into formative and summative components. Formative components take the form of self-assessment questions or activities and they are not graded.

Self-assessment questions are just one of the elements in the distance education assessment system. There are other forms of assessment too, and

each of them has specific functions. In any one institution or even in any one course the system of assessment is arranged in such a way as to suit the resources available, the needs of the learners and the subject being taught.

Let us now consider these forms in more detail.

3.5.1 Forms of assessment

In this sub-section, we shall be touching upon the major forms of assessment—self-assessment, teacher assessment, computer-marked assessment, peer assessment and terminal assessment.

Self-assessment

Self-assessment questions have three main functions:

- i) they help the student to check that a point has been understood;
- ii) they reinforce memory or understanding; and
- iii) they may also stimulate the student to go forward in his or her thinking.

Questions with either of the first two functions must have answers provided otherwise they will not provide feedback. Even if answers seem too obvious to writers, they must be given because they may not be quite so obvious to learners. Teachers often feel unhappy about providing answers—they fear that learners will cheat by looking at answers before they try the questions. This fear is based on a misunderstanding of the function of self-assessment questions, which are essentially a means of reinforcement and checking, and, by implication are not intended to be evaluated. If a learner 'cheats' it matters little—simply reading the answer and relating it to the question itself will be of some assistance to the learner although admittedly this is not as beneficial as doing the exercise.

Self-assessment questions are mostly of the objective* type: that is, question with only one correct answer. We shall look at types of objective question more closely later in the unit. Questions with the function of stimulating the learners, however, are not objective in nature.

Such questions often ask learners to draw on personal experience or past study, and may not require a written answer from the learner. The writer, too, is unable to provide answers, but instead a suitable comment should follow the question, to give the learner some idea of how to evaluate his or her answers.

* Note that this use of 'objective' is as the opposite of subjective. This is a different meaning from that used in educational objectives. In the latter case 'objective' means 'target' or 'goal'.

Teacher/Tutor assessment

The summative components of assessment may be 'Tutor-Marked Assignments' (TMAs), work-place or institutional assessment or examinations, and that these assessed and graded.

The most important form of assessment by the teacher in distance education is the assignment. The assignment consists of one or more questions which the learner completes and send to the tutor or teacher for 'marking'. Questions should be designed to allow the tutor to check how well the learner has learnt and understood the material. Such questions will need short/lengthy answers. They may even comprise objective type questions. To such questions, however, answers are not given in the unit as the intention is to evaluate the learners. To evaluate how well a learner can apply what he/she has learnt, there may be, for example, essay questions that encourage the synthesis and analysis of material. A single essay could, in fact, test both understanding and application of content with marks being allocated for each aspect to provide the teacher with an opportunity to assess the strengths and weaknesses of each learner, and to return written comments with the assignment. Such comments may include advice on remedial work for a learner who has not done well, or advice on additional work for a bright learner who could benefit from it.

Another function of the assignment, although this is not a form of assessment, is to provide an opportunity for personal contact, so that the sense of isolation of both learners and tutors is reduced.

Teacher assessment may serve simply to provide feedback to learners, or it may also count towards a qualification. Such assessment is called continuous assessment. Correspondence tutors need to be provided with a marking guide for each assignment, especially when continuous assessment occurs. A guide helps to ensure that assignments are all marked to the same standard, even though there may be many tutors.

Assignments should be mailed to learners with the relevant units. This helps the learners to organise and direct their individual study. The assignments are often, printed separately, particularly when new assignments have to be issued every time a new intake of learners studies a course. Sometimes the same assignments may be used over and over again. But it is always advisable to include new assignment questions to present plagiarism even if inadvertent.

Teacher assessment also occurs at study centres. The teacher has little time for individual contact with learners, but can try to ensure that each individual is coping with the course satisfactorily. The teacher can assess practical work, and can also check whether face-to-face performance is equal to performance on paper, or whether some additional help is needed.

Computer-marked assessment

It supplements or complements the teacher-marked assessment. It is the only form of assessment which is seldom found in conventional education (except for exams). In distance education, its functions are rather restricted. It is usually used only for testing knowledge and understanding. However some distance education institutions have experimented with computer-marking as a full alternative to tutor-marking (teacher assessment), with surprising success.

In the pioneering system developed some years ago by Hermodes (name of an institution) of Sweden, a computer was programmed not only to mark assignments, but also to send a personalised letter of comments to each student. Using this method, scripts were returned to learners far more quickly than with conventional marking, and the learners were very happy with the quality of comments and responses provided in their letters.

The extract that follows describes the Hermodes experiment with marking assignments by computer. As you work through this extract keep the following question in mind—Why do you think the learners appreciated the CADE (Computer Assisted Distance Education) system so much?

The CADE system requires that the assignments for submission are the multiple choice type. The student marks his answers on specific answer boxes. They are registered by an optical reader, which produces a tape. This tape is put into a register by an optical reader, which produces a tape. This tape is put into a computer, which processes the information given, collects appropriate comments from one of its secondary memories, and — as an end product—prints out a letter commenting on the student's answer. This letter corresponds to the correspondence tutor's manual corrections and comments in traditional two-way communication.

A CADE comment letter consists of five main parts:

- 1) Identification (tutor, student, course, submission number).
- 2) Introduction
- 3) Instructional comments
- 4) Evaluation
- 5) Concluding phase.

The *introductory texts* are common to all the courses. However, there are nine different texts for the computer to choose from, and this fact allows for considerable variation. The introduction may be extended by a text referring to printed model answers which are manually enclosed. This text is also available in different versions. Therefore, a student never receives the same introductory text on two successive occasions.

The *instructional comments* are of two kinds:

- Comments on single answers; and
- 'special' comments

Comments on single answers provide the number of the questions + the letter signifying the correct answers + the alternatives chosen by the student + comment for explanation (often including a short discussion and/or suggestions for review). The explanation can be varied depending on which alternative the student has chosen. As a matter of routine, all incorrect answers to single questions are commented on in this way. However, the tutor designing comments for the system may also comment on (certain) correct answers.

The *special comments* can mostly be used flexibly. For instance, it is possible to:

- provide a comment referring to a group of answers, or to the whole study unit; and
- refer to a student's answer(s) to one or more questions on an earlier occasion of submission.

The comment designer may work out a maximum of five *special comments* for each study unit (submission occasion).

The *evaluation* part states the student's number of correctly answered questions, and the total marks. In addition, it provides a concluding overall comment. Like the introductory texts, the concluding comments are generally common to all CADE courses. The computer can choose between 29 different concluding comments. Its choice depends on the student's achievement on the particular submission occasion, as well as on his results on the previous occasion. In addition, each variant is available in three verbally different versions.

The *concluding comments* have—as far as possible—been worded in a friendly encouraging way. Something similar might be said with regard to the CADE comment letter as a whole. Moreover, the comment designers often address themselves directly to the students, which may lend a comparatively personal touch to the letter although—largely—it keeps strictly to facts.

The student writes questions and/or comments (if any on the back of the answer blank. The tutor in charge provides a reply, as a rule by adding a manual postscript to the computer-printed comment letter.

Generally, CADE comments are considerably more extensive than manual comments given by correspondence tutors in traditional two-way communication. According to a calculation, an average CADE letter comprises about 300 words.

In essential respects, the experimental outcome favours the computer-assisted system, at the same time as none of the results tells against it. Particularly remarkable are the students' attitudes to the scrutiny of their submitted solution. In both courses, the students are more satisfied with the computer-assisted tuition than with the tutor's manual correction and

commenting. This supports the assumptions about the instructional and motivational functions of computer-assisted two-way communication.

The original aim of the CADE project was of an exclusively practical nature—to search for new ways to render correspondence education more effective and to improve its instructional quality. The outcome of the two field experiments have also clear practical implications. Correspondence education with computer-assisted two-way communication off line, arranged as in these experiments, appears to yield educational effects which are, in several respects, more favourable than those of traditional correspondence education. Although the strength of the relationships found is not throughout of a considerable magnitude, an implementation of computer-assisted tuition certainly appears justifiable from an educational point of view.”

Peer assessment

Informal assessment or performance by fellow learners is common in conventional education, but rarely occurs in distance education. When it does occur in study centres, its main value is to boost confidence. Distance learners are always greatly encouraged to discover that their fellow learners respect their ideas.

Terminal assessment

Examination or terminal assessment plays the same role in distance education as in a conventional educational system. Usually more than 50% of marks are awarded on the basis of term-end examinations, although a few distance teaching institutions have experimented with accreditation on the basis of assignments and dissertations only. Open universities provide their own examinations. Most of them however prepare their students for public examinations or for the examinations of a parent body (such as a Directorate of Correspondence Courses in India which prepares its students for the usual university examinations).

In considering these forms of assessment, we have seen that there is a great emphasis in distance education on self-assessment. At the same time, each institution uses the means available to develop a system which provides sufficient opportunity for the teacher to check the learners' work and provide advice where necessary, and opportunity for the learners to have some personal contact with the teacher and fellow students.

It should not, however, be construed that it is necessary to have the same teacher marking assignments and leading discussions and sessions in the study centre, since this is often an impossibility. Sometimes assignment markers are highly specialised, and scattered all over the country while study centre teachers are relatively lower level specialist supervisors. Frequently more assignment markers are needed than study centre teachers, as the former mark individually while the latter meet groups and so fewer are needed to cover all the learners.

Continuity and standardisation are maintained through course-related notes for assignment markers and study centre teachers respectively, which give guidance on marking and suggest activities as appropriate. Institutions often also brief all their teachers on new courses at the time of the launching of these courses.

Check Your Progress 3

Do you think all assignments should count towards continuous assessment?
Give reasons for your answer

Note: a) Space is given below for you to write your answer.
b) Compare your answer with the one given at the end of this unit.

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In this unit we began with presentation of the content and then concentrated on how understanding of content is assessed. This may give the impression that in a distance education unit, sections concerned with teaching and those concerned with learning are entirely separate. This is not so. While it is convenient to discuss these elements separately, a good distance teaching unit is like a tightly woven fabric, with content and exercise mixed together. Often, the tone of the presentation is questioning, giving the impression of dialogue – questions may occur in the middle of paragraphs, and the whole unit is directed towards involving the learner in active participation. We have to keep a balance between the self-assessment questions and the tutor-marked assignments in open and distance education courses. Keeping in mind the significance of self-assessment questions in any distance education unit, we have here presented a detailed discussion of such assessment questions.

3.5.2 More about self-assessment

Self-assessment questions should occur frequently in any distance teaching material. They are normally presented as a feature separate from the main text: one reason for this is that the answers to the questions are also given in the unit, and both questions and answers therefore need to be numbered to ensure identification. This leads to the necessity of separating them from the continuous text. (there are other advantages to this as we shall see below.) It is, however, important to see that text and questions are closely interwoven—constantly taking the learner forward rather than functioning as a check-post. Certainly, we can describe the unit as a series of steps, but they are small, easily taken steps—perhaps we might think of a moving staircase rather than a ladder.

How can we construct questions that are neither too demanding nor too easy, that provide reinforcement without interrupting the flow?

In many distance teaching materials, the self-assessment questions are the least satisfactory feature, despite their importance. In order to see why this is so, we will look more closely at different forms of self-assessment questions and consider the problems that arise in constructing them.

Forms of objective questions

Objective questions are those that have only one correct answer or, sometimes, a limited choice of correct answers. A question that requires the learner to select the correct response from a list is an objective question. They are valuable for their ability to provide reinforcement and feedback, as the answers are precise and unambiguous

Forms of objective question can be classified under two types:

- i) Selection type
- ii) Completion type

i) Selection type

This type includes:

- Multiple-choice questions: a stem is given, as also a choice of 3-5 endings or answers. Only one of the endings is correct the rest are incorrect 'distracters'.
- True/false questions: similar to multiple choice, but with only two alternatives: one correct and one incorrect.
- Matching questions: a set of stems and endings are given, or two lists of linked points, or illustrations and captions. The learner is asked to match the pairs.

ii) Completion type

This type includes sentences with words missing or tables with figures missing, and the like. The learner must supply the missing item. Questions with one word or very simple answers fall into this category.

Besides these two forms, there are exercises which combine both selection and completion; for example, an exercise which asks you to complete a text by selecting some items from a list. Yet another form is special subject-related exercises which include drills or substitution tables for language work, or calculations and problems for mathematics.

Advantages and disadvantages of objective questions

Are the questions too easy? This is the first question most people ask, usually also commenting that learners should not be spoonfed. At first sight, this may seem a fair criticism but we must recall that a major function of self-assessment questions is to reinforce learning. Questions need not be challenging to be effective but all the same, should be sufficiently demanding, according to the level of the learners. At this point, let us remind ourselves that objective questions are regularly used in examinations at all levels. It is possible to construct questions of an objective type that test knowledge and understanding from the primary level to the postgraduate. The same forms of questions can be adapted to different levels.

Herein, however, lies one of the disadvantages of such questions. It is time-consuming and demanding job to construct them, and in order to cover the materials thoroughly, many questions are required. Examining authorities sometimes have whole divisions whose job is to construct a battery of questions for use in examinations. Those involved in course development for distance education have first to learn how to formulate objective questions and must then have the patience to think of enough of them. Those questions that are often intended to be objective are often poorly constructed, as insufficient time is devoted to formulate them.

A further disadvantage is that object questions, if adequately provided, consume a great deal of paper. Bulky books may overstretch the budget, and prove off putting to learners.

On the other hand objective questions can be used for many purposes and at all levels and have one overriding advantage; the learners are provided with instant, accurate feedback on their progress. This makes such questions an important component of most distance courses.

Short-answer questions

A short-answer question requires the learner to write a paragraph, make a list or complete some similar activity relating to material just covered. This kind of question is very common. (Most of the 'Check Your Progress'

questions in this course are of this nature). These questions do not have only one possible answer (unless the answer is one word, when the question can in any case be classified as objective). Thus, their disadvantage is that they do not provide a foolproof check on progress. The learner must evaluate the worth of his or her answer against the possible answers and by back-referencing. Writers often make this self-evaluation extremely difficult by leaving questions open, and the result may be ineffective material.

On the other hand, short-answer questions are relatively easy to construct and, particularly for learners at a higher level, they encourage greater independence and self-reliance.

Presentation of answers

Answers to self-assessment questions not only provide feedback, they can also be part of the teaching. Alongside the answer itself, there may be information which helps those learners who have made mistakes to see why, or there may be comments which make the learner consider a new side to the question.

Thus, the answers are not just an appendage to the unit, but part of the fabric. The course writers should acquire the habit of constructing answers immediately after they have written the questions.

Answers are usually placed at the end of the unit, or at the end of the volume in which the unit occurs. Some institutions place them near the questions for quick reference, for example upside down or on the next page. Many learners prefer the answers to be better hidden; they complain they are tempted to have a furtive glance at the answers if these are too easily visible.

Development questions

These are questions to make the learner think, and do not normally have a set answer. The learner may be asked to consider a point in a section just read, or think about a topic which will shortly be explained. In particular, this kind of question is used to help learners relate their reading to their personal experience. Development questions are an important substitute for live dialogue. Often, the question is followed by a comment, an example or a discussion, to provide some reassurance to learners that they are thinking along the right lines.

Learners and self-assessment questions

Why to provide self-assessment questions? Do learners complete these questions? These are questions many people raise. Of course, not every learner bothers to answer all the questions, but many do, and would probably do less well without the practice.

It is interesting to note that learners approach units in many different ways. Some start by looking at the exercises, and then try the text, some skip backwards and forwards through the material, some work straight through from beginning to end. If a learner prefers an unconventional approach, and is successful, does it matter if he or she does not complete the exercise? Those that need the exercises will do them.

It is, however, undesirable for learners to read passively. A well-designed unit should not allow this to take place. Not only will it contain numerous exercises within the body of the text, but also lead the learners to think, to apply what is learnt practically or to discover new ideas for themselves.

Check Your Progress 4

Do self-assessment questions lead to spoonfeeding? Substantiate your answer with arguments for and against this opinion.

Note: a) Space is given below for you to write your answer.
b) Compare your answer with the one given at the end of this unit.

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3.6 LET US SUM UP

This unit has discussed the content of a unit and explained how the arrangement of the content creates conditions in which distance learners are likely to learn. The main points are:

- i) the choice of subject matter is largely determined by the relevance of the material to learners and a consideration of their learning needs;
- ii) the content is normally best organised when it leads from the specific to the general, the familiar to the unfamiliar and should be presented in a logical order;
- iii) interesting modes of presentation such as diagrams and illustrations or suggestions for activities should be considered as alternatives to prose wherever appropriate;

- iv) distance education has its own assessment system, which uses the same forms of assessment as conventional education, but in which self-assessment is pre-eminent; and
- v) there are a variety of optional question types for self-assessment, some of which are demanding and difficult to construct.

Check Your Progress: Possible Answers

- 1) One suggestion is to give a range of 2 or 3 examples from different parts of the country, and then ask learners to identify a local example for themselves. Another is to rely on study centre sessions to cover material of this variable nature. A third possibility is to produce supplementary regional materials.

There is no easy way to handle this difficulty.

- 2) Yes, if you are not sure why, look back to Block 1 Unit 2, at the treatment of multi-media education.
- 3) In most cases it is not usually necessary for learners to complete all assignments to cover the course well, and to force them to do so by making all assignments count towards the final mark could put undue strain on learners. It is more usual to specify a number of assignments for continuous assessment, in a form such as 'the three best assignments' out of five; etc.

We should also bear in mind that an assignment has a teaching function. The teacher tries to help the learner to develop ideas and improve work. A learner whose first priority is to get good marks is likely to try to cover up difficulties, rather than to expose them to the teacher. In order to reduce this risk, it is advisable to have some assignments that are not 'examined'.

- 4) Here are a few points. You have probably thought of several more.

Those who agree that this is spoonfeeding may say that self-assessment questions are not challenging enough and that learners will tend to look at the possible model answers before writing their own, with the result that everything is learnt by heart.

On the other hand, self-assessment questions can be challenging. But this is not their main purpose. Rather, their function is to provide frequent reinforcement and feedback to learners, while other parts of the assessment system (such as assignments) provide challenges and test understanding.

Paradoxically, the presence of self-assessment questions can lead to greater self-reliance, as learners are encouraged to become responsible for their study.

UNIT 4 ORGANISING THE PRESENTATION

Structure

- 4.0 Objectives
- 4.1 Introduction
- 4.2 Presentation and Motivation
- 4.3 Legibility
 - 4.3.1 The type
 - 4.3.2 Arranging the type
 - 4.3.3 Paper size
 - 4.3.4 Paper colour and quality
- 4.4 Legible Graphics
 - 4.4.1 Illustrations
 - 4.4.2 Diagrams and charts
- 4.5 Attractiveness
- 4.6 Accessibility
 - 4.6.1 Structural devices
 - 4.6.2 Access symbols
 - 4.6.3 The importance of access structures
- 4.7 Let Us Sum Up

4.0 OBJECTIVES

At the end of the unit, you should be able to:

- discuss the relationship between presentation and motivation in distance education;
- describe factors which contribute to the legibility of texts;
- explain features which contribute to the attractiveness of texts; and
- describe features which make texts usable and accessible, and explain why they are important for developing study skills.

4.1 INTRODUCTION

Learning by reading a text is not easy. The reader must put considerable effort into the task. But that is not all; the quality of the text itself is also important. Some texts are more effective teachers than others. There are three categories of factors which contribute to effectiveness: the presentation of the context, the level and clarity of language, and the format of the text. In other words, the meaning must be clear, the language simple and the text itself well presented. It is difficult to estimate how much importance to attribute to each of these factors, but it appears that the third

factor, (more important than the theme of this unit), is as important as the other two. In this unit, we shall consider why this is so.

This unit will help you to understand the importance of presentation and design in distance learning texts.

We have come a long way. Having discussed course design in the first unit, we came to *unit design* in the second unit, and then to the organisation of content in the third. We close the block with a discussion, in this last unit, on the presentation of content.

4.2 PRESENTATION AND MOTIVATION

To what extent does the appearance of a text matter? It may give us pleasure to possess an attractive book, but is it of any educational importance whether or not a book is good to look at? We can answer this question both in the affirmative and the negative.

If a student is very highly motivated, s/he will learn even from poorly produced materials. There have been cases where distance learners have accepted hand written duplicated notes. Many correspondence courses consist of badly-typed, densely-packed pages, with thin rough paper, and a proportion of learners will always study successfully even with such materials.

On the other hand, distance learners can easily lose confidence. In distance education, the learner must persist with his/her studies over a period of years. Dull, unattractive materials wear away the will to persist, and destroy learners' confidence.

Besides being dull, poorly presented materials are actually more difficult to learn from. Research on typography has led to a number of guidelines for making text legible. If these guidelines are not adhered to, text becomes difficult to read and the content consequently more difficult to understand.

These findings on legibility apply to any text. Research on the habits of distance learner has led to a further consideration. Distance learners do not necessarily read their units continuously from beginning to end. They may skim through them, and then return to read selected parts carefully; some start by looking at the summary or assignment at the end; others may approach the material in an unpredictable way. This appears to be a matter of individual differences between learners. There is no indication that one way of studying is intrinsically better than another. The designer of self-instructional materials must, however bear in mind the probability of differences in approach between learners. However can such differences be catered to? How can the materials be made accessible to everyone? As we shall see below, design features which started as simple signs are now recognised as important 'access devices'.

The three features of text—legibility, attractiveness and accessibility—are closely related and, as we shall see in the rest of this unit, are not secondary to the presentation of content, but have direct influence on the effectiveness of the material. Before we discuss these features in greater detail, let us work out the following exercise.

Check Your Progress 1

List the reasons why unattractive units are less effective.

- Note:** a) Space is given below for you to write your answer.
b) Compare your answer with the one given at the end of this unit.

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4.3 LEGIBILITY

The main factors in legibility are the typeface, its arrangement on the paper and the quality and type of paper used.

4.3.1 The type

Letters, or characters as they are called by typography, come in many different forms or typefaces, but for the Roman alphabet (the one used for English) we need only distinguish between 'ordinary' and 'display' typefaces. Display typefaces are those used in advertisements, hoardings, book covers and so on in order to make a special impact.

They should never be used for the body of a text, as they are often ornate or conventional in design and difficult to read.

A great range of typefaces are available—probably far more than you are aware of. Most are quite legible, although a few are unsuitable for educational texts, such as those with tall thin characters, or characters with very fine vertical lines, or some with artificially squared shapes. You will

seldom see a text in a really unsuitable type, but some are clearly more attractive than others.

There has been a long-standing controversy about whether 'serif' or 'sanserif' typefaces are preferable. (Serifs are short lines across the ends of arms and stems of letters; some modern styles do not have serifs, and are known as **sanserif**). Experiments to discover which style was easier to read yielded conflicting results, and the conclusion has been drawn that readers prefer the style they are most used to. Each typeface is available in three styles: Roman (ordinary), *italic* and **bold**. Italic is the term used for *light, sloping letters, like this*, and is normally used for foreign words, book titles, and sometimes for emphasis. It should not be used for long passages. Probably you have come across occasional passages in italic, and you will know that is rather tiring to read. Experiments have confirmed that the average person takes longer to read a text in italics than one in roman script.

Bold type is heavy type, like this, and is normally used for headings or emphasis. If you use it for a complete text, the material would be quite legible, but unattractively heavy looking.

Another important option is the choice of CAPITAL letters (known as upper case) or the more usual mixture (upper and lower case). We often find headings all printed in capitals, to give them importance. But why is it unusual to find a complete text printed in upper case characters? It is again due to our concern for legibility. Experiments have shown that the average person cannot read a passage all in capitals as fast as a passage in upper and lower case. This is likely to be partly due to the monotonous uniform size of capital letters. There are no landmarks for our eyes to rest on, while upper and lower case characters have ascenders and descenders (tops and tails as in d and p) which, so it appears, catch the eye and help the reader to recognize words more quickly.

A final consideration is the size of the type. You will be familiar with the sizes of type produced by a typewriter, and will know they are a good size for reading. Many typewriters have letters one-sixth of an inch high, and this size is in fact the standard for typographic measurement known as a pica. Type is sized, using a point system, with twelve points to a pica. Thus, there are 72 points to one inch. Printers use size of type varying from four or five points, for footnotes, to about 20 points, for children's books or partially sighted readers, but the common sizes are ten, eleven and twelve points. Small print is hard to read, while large print means a waste of paper.

4.3.2 Arranging the type

You might suppose that we read silently in the same way that we read aloud—word for word. In fact this is not the case. A good silent reader reads words in groups, four or five words at a time. Observations of the eyes of people reading have shown that the eyes do not follow the print smoothly along the line; rather, they proceed in jumps, with the eye resting on a focal point smoothly along the line; rather, they proceed in jumps, with

the eye resting on a focal point in each group of words. Most movements are forward, but sometimes the eyes jump back and repeat a bit not well understood.

The points that follow can be explained in terms of how we read, with the jumping movement of the eyes. A good arrangement of text (layout) uses cues and devices to catch the eye effectively.

A first consideration is the *line length*. After a long line of text, the eyes have to jump back farther to the start of the next line. The longer the line, the greater the risk of wrongly identifying the next line and wasting time searching for the correct place. It appears that if the average length of line exceeds sixty characters, the risk of error is unnecessarily high. It is normal, to take sixty characters as a near maximum.

What happens if the lines are very short? Think of newspaper columns. They are quite easy to read. In fact, you can train yourself to scan newspapers and get the gist by moving your eyes slowly down a column vertically. The eyes can just manage to absorb all the words in a column in a glance. So, short lines are acceptable in theory.

In practice, however, we seldom use short lines. In order to make the best use of space, we would put two columns on a page if we used short lines: the result can be a dense and forbidding page. Too many words on one page is quite off-putting.

Whatever the length of line, each line normally starts the same distance from the left of the page, so that a straight margin could be drawn alongside the letters. A printer describes this as 'left-justified'. Texts may also be justified to the right of the page, but this is optional. Do you think it is better to have an uneven edge at the right or 'justified' text? The answer is, perhaps, surprising. It is easier to read the text, if the right edge is 'unjustified'—notice that the right edge in this text is 'unjustified', while the left edge is justified'.

There are several reasons for this. First, unjustified edges have fewer hyphenations or words broken across lines. Secondly, a regular size space can be left between words. In justified texts, on the other hand, spaces often have to be adjusted and the effect is often to create what look like vertical rivers running down the page, where too much space has been left in successive lines. Finally, our eyes lose their place less frequently with unjustified text. This provides another reason for avoiding a two-column layout for a page. Where lines are short, these disadvantages become more frequent. Despite these disadvantages, 'justification' is now a commonplace practice.

Finally, horizontal spacing also matters. Our reading is impeded if lines are very close together, and also if they are too far apart. Hartley (1993) reviewed 28 studies about spacing, comprehension and recall, and it was found that nineteen (19) studies showed improved comprehension or recall

for spaced text, (give figure) showed no difference, and four (04) produced negative outcomes. These outcomes were related to the nature of spacing. When the text was presented as a single word per line, comprehension and recall were inferior to text presented in the traditional way, but when the meaningful structure of the text was emphasized in some way, then the outcomes were usually superior to traditional forms.

Extra space between lines is often used to indicate a new paragraph. A small indentation (or blank space at the beginning of a line) is an alternative indicator.

4.3.3 Paper size

Most distance-teaching institutions now use paper-sizes from the international system, with A4 paper (the size we are using) being the most common. A5 (half this size) is also used. You may also find other older sizes such as foolscap and quarto.

These large sizes of paper are good for typing: 60 characters from most typewriters give a line of six inches long, which fills an A4 page quite nicely, leaving a good margin. (The pages, however, are not so good for typesetting. A typesetter will normally use slightly smaller letters and a line of type carried on right across the page would contain too many characters for comfort.) This has led to the page design which has become associated with Open University texts, where a block of text fills only two-thirds of the page width, as is the case with the text which you are reading.

The blank space on such pages can be used in many ways: for subheadings, key words, symbols, illustrations and diagrams, or simply as space for learners to make notes. The page design itself is quite attractive, but is, however, expensive on paper.

4.3.4 Paper colour and quality

Most printing is in black ink on white or near-white papers. Texts remain easy to read if other light-coloured paper is used or other dark-coloured ink. Two-colour printing is particularly attractive, with the second colour used for emphasis, or two colours used in diagrams. Light inks and dark papers should never be used. Of course, any variation or change from black ink and white paper may cost more.

The quality of paper is also an important consideration. Poor quality paper is often thin and absorbent. Sometimes good printing is spoilt by the use of poor paper, with the print showing through from one side to the other.

Check Your Progress 2

Look through this unit and note down the way in which we have used italics, bold letters and words in capital letters. Do you think the layout chosen is fully legible? Substantiate your claim.

- Note:** a) Space is given below for you to write your answer.
b) Compare your answer with the one given at the end of this unit.

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4.4 LEGIBLE GRAPHICS

Pictures, diagrams and charts are an important feature of distance education units. They can help to explain or teach ideas better by bringing them alive. In some subjects, they are particularly important. Moreover, individuals differ in their approaches, some being more visually-oriented than others. Such people may need pictures, even though others may bypass them.

4.4.1 Illustrations

It is widely accepted that the textual components in distance education materials need to be both more explicit with respect to the content presented and more supportive with respect to the instructional guidance that is provided to the learner. There are two widely accepted broad categories of use for illustrations within the self-learning materials (a) motivational affective purposes (b) cognitive purposes.

This category includes photographs, drawings or cartoons. What makes a good picture?

First, it must be relevant to the point and must be familiar and recognisable. If you cannot identify what there is in a picture, it is quite useless. For example, a photograph of dry cracked earth, to illustrate the effects of drought, may simply look like a collection of smudges.

The advice above may seem unnecessary. It has to be recognised, however, that not everyone sees the same picture the same way, and often a picture apparently clear to the course developers communicates a different or incorrect message to many of the learners. To reduce this risk, two important guidelines should be followed: a picture should be placed near the text which refers to it, and it should always include clear explanatory reference to the picture in the text. In addition, it is usually advisable to provide captions to the pictures.

Often in distance education texts you will find line drawings rather than photographs. Photographs require a more expensive printing process than line drawings, and do not reproduce well on cheap paper. Distance educators sometimes express regret that they cannot use photographs more often. In fact, there is no real loss insured here. On the whole, readers find line drawings as useful and attractive as photographs.

Check Your Progress 3

With regard to distance education, it is often said that line drawings have some advantages over photographs. Suggest some disadvantages of photographs as compared to line drawings.

- Note:** a) Space is given below for you to write your answer.
b) Compare your answer with the one given at the end of this unit

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4.4.2 Diagrams and charts

This category includes graphical material where words and graphical features are mixed. They are particularly important in distance education for explaining processes and sequences. As with illustrations, they should be linked with explanations in the text, and should normally be numbered.

A common error in the use of a sequence of diagrams, is to use too few diagrams. A demonstration on paper has to describe the sequence of events that occurs in reality, and each step must be portrayed clearly. In science, for example, while the conventional written description of an experiment shows one diagram of the apparatus, the distance education unit should have several.

There are a number of ways of presenting information graphically—flow charts, pie charts, bar graphs, line graphs, tables, and so on. Considerable attention needs to be paid to choosing the best style for the kind of information being presented.

Many distance education institutions pay too little attention to graphics. The professional services or graphic designers and illustrators are in fact important for the successful design of the text. Obviously, well designed text always attracts the attention of the learners. Making a text appealing is, thus, vital in distance education. In section 4.5 we have presented how a text may be made attractive. Before we take up this topic for our discussion, we shall digress in order to tell you how to achieve the maximum possible usability of a text.

Achieving usability

The analysis of usability has suggested that written materials are used more easily if they are designed to be compatible with the perceptual strategies, the conceptual knowledge, and the information processing resources of the user. The problem is how to achieve such design, and to convince producers of written materials to consider in detail the usability of those materials.

Manuals and instructional texts are particularly suitable for discussion because they encompass a diversity of types of communication—explanations, instructions tables and sometimes questions. For our discussion, let us take as example health manuals produced for the third world. Health care is increasingly involving part-time workers at the village level. Such workers receive little formal training, (probably even less than 100 hours) but may be given manuals to supplement the training.

The design of such manuals needs to satisfy a number of potentially conflicting criteria. The information must be medically sound yet comprehensible to someone with a limited education. Moreover, the language of the text may not be the first language of the health worker. It seems essential to give adequate consideration to the needs of such users but the limitations of both time and budget often necessitate a compromise between the ideal and the barely adequate. To achieve satisfactory compromises, the producers of written materials need to have some information about readers, textual presentation, and the adequacy of the draft text.

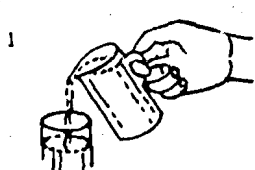
Part-time village health course writers have usually gained the respect of the village through their skills as farmers or parents, and their remuneration as health workers will depend on the decision of the villagers, that is, they are not chosen on the basis of their education. The manual writer needs to know much more about the reader, however, because health manuals can serve a variety of different functions such as those of a work manual, a reference manual and a training manual.

Techniques for discovering what the users want from a manual, range from informal conversations to formal surveys. Where comparable manuals already exist they may be surveyed as well. Survey techniques can also be used to establish if certain words are understood and if the worker's previous experience in health care has led to any presuppositions which may need explicit correction in the manual or alternatively, can be used constructively by the writer.

Decisions about the order of sections within a manual can be made in the light of information obtained about readers and their intended use of the text. The first consideration is that the user will want to find things in the manual. The designer must, therefore, provide adequate access structures such as headings, coloured pages, indexes, or reference keys in the margins of the page. The choice may depend on the user's familiarity with the alternative schemes.

A work manual needs to use presentation factors in such a way that there will be only a minimal risk of users losing their place in the procedural sequence and inadvertently missing a step. Figure 2 illustrates how changing the layout can make instructions easier to follow.

EXPERIMENT TO SHOW THAT AIR CAN SUPPORT A COLUMN OF WATER



Method

- 1 Fill a glass tumbler with water right up to the brim.

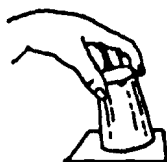
Air can support things. You can carry out an experiment to show that air can support a column of water. You will need a tumbler, a piece of cardboard and water.



2

- 2 Slide a piece of cardboard over the top of the glass so that it touches the water. Do not allow any bubbles of air to creep in.

3



- 3 Turn the tumbler upside down holding the card against the glass. Take your hand away from the card. If you do this carefully, the water will remain in the tumbler. It will not fall out because it is supported by the air pressure below.

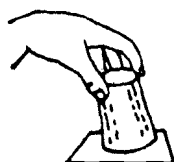
EXPERIMENT TO SHOW THAT AIR CAN SUPPORT A COLUMN OF WATER

Air can support things. You can carry out an experiment to show that air can support a column of water. You will need a tumbler, a piece of cardboard and water.

Method



- 1 Fill a tumbler with water up to the brim.



- 3 Turn the tumbler upside down holding the card against the glass. Take your hand away from the card. If you do this carefully, the water will remain in the tumbler. It will not fall out because it is supported by the air pressure below.



- 2 Slide a piece of card over the top of the glass so that it touches the water. Do not allow air bubbles to creep in.

Fig 2: Variations in the spatial layout of procedural instructions. At the top are the original instructions; below is a revision proposed by Hartley

(Courtesy: James Hartley, 1978)

A reference manual may need an appropriate cross-referencing system and it certainly needs a well-designed contents page. Guidelines sometimes

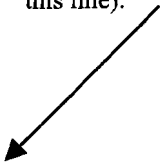
recommend that the distance between titles and page numbers should be small, so to reduce errors in reading. The need for sensitive interpretation of such advice is illustrated in Table 2 where, to reduce the gap between section numbers and page numbers, the section numbers have been vertically aligned on the right. Prominence is thus given to the sections with the longest section numbers although they are the minor sub-sections within the chapter. The user has to work to discover where and what the major sub-divisions are. Considering what the user does with the written information creates an awareness which avoids such problems. There is no substitute for careful evaluation of design options.

Table 2: An illustration: The layout obscures the importance of section headings

3 General rules for copy preparation

- 3.1 General instructions
- 3.2 Standard page
 - 3.2.1 Size
 - 3.2.2 Typing
- 3.3 Heading
- 3.4 Sections, sub-sections
- 3.5 Footnotes
- 3.6 Cross references
- 3.7 Quotations
- 3.8 Figures and table
 - 3.8.1 Artworks
 - 3.8.2 Tables
 - 3.8.3 Captions
- 3.9 Spelling
 - 3.9.1 Size/ise
 - 3.9.2 Spellings of note
 - 3.9.3 amper and (&)
 - 3.9.4 Hyphens
- 3.10 Punctuation
 - 3.10.1 Full stop (full point)/abbreviations
 - 3.10.2 Parentheses
 - 3.10.3 Comma
 - 3.10.4 Quotation marks
 - 3.10.5 Dash (em rule)
 - 3.10.6 Omissions (ellipsis)
- 3.11 Capitals
- 3.12 Numerals
 - 3.12.1 Decimal point
 - 3.12.2 Dates
 - 3.12.3 Time
 - 3.12.4 Percentage in descriptive text
 - 3.12.5 Page references
- 3.13 Italics/bold type
 - 3.13.1 Titles
 - 3.13.2 Foreign words and phrases
- 3.14 References
 - 3.14.1 Text reference
 - 3.14.2 Book
 - 3.14.3 Journal
 - 3.14.4 Government document
 - 3.14.5 Open university references
- 3.15 The international system of units

(The page numbers are intended to be aligned on the left along this line).

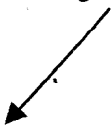


Principles of the Text Design

To understand the point clearly, compare the design with the one given below.

- 3.1 General instructions
- 3.2 Standard page
 - 3.2.1 Size
 - 3.2.2 Typing
- 3.3 Heading
- 3.4 Sections, sub-sections
- 3.5 Footnotes
- 3.6 Cross references
- 3.7 Quotations
- 3.8 Figures and table
 - 3.8.1 Artworks
 - 3.8.2 Tables
 - 3.8.3 Captions
- 3.9 Spelling
 - 3.9.1 Size/ise
 - 3.9.2 Spellings of note
 - 3.9.3 Amper and (&)
 - 3.9.4 Hyphens
- 3.10 Punctuation
 - 3.10.1 Full stop (full point)/abbreviations
 - 3.10.2 Parentheses
 - 3.10.3 Comma
 - 3.10.4 Quotation marks
 - 3.10.5 Dash (em rule)
 - 3.10.6 Omissions (ellipsis)
- 3.11 Capitals
- 3.12 Numerals
 - 3.12.1 Decimal point
 - 3.12.2 Dates
 - 3.12.3 Time
 - 3.12.4 Percentage in descriptive text
 - 3.12.5 Page references
- 3.13 Italics/bold type
 - 3.13.1 Titles
 - 3.13.2 Foreign words and phrases
- 3.14 References
 - 3.14.1 Text reference
 - 3.14.2 Book
 - 3.14.3 Journal
 - 3.14.4 Government document
 - 3.14.5 Open university references
- 3.15 The international system of units

(The page numbers are intended to be aligned on the left along this line).



In a training manual, it is often helpful to provide the reader with an explicit statement of the objectives in each section of the text. These may be presented in a formal list or in a more informal discursive style. They may be supplemented by questions, thereby enabling the reader to monitor his/her own progress through the manual. There are several advantages in the judicious use of self-assessment questions, ranging from checking that readers have fully grasped a new concept to dividing the material into small manageable sections to encourage readers by showing them they can use their knowledge.

Retention of the information in training manuals can be improved by various techniques. For example, even if medical students may forget the biochemistry involved in fluid and electrolyte therapy they will remember how to treat diarrhoea and vomiting once they have heard this doggerel:

Babies who have D and V
Shrivel up and fail to wee
When this happens, then we ought
Fill them up with salt and water

The doggerel continues through another three verses dealing with other aspects of the diagnosis and treatment of fluid and electrolyte disturbances. Notwithstanding that the particular example deals with medical treatment beyond the stage of primary health care, it illustrates one advantage of considering the usability of the material.

4.5 ATTRACTIVENESS

What comes first to your mind at the mention of a correspondence course? For most people, the first thought is of a dreary looking set of papers; and then there comes some thought on the content. The persistence of this common image probably presents the best case for making materials attractive and also indicates what is needed. First, the exterior of the course units should look bright and appealing with a cover of coloured paper preferably a glossy cover with a pictorial design. Inside, the text should be well distributed over the pages, not too dense, with suitable illustrations and design features. In fact, if guidelines for legibility are followed, it is likely that an attractive text will be the outcome.

Good results can be achieved at little cost. An ordinary typewriter can be used to create clear, attractive pages. Transfer lettering such as stencil shapes can be used to make headings and the words for covers, and bright cards can be used for covers themselves. The technology remains simple and the results far superior to the drab lesson notes of the past.

The new technology of word-processing may be used if the occasion demands that the text be rearranged on the pages. If an institution has invested in word-processing equipment, there is no excuse for substandard texts.

The question of attractiveness ultimately depends on the eye of the beholder. Perhaps, the serious learner is indifferent to the look of his/her text; as long as it is readable, he/she will accept it. Let us suppose that most of our learners feel like this; all the same, there will always be a proportion of learners who have difficulties or feel discouraged. A boring unattractive text could be the last straw.

4.6 ACCESSIBILITY

If texts are learner-centred then learners should be able to use them as they like. But options are only open in so far as learners can recognise alternative approaches to the material.

Once again let us take as a point of comparison the traditional correspondence lesson—long dense pages of lecture notes, with barely a break for a heading. If you want to approach these materials in an unusual way, you might as well cover your eyes, and choose a place to start with a pin; the text does not give you any help.

A good distance-teaching unit, by contrast, is highly structured so that sections and activities are clearly differentiated, and symbols and design features are used to indicate changes. These features create an environment which allows learners to find their way around the text, and to choose their approach and emphasis for themselves.

Distance education has been criticised for being too rigid and prescriptive. As we have seen, the behaviourist approach to learning has been highly influential in the evolution of course development procedures. An emphasis on usability and accessibility counters the tendency to be too teacher-centred, and some of the organisational devices deriving from the behaviourist tradition can be used to serve the learners in making their own choices. A highly structured text could be a framework for controlling learners; instead, with careful planning, it becomes a framework from which they can develop their ideas according to their own preferences and needs.

4.6.1 Structural devices

You are already familiar with a number of devices used to improve the usability of texts. Can you think what they are? Perhaps you thought of statements of objectives, headings, summaries and the division of a unit into sections. All these devices make the material more accessible to different learner needs.

The devices must be carefully presented. For example, sections of a unit can be numbered in various ways. The system of using points, as in these units, is very popular, as it clearly distinguishes between main and subsidiary point 4.1 is a main heading, with 4.1.1 being a subsection. This system can be easily misused: sections can be strung out with no clear distinction between main and subsections, if paragraphs are simply numbered in sequence: 4.1, 4.2, 4.3.....4.2.2: or too many subdivisions can be introduced; 4.1, 4.1.1, 4.1.1.1.... This example indicates that good presentation is not merely a matter of using a device; it must also be well used. The designer looks for the clearest and simplest solution.

4.6.2 Access symbols

In distance education, a tradition has evolved of using small symbols to indicate different kinds of activities; a book for reading, for example, or a pen for writing an exercise. These symbols help learners to organise their studies, both by breaking the text into different kinds of sections and also by allowing at-a-glance assessment of the kinds of activities called for in any one unit.

Check Your Progress 4

How might the use of access structures help students to study more effectively? List as many points as you can.

- Note:** a) Space is given below for you to write your answer.
b) Compare your answer with the one given at the end of this unit.

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4.6.3 The importance of access structures

As the body of research concerning learners' study behaviour has grown, we have become aware of the great variety of different ways in which individuals approach studying. Distance education, with its centrally prepared teaching materials, on the face of it offers little scope for individual differences. Access structures, however, provide a framework within which learners can move more freely, and use their preferred learning styles. Unfortunately, little research has been done on access structures and guidelines are based largely on common sense.

If you were to compare an educational textbook and a novel, both in a language you do not know, you would probably be able to tell them apart

just by appearance. The novel will almost certainly consist solely of continuous prose. The text of the educational book, on the other hand, may be surrounded by additional pedagogical components, such as contents, index, glossary, summaries and so on. Why is the difference visible? It is because the structure of the text book has been typographically signalled, while the structure of the novel is signalled by linguistic means alone.

Consider the readers' problem if the contents list of this unit were to be laid out as continuous prose. The words would be legible, recognisable, comprehensible (by themselves), and memorable. Although the page might look attractive, it would nevertheless be completely unusable for its intended purpose. The problem would not be legibility so much as accessibility.

A content list uses typographic layout and signalling to display structural relations in its content. The structure of a complete book can be made accessible in a similar way that is, typographically signalled devices can be used to help readers overview the text and locate relevant parts efficiently. To the list of such devices in the first paragraph might be added headings, concept maps, questions, study notes, and learning objectives. Used together in a coordinated way they comprise the access structure of a text.

It might be thought that the various components of an access structure, being so prevalent in modern textbooks, would have been the focus of reasonably thorough experimentation. Instead, it is extraordinary that whereas innovative devices such as the *advance organisers* or behavioural objective, have been the subject of dozens of studies, there are only a few papers that even mention headings as an aid to learners: and so readers may need to read selectively, then the models, theories, or methodologies used as the basis for empirical research should take this into account. Randell (1996) discusses ways of presenting texts so that it is both accessible to learners and assist them in the learning process. Distance education texts reveal a variety of access structures and these are the devices which help the course/unit writer go as close to his/her learners and help them come as close to the content as possible. These devices also help the learners find their way into the text. The three main functions of these access devices are:

- They enable learners to find what they need to read in a unit, i.e., the means and ways to reach the content.
- They make the content more intimate to learners and help them grasp what is presented in the unit.
- They perform the functions of a live classroom teacher, i.e., build a teacher into the text.

Some of the access devices we use in our unit are title of a unit, structure of the unit, objectives, division of content, illustrations, glossaries and summary. Of the above access devices, some are inserted expressly to enable learners to find their way in and through the text. These are devices such as an explanatory title, contents list, headings, numbering systems,

visual signposts, and icons. Others, described below as *advance organizers*, overviews, pre-tests and objectives are designed to assist with the learning process too. Course writers usually use a combination of these structures, and this diversity has the potential to increase access to learning. From a perspective which privileges quality, it is recommended that all devices and structures used should be field tested and researched to ensure that they accomplish the goals for which they were designed. For more details go through block-4 of this course pages 46-65.

“The four access devices frequently used by course writers are advance organizers, overviews, pretests, and objectives. Duchastel (1979), Hartley and Davis (1976), Mason (1984) and others have discussed them as below:

Advance organizers

Definition and Purpose	Research findings	Guidelines for use
• A conceptual framework of new ideas. This new set of ideas is presented prior to the material to be learned. It is linked to and anchored in familiar concepts. • Facilitates learning and retention of new material • Here is an example to clarify these terms.	• University students seem to derive more benefits from advance organizers than others • Simulations, models, graphs, maps, and networks seem to work better than prose • Mathematics and the sciences are subject areas in which advance organizers appear to be most facilitative. • Advance organizers have the strongest positive effect on the transfer of knowledge rather than retention. • Students derive a long-term rather than a short-term advantage in retention of material	• Materials to be learned can be organized hierarchically along three dimensions: general to specific; abstract to concrete; etc. • The use of these materials is entirely unfamiliar, so steps should be taken to familiarize learners with it. • Materials should be arranged in terms of concepts of language which are already familiar, and use appropriate illustrations and analogies, e.g. concept maps diagrams graphs etc. • Precede the advance organizer with a statement of objectives for the unit.

Advance organizer

- In this section we will talk about writing in general and then point out how writing for distance education materials make additional demands on the course writer.

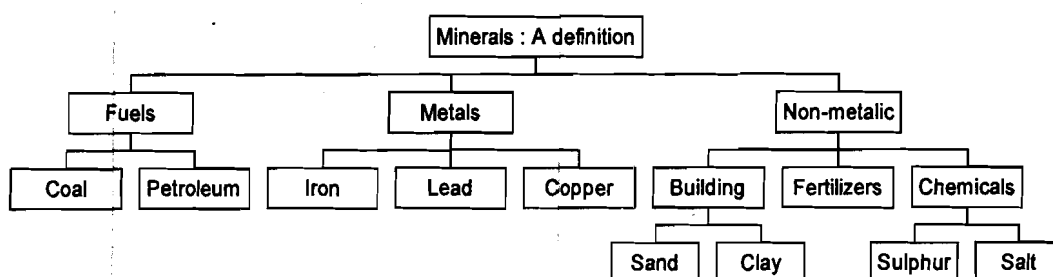


Fig: An example of an advanced organiser of a topic Minerals: A definition

Objectives

Definition and Purpose	Research findings	Guidelines for use
- Precise statements of key learning goals for specific units in course materials - Objectives indicate what learners should be able to know and do as a result of having worked through the course - They are useful to writers as reminders of what the learners need to achieve, and they provide a good framework for designing evaluative criteria, activities, and assessment question. - They show learners the key competencies they need to master in the course; assist learners to organize their learning activities more efficiently, reduce time spent on	- Research indicates that while many educators favour the objectives as important in planning, for effective teaching and learning, students do not use objectives as intended by those who have written them. Specific objectives, however, have a positive effect on learning. - In a text with a low degree of structure; - Where objectives are distributed within each section of the text; - Where a high level of cognition is required; - Where students are interested, use objectives to search for relevant material,	- Objectives should be clear and precise - Use of objectives are more useful when learning tasks are complex and require high level cognitive skills. - Learners will use objectives to suit their own purposes irrespective to their location. - Disperse objectives throughout text in small sets. Using a large number of objectives may cause learners to feel overwhelmed and frustrated and discourage them from using the objectives. - Make explicit the function of objectives and why you have used them.

misdirected effort, and offer a basis for student self evaluation. • Here is an example to clarify the term 'objectives': having studied this unit you should be able to: • define book keeping • explain why we keep accounts of books	and have had rewarding experiences in using them.	
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Overviews

Definition and Purpose	Research findings	Guidelines for use
Overviews are condensed content outlines which emphasize key points and may contain a glossary of key terms. Overviews can also be called content maps in which only the most prominent features of the content are displayed. To familiarise learners with the scope and broad structural features of the materials to be presented.	Very little research seems to have been done on the effects of overviews in distance education.	Materials to be learnt can be organized into units that help define the nature of the material. Presentation of subsequent material should be linked to the structure of the overview. Overviews should be brief, condensed outlines of teaching subject matter, and should contain explanations of key terms. Pictorial and graphic devices that can illustrate overview content or represent it more economically should be used. Stage-by-stage overviews should be used in preference to, or in addition to, whole overviews.

Pre-tests

Definition and Purpose	Research findings	Guidelines for use
• A set of questions which can determine what learners already know about the material to be taught or whether learners have the pre-requisite knowledge and skills for acquiring what is to be taught • Pre-tests can orient learners to the content and alert them to performance standards expected, gaps in their knowledge, and essential learning tasks.	• Very little research has been done on the effects of pre-tests on post-instructional performance • The real value of pretests is not in their capacity to facilitate actual comprehension of learning materials, but in their potential to function as access devices.	• Pretests should be used in conjunction with other instructional devices such as overviews and objectives. • Be clear about the content and processes which you want to test. • Use several shorter pretests and locate them before the relevant text units rather than one large pretest • Give directions to learners how to use pre-tests to assist learning.

A course writer involved in designing an instruction text will have to make decisions about how to introduce the materials, help learners find their way through the text, & how to present the text in such a way that it will make it easy for the students to learn. The course writer can select the devices, structures, or approaches which will be useful to the learner. The best way of selecting this would be to apply the design-field testing-rewrite-research cycle. However, time and cost constraints usually dictate how writers approach the presentation of these devices. Much research and experimentation is necessary to ensure that writers are constantly improving access to course materials to ensure greater success for learners."

Why has practical research been done?

Davis (1990) has examined a few research studies and theory pertaining to text processing and text design, deriving major principles for the design and development of self-learning print materials. It is hoped that these principles and suggestions will be useful in developing self-learning text. These *principles* are

1. *Use vocabulary that is appropriate to the audience and the task at hand in order to minimize the cognitive capacity required to process the text.*

2. *Use syntactic structure that conveys the ideas at hand and effectively relates new information to prior knowledge.*
3. *Facilitate the reader's ability to recognize the relationships among sentences and paragraphs.*
4. *Self-learning text should be designed to assist the reader in identifying the most important ideas in the text.*
5. *Design text such that its organization is easy to follow and clear to the reader.*
6. *Include activities in self-learning print materials that will assist the reader to assimilate new ideas from text, and to integrate those ideas with prior learning.*

These principles relate theory and research on text comprehension to the design and development of self-learning print materials for distance learning. Various research studies emphasized that the text should be a mirror (within which students can see the causes and effects of the natural and social worlds) rather than a means of transmitting knowledge. The distance education texts should stimulate students' interest by questioning their assumptions and guiding their imagination. This approach reverses the traditional, modernist, understanding of the relationship between course writer and learner (reader).

It would be a difficult task to classify all the research that has been published on texts. We are here primarily interested in studies that specifically aim to inform and evaluate the work of professional communicators. However, not only has a wide range of topics been identified for investigation but the purposes of researchers have differed greatly. Studies range from the highly theoretical to the pragmatic, from molecular issues to whole text books. Much of the research has investigated theories of memory, learning, or language processing and only incidentally the use of texts. Even research that is specifically concerned with text does not always aim at the same outcome. There are three kinds of problems — theoretical, methodological, and practical — and there is the danger of interpreting research which is primarily intended to solve theoretical or methodological problems as a source of advice about practical instructional situations.

4.7 LET US SUM UP

In this unit we have argued that the appearance of text is important, partly because it affects learners' motivation, but also because legibility and clear presentation contribute to the learners' understanding of the text. The main points we have made are:

- i) type style, size and line length affect readability;
- ii) particular care needs to be taken in the presentation of graphical information; and
- iii) access structures help learners to study more effectively.

Access devices thus earn a high reputation in distance education, mainly for two reasons:

- i) lack of immediate feedback to students; and
- ii) self-instructive nature of the text materials.

Check Your Progress: Possible Answers

- 1) You could mention that they are difficult to read (illegible), difficult to use flexibly (inaccessible), unpleasant and demotivating, and . eventually leading to a high dropout rate.
- 2) Italics have been used to emphasise key words/expressions
Bold letters have been used for headings, for captions, figures and tables.
Words in different typefaces occur in unit titles and main headings. They are not used for subheadings.
We are not aware of any way in which the layout contravenes good practice.
- 3) Photographs may show objects from an unusual angle, or many contain too much background material, so that the main feature of the picture does not stand out. Line drawing can show only the key items, clearly depicted.
- 4) To answer this question, you need to remind yourself of the idea concerning learning that we introduced in block 1. You might have mentioned;
 - gaining the learner's attention;
 - helping the reader to select points;
 - directing the reader's mind to the main arguments
 - helping to organise a study period
 - helping the learner to review and revise material; and
 - helping the learner to study effectively in the mode he/she prefers.

REFERENCES

- Allman, P. (1983) 'The nature and process of adult development', in Malcolm, T. (ed.) *Adult Learning and Education*, Croom Helm Ltd., Australia.
- Baath, J. (1997, Spring) *Postal two way communication in correspondence education*, Paper presented at the HHSC workshop in Malmo.
- Duchastel, P. (1979) 'Learning objectives and the organization of prose', *Journal of Educational Psychology*, 71, 1, 100-106.
- Faw, H. W. and Waller, T.G. (1976) 'Mathemagenic behaviours and efficiency in learning from prose materials: review, critique and recommendations', *Review of Educational Research*, 46, 4, 691-720.
- Hartley, J. and Davis, I.K. (1976) 'Preinstructional strategies: the role of pretests, behavioural objectives, overviews and advance organizers', *Review of Educational Research*, 46, 2, 239-265.
- Holmberg, B. (1983) 'Guided didactic conversation in distance education', In D. Sewart et.al. (ed). *Distance Education: International Perspectives*, Croom Helm Ltd., Australia.
- International Extension College (1979) *Writing for Distance Education*, International Extension College, Cambridge.
- Kaplan, R. (1976) 'Effects of grouping and response characteristics of instructional objectives when learning prose', *Journal of Educational Psychology*, 68, 4, 424-430.
- Kolers, P.A., Wrolstad, M.A. and Bouma, H. (1979) *Processing Visible Language*, Plenum Press, New York.
- Marland, P.W. and Store, R.E. (1982) 'Some Instructional Strategies for Improved Learning from Distance Teaching Materials', *Distance Education*, 3(1), 84-90.
- Mason, J. (1984) 'What do we really want students to learn?' *Teaching at a Distance*, Vol. 25.
- Wright, P. (1979) 'Usability: the criteria for designing written information', in P.A.Kolers, et. al. (eds.) *Processing Visible Language*, Plenum, New York.

SELECTED RESOURCES FOR DESIGNING AND DEVELOPING SELF-LEARNING PRINT MATERIALS

- Bates, A. (1995) *Technology, Open Learning and Distance Education*, Routledge London
- Gachuhi, D. and Matiru, B. (eds.) (1989) *Handbook for Designing and Writing Distance Education Materials*, Zentralstene Far Erziehung, Wissenschaft and Dokumentation, Bonn, Fedral Republic of Germany.
- Harrison, N. (1991) *How to Design Effective Text-Based Open Learning*, McGraw-Hill, New York.
- Hartley, J. (1995) 'The layout and design of textual materials for distance learning', in Lockwood, F. (ed.) *Open and Distance Learning Today*, Routledge, London, pp. 279-87.
- Hutton, B. (1995): *A Manual for Writers of Learning Materials*, Bachu Books, Capetown.
- Jenkins, J. (1990): *Course Development: A manual for Editors of Distance Teaching Materials*, International Extension College, UK.
- Lewis, R. (1990) *How to Write Flexible Learning Materials*, National Council for Educational Technology.
- Lockwood, F. (1992) *Activities in Self-Instructional Text*, Kogan page, London.
- Lockwood, F. (ed). (1994) *Materials Production in Open and Distance Learning*, Paul Chapman, London.
- Lockwood, F. (1998) *The Design and Production of Self-Instructional Materials*, Kogan Page Ltd., London.
- Marland, P.W., Patching, W., Putt, I., and Putt, R. (1990) 'Distance learners' interactions with text while studying', *Distance Education*, 11(1), 71-91.
- Parer, M. (1988) *Textual Design and Student Learning*, Centre for Distance Learning, Gippsland Institute of Advanced Education, Churchill, Victoria.
- Race, P., and Brown, S. (1998) *Choosing and Designing, Flexible Learning Materials, The Lecturer's Toolkit* (A Practical Guide to Teaching, Learning and Assessment), Kogan Page, London.
- Rowntree, D. (1990) *Teaching Through Self-Instruction, How to Develop Open Learning Materials*, (Revised edition), Kogan Page, London.

SELECTED RESOURCES FOR DESIGNING AND DEVELOPING SELF-LEARNING PRINT MATERIALS

Rowntree, D. (1994) *Preparing Materials for Open Distance and Flexible Learning*, Kogan Page, London.

Schroeder, E and Grabowski, B. (1995) 'Patterns of exploration and learning with hyper media', *Journal of Educational Computing Research*, 20, pp. 313-335.

Tillema, H. (1983) 'Webteaching: sequencing of subject matter in relation to prior knowledge of pupils', *Instructional Science*, 12, pp. 321-332.

Waller, R. (1979) 'Typographical access structures for educational texts', in Kolers, P.A., Wrolstad, M.A. and Bouma, H. (eds.) *Processing of Visible Language*, Vol. 1, Plenum Press, New York.

Wright, T. (1987) 'Putting independent learning in its place', *Open Learning*, 2(1), pp. 308.