SECTION 3: PLANNING AN ODL COURSE

OVERVIEW OF SECTION 3

Section 3 is all about planning. Because ODL courses are mostly based around learning materials that have to be prepared before the students start to study, almost every detail of the course needs to be planned before the course starts. This section looks at some of the many aspects of planning that you will need to think about.

Learner profiles

The first part looks at learner profiles – that is, at describing who your learners will be. They may be very like the students in your face-to-face classes, but it is more likely they will differ in many ways. For example, they may be older, they may have more heterogeneous backgrounds and they may live much farther away from resources such as libraries or schools than your current learners.

Context issues

This part looks at the circumstances under which your learners will study. Will they have somewhere to study? What resources will they have at home? What resources will they be able to access in their locality? All these factors affect how you design your course and what you will need to provide to students.

Setting aims and objectives for your course

Your first ideas about your course will probably be in the form of some general aims. In this part of the handbook you will look at course aims and at how course objectives can be derived from those aims. Aims and objectives are very important in helping to define the content of a course and the depth to which that content will be studied. The earlier you can decide on the aims and objectives of a course, the easier it will be to create the learning materials for that course.

Content analysis and planning: what to include?

Evaluations of ODL courses frequently show that learners have too much to study. If courses are overloaded with content, learners adopt superficial learning techniques, attempting to memorise key points rather than to understand the material. It is therefore

important to keep control of the quantity of material put into a course. This topic looks at some methods for doing that.

Methods of ordering content

Once the aims, objectives and content have been decided, they all have to be put into an appropriate teaching order. For some topics, the order is almost determined by the content itself – this applies to sequential subjects such as maths and some parts of the sciences. For other subjects, there is a wide range of possible content orderings. This topic looks at 10 different methods of ordering, although not all are applicable to every course.

Pacing the course

Decisions about pace are only loosely connected to planning and writing learning materials, but it is convenient to make those decisions at the same time as planning the course as a whole.

The course specification

Course planning leads to two key documents, which are then used in creating the course. The first of these is the course specification. This is a document that authors, instructional designers, editors, tutorial staff and administrative staff can use to put in place every aspect of the new course. The smaller your organisation, the simpler this specification can be, but in very large institutions the specification may actually be a series of documents, specifying the course and its systems in great detail.

The course guide and other devices

The other key planning output is the course guide, which is an overview of the course for use by students and tutors. It usually contains information about the course itself, the tutorial and support system for the course, the administrative systems, and the course assessment.

3.1 LEARNER PROFILES

3.1.1 INTRODUCTION

In planning a new ODL course, your starting point will always be your learners. Who will they be? How old will they be? What prior knowledge will they have? Why do they want to study?

As you answer questions such as these, you will build up a picture of a typical learner for your course. This is called a 'learner profile'.

> **Issues for instructional designers**
>
> 1. What sort of data do I need about our potential students?
>
> 2. How can I collect that data?

3.1.2 WHY PROFILES ARE NEEDED

Learner profiles are important because they provide the instructional designer with data that will enable him or her to make informed judgements about key aspects of the learning materials. For example, when designing a course, you need to know the literacy level of learners, their ITC skills and their prior knowledge of the subject you are teaching. Table 6 summarises some of the key uses that an instructional designer makes of learner profile data.

3.1.3 THE CONTENTS OF A PROFILE

You could collect a lot of learner profile data – more perhaps than you could use. It is therefore important to think about what data you most need for the particular course you are preparing. For example, for a course on a sequential subject (e.g., maths or a foreign language), data on prior learning might be the most important to have. For a course on a professional subject (e.g., law, accountancy), the most important thing to know might be learners' current work and the type of work that they hope to move into. You therefore need to adapt your profile data collection to your needs as instructional designer.

Some of the commonest data collected is shown in Table 7.

TABLE 6. How an instructional designer uses learner profile data

Type of data	You need to know this to decide …
Literacy level	The level of language to use when writing materials
Age group	What types of examples to use The extent to which you can draw on learners' experience (e.g., older learners will have more experience of work and bringing up children)
ITC skills	The skills you can assume learners have and which will have to be taught
Reasons for studying	The approach and types of examples to use to best motivate learners (e.g., learners studying law to become lawyers might be motivated by a different approach than that of learners studying law to help them as managers of small businesses)
Home situation	Does the learner have a place to study? Does the learner have access to electricity?
Prior knowledge	The knowledge you can assume that learners already have and the knowledge that you must teach
Learning situation	The sorts of tasks you can set (e.g., can you set a task that requires going to a library?)

3.1.4 LEARNER PROFILE FORMATS

There are two main formats for learner profiles:

Tables and charts

Tables and charts are used for profiles based on survey data or data extracted from an administrative system. This data represents large numbers of learners and will show things such as:

- percentages of learners in different age bands, and

- percentages of learners with given levels of prior qualification.

TABLE 7. Examples of learners' profile data

Category	Examples
Personal characteristics	• age • gender • family circumstances • work circumstances
Reasons for studying	• to gain entry to another course • to gain a qualification • for pleasure
Prior knowledge	• the qualifications the learners already have • other learning they have completed • learning problems they might they have (e.g., misconceptions and bad study habits)
Prior study skills	• experience the learners already have of studying other than in a classroom • their ability to organise their own time • their note-taking skills • their self-assessment skills • their ITC skills
Study circumstances	• their access to a library • their access to a computer and the internet • their access to other learners • their ability to visit study centres

Source: Woodley and Ashby (1994), Race (1992) and Rowntree (1994)

Vignettes

This method is used when the profiling data refer to individual learners. A short description is prepared of each learner, representing a 'typical' learner. This is a good method to use if, say, you are asking a teacher to tell you about a 'typical learner'. The resulting profile reads like a short biography, but may well be a composite of several students.

3.1.5 METHODS OF COLLECTING PROFILE DATA

The most accurate source of data is that from the learners who are going to take the course you are designing. Unfortunately, you may have no access to those learners. For example, if you are setting up a new ODL organisation, you will need to start planning courses many months before any students have enrolled. Even if you are working in an existing ODL institution, you cannot necessarily assume that the institution's existing students will represent the students for the new course. For these reasons, collecting accurate profile data is problematic and you need to be careful in extrapolating on data from existing learner groups to future ones.

That being said, the following are potential sources of learner profile data:

•   If you are a teacher, think about the characteristics of the students that you have had in your classroom. How will ODL students be similar to these? How will they differ?

•   Contact other teachers who have taught similar students and ask them for learner profile data on their students.

•   Gather together a group of students on an existing but similar course and ask them for data about themselves.

•   Mail a questionnaire to past students, current students or people who have enquired about the courses offered by your institution.

•   If your instructional design process will include a period of developmental testing, mail a questionnaire to the students who test your course. (It would be good to have learner data long before this, but no data will be more reliable than that which comes from a pilot, since the pilot learners are the nearest you have to 'real' learners.)

•   Find out what sort of student profile data is kept in your institution's administrative records. If this is on computer, you might be able to search for data on courses at the same level or in the same subject as the one you are working on.

3.1.6 ISSUES IN PROFILING

Data on personal characteristics such as age are fairly easy to obtain. However, data on things such as prior study skills, learning styles and personality can only be obtained using sophisticated (and therefore expensive) survey techniques (Woodley and Ashby, 1994). It is important to be realistic about just how much of this data you can reasonably collect. The more money spent on data collection, the less money will be left for making the course.

3.2 CONTEXT ISSUES

3.2.1 INTRODUCTION

Where your learners will study and what resources they have access to are important factors in planning a course. Perhaps you can be sure that they will have pencils and paper, but will they have access to a radio or to the telephone? Will they be able to travel to a local centre or visit a library?

You need to know the answers to questions such as these before you plan your course in detail.
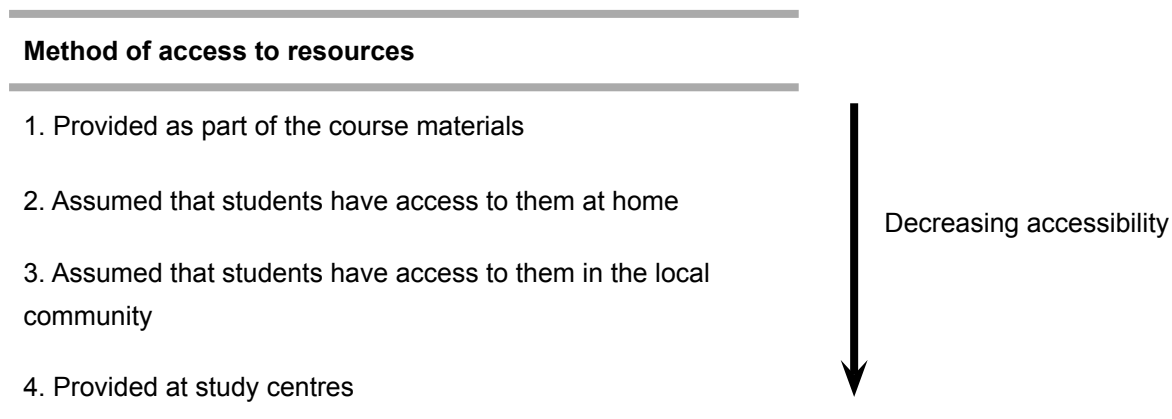
> **Issues for instructional designers**
>
> 1. Where will the learners study?
>
> 2. What resources will they have access to?
>
> 3. What resources will I need to provide?

3.2.2 CONTEXT ISSUES IN INSTRUCTIONAL DESIGN

As soon as you begin to plan an ODL course, you find yourself having to make learning context decisions. These vary from the fairly trivial (e.g., asking learners to look up a word in a dictionary) to the larger scale ones (e.g., deciding to broadcast part of the course on radio). The first decision assumes that learners have access to dictionaries and the second that they have access to a radio (and one away from too many distractions).

In ODL, most learners are studying part-time and many have jobs. It therefore suits them to do as much study as possible either at home or at work. If they have to travel in order to do part of their course, the time taken and the travelling problems can be a deterrent to enrolling. Thus, accessibility of course resources for ODL students can be thought of in a hierarchy. At the top of the hierarchy (i.e., most accessible) are the resources the organisation sends to students as part of their course (see Figure 5). Next come those resources that students are assumed to have in their homes. These vary from simple things such as paper to write on, to things that not every student will have, such as a radio. They may also have access to textbooks or other material produced by other organisations than yours.

The next group of resources are those things that students are assumed to have access to in the community. These might include access to a library or to an internet café. Finally come those resources that students have to travel to a local centre to access. If doing that is time-consuming and costly, then those resources are not in fact very accessible.

FIGURE 5. Levels of access to resources

Method of access to resources

1. Provided as part of the course materials

2. Assumed that students have access to them at home

3. Assumed that students have access to them in the local community

4. Provided at study centres

Decreasing accessibility

It follows from our analysis in Figure 5 that the instructional designer will try to make as much use as possible of items that are most accessible to students and as little use as possible of items that are least accessible to students. (It is important to note that our analysis is not suggesting that you should not include study centres. Rather, it is saying 'do not ask students to go to study centres for trivial purposes'.)

3.2.3 HOW TO PLAN AROUND THE CONTEXT RESTRAINTS

At a fairly early stage in designing your course, you need to make a list of all the things you will assume the students have access to. Once you have a list, it can be helpful to categorise each item under one of the headings of Figure 5, as Example 4 shows.

EXAMPLE 4. Possible resource requirements for a particular ODL course

Method of access to resources	Resources
1. Provided as part of the course materials	Workbook Textbook
2. Assumed that students have access to them at home	Pens, paper Calculator
3. Assumed that students have access to them in the local community	Internet café for emails to tutor
4. Provided at study centres	Tutorials Computers for developing ITC skills

3.2.4 EQUIPMENT CHECKLIST

The following is a list of the sort of things that ODL courses sometimes assume that students have access to. You can use your student profile results to produce a list of the things that your students will realistically have access to.

- textbooks

- libraries

- computers

- internet

- a place to study quietly

- a place to keep materials

- study centres

- other students

- electricity

- pens, paper, rulers, drawing equipment

- calculators

- audio tape player

- video player

- radio

- TV

- tutors

- local centres.

3.2.5 ROLE OF TUTORIAL SUPPORT

One of the most important parts of the context for an instructional designer is the role of tutorial support. Tutorial support is usually provided by part-time tutors and usually done by mail, telephone and email. Support may also be offered by local centres to which students have to travel. Although the instructional designer is not usually responsible for deciding on the form of tutorial support to be provided, the designer needs to take account of the form of the support in the design of the materials.

Tutorial support usually includes one or more of the following functions (Freeman, 2004):

•   correspondence (letter/email) with tutors

•   marking and commenting on written work

•   telephone discussion with tutors

•   telephone/online discussions led by tutors

•   tutorials

•   weekend study sessions

•   field trips

•   newsletters and newspapers

•   radio tutorials

•   self-help groups

•   social events

•   web sites (especially bulletin boards).

The issue for the instructional designer is 'Which bits of the course should be allocated to tutorial support?' A simple way to answer this question is to note that tutorial support is usually the most expensive part of delivering a course. It should therefore be used for things that cannot readily be done within the ODL materials. For example, a course may include 10 written assignments. It is better to use those for tasks that students cannot check for themselves (e.g., essay writing, problem solving) than for tasks for which it is easy to develop self-tests (e.g., simple right-wrong knowledge tests). The more expensive the support medium, the more the instructional designer must check the medium is being used to its best advantage.

3.2.6 TUTOR TRAINING

In most ODL systems, tutors are recruited from face-to-face teaching and so lack those skills specific to ODL, such as marking and commenting on written work, establishing a relationship at a distance and supporting home-based learners. Although instructional designers do not generally have to take responsibility for this type of training, it is useful for them to be aware of the issues involved. More details on tutoring in ODL can be found in O'Rourke (2003).

3.3 SETTING AIMS AND OBJECTIVES FOR YOUR COURSE

3.3.1 INTRODUCTION

Before you write your materials, you need to know what it is you wish to write. The four most common ways to do this are shown in Figure 6.

FIGURE 6. Four ways of describing the contents of a course

A general description of the course

A contents list

A set of aims

A set of learning outcomes

Increasing precision

This part sets out to explain why aims and outcomes are more precise than other methods, and why we need that level of precision.

Issues for instructional designers

1. What is the best way to describe the course that I wish to write?

2. What should be the course aims?

3. What should be the course outcomes?

3.3.2 COURSE AIMS

What they are

According to Fry et al. (1999), '[Aims] are intended to provide the student, teacher and other interested parties with an understanding of the most overarching general statements regarding the intended consequences of a learning experience.'

Rowntree (1994a) defines aims as being 'a general statement of either (a) what the learner might learn or (b) what the teacher will do.'

From these definitions it is clear that course aims are high level and generalised. Their importance, therefore, is in giving a sense of direction to a course, rather as a mission statement does to a business (Rowntree, 1994a). Aims are the sort of thing that you might use in promoting a course as in 'This course will help you gain an up-do-date knowledge of the current uses of learning objects and to critically evaluate their potential for ODL.'

Why aims are needed

Course aims serve two main functions.

First, they are a means by which a course team or a group of teachers creates a vision of a particular course they want to create. The aims state the purpose of the course and, to a certain extent, state the justification for its creation.

Second, the aims provide a way of communicating the overall purpose of the course to others. 'Others' might include part-time authors who work on the course, tutors who support the students and, most definitely, students themselves.

How to write aims

Aims should be brief: typically a list of aims will contain three to five items of no more than 50–75 words each. Typical aim statements will be of the following format:

•   This course aims to give you an understanding of …

•   This course aims to equip you to work as …

•   This course aims to help you critically evaluate …

Although aims are important, they play little part in the day-to-day work of instructional designers for one simple reason: aims are always broadly expressed. What the instructional designer needs is something more precise – namely, learning objectives or learning outcomes – which we now look at.

3.3.3 LEVELS OF LEARNING

An extremely useful course planning tool is the taxonomy of educational objectives (Bloom [editor], 1956). Although this taxonomy was developed by a sizeable team of researchers, it is referred to here as 'Bloom's taxonomy'.

The taxonomy, or hierarchy, is shown in Figure 7. At the bottom level is the simplest type of learning: knowledge. Bloom uses the word 'knowledge' to mean 'rote learning', such as learning the names of plants or the months of the year. Little understanding is needed to do these tasks since they are basically 'learnt by heart'.

The next step up is 'comprehension' – that is, understanding basic ideas and concepts. In this context, 'to understand' means 'to be able to explain in your own words'. Typical items that are learnt at the comprehension level are concepts such as weight, democracy and cost.

Other levels of learning as you move up the hierarchy include:

• application (using ideas and methods),

• analysis (taking an idea or thing apart and explaining how it functions),

• synthesis (putting different ideas or things together to create new wholes), and

• evaluation (critiquing ideas or things).

FIGURE 7. Bloom's taxonomy
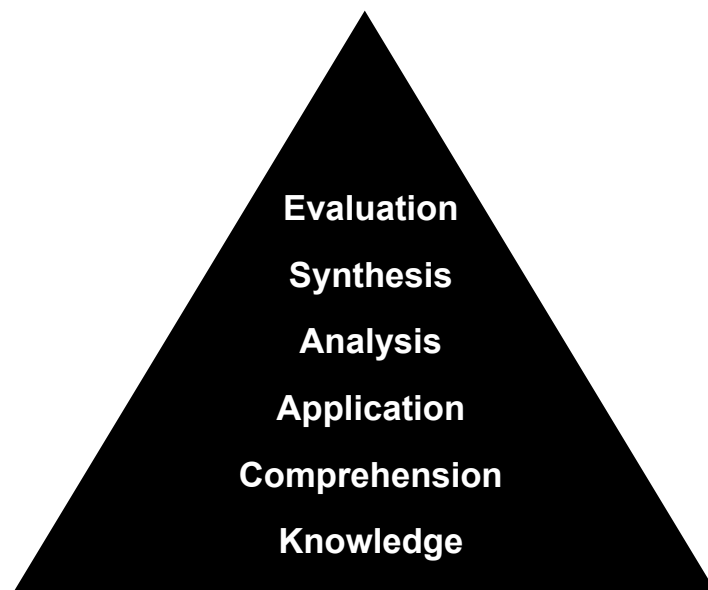
Some examples of how Bloom's taxonomy classifies different pieces of learning can be seen in Table 8.

TABLE 8. Examples of the use of Bloom's taxonomy of the levels of learning

Level	Explanation	Examples
1 Knowledge	The ability to recall facts in a rote manner.	Repeat a definition. Name the parts of a machine.
2 Comprehension	The ability to explain the meaning of a fact or idea.	Put a definition into one's own words. Explain why it is dangerous to touch 240 volt contacts.
3 Application	The ability to use information in new situations.	Calculate distance given speed and time. Conjugate a verb given the rules for the conjugation.
4 Analysis	The ability to identify the parts of, and relationships in, a situation.	Identify which statement follows from a set of premises.
5 Synthesis	The ability to put things together to create a whole.	Write a report.
6 Evaluation	The ability to judge value.	Identify the best of a number of strategies.

3.3.4 OTHER TAXONOMIES

Various other taxonomies have been developed, although none seem to be extensively used in ODL. The two most frequently mentioned are the affective domain taxonomy and the psychomotor domain.

Affective domain taxonomy

The affective domain taxonomy (Krathwohl et al., 1956) deals with feelings and is divided into:

- receiving (e.g., listens, attends showing sensitivity),

- responding (e.g., participates, follows instructions),

- valuing (e.g., appreciates, shows commitment),

- organising (e.g., recognises own role, plans), and

- characterising (e.g., influences, modifies, proposes, questions).

Psychomotor domain

The psychomotor domain (Harrow, 1972) is concerned with physical activity and is divided into:

- reflex movements – actions that are completed without any learning (e.g., knee jerk when knee is tapped),

- basic fundamental movements (e.g., walking, running),

- perceptual – movements that involve adjusting to the environment (e.g., jumping over a rope),

- physical activities – actions involving vigour, agility, etc. (e.g., digging),

- skilled movements (e.g., dancing, sport), and

- non-discursive communication (e.g., facial expressions, body language).

3.3.5 LEARNING OBJECTIVES AND LEARNING OUTCOMES

What they are

In contrast with aims, authors are in much less agreement about the meanings of the words 'objectives' and 'outcomes'. The problem can be summarised as follows:

> [The definition and use of the term learning objective] have become less and less precise in recent years. … The term is often used interchangeably (but loosely) with the term 'learning outcomes. (Fry et al., 1999)

At the same time, some British universities maintain that there is a very sharp difference between a learning outcome (which they treat as an aim) and a learning objective. For the purposes of this handbook, aims are defined as being high level and general (see above) and learning outcomes as being synonymous with learning objectives.

According to Mager (1962):

> An objective is an *intent* communicated by a statement describing a proposed change in a learner – a statement of what the learner is to be like when he has successfully completed a learning experience.

Another way of thinking about objectives is to see them as being at three levels (Romiszowksi, 1981):

- **terminal** – This is the level to be reached on completion of the piece of learning, which might be seen as being at the end of a unit or at the end of a course.

- **intermediate** – An intermediate objective refers to a particular piece of learning that needs to be achieved in order to reach a terminal objective. This is the level at which you would check learners' progress.

- **enabling** – An enabling objective is one that is not stated in the terminal objective, but is needed in order to achieve it. For example, a course on agricultural economics might require learners to look at recent journal articles, for which online search skills would be needed. Those skills would be an enabling objective (i.e., they enable students to get the journal articles that they need).

Samples of learning objectives are shown in Example 5.

EXAMPLE 5. Sample learning objectives

- By the end of this unit you should be able to name the capital cities of South America.

- By the end of this unit you should be able to solve quadratic equations by factorisation.

- By the end of this unit you should be able to critically evaluate a research paper.

This list is written in increasing order of intellectual complexity, showing outcomes at levels 1, 3 and 6 of Bloom's taxonomy.

Learning objectives can be set at a unit level (Example 6), course level (Example 7) or module level (Example 8). The smaller the piece of learning that you are describing, the narrower the objective becomes. For example, 'define the term double-entry book-keeping' is more narrow than 'establish your team role style'.

EXAMPLE 6. Sample objectives at the unit level

1.2 Outcomes

In order for us to develop a learner support strategy that liberates and encourages learners to not only become participants in the learning dialogue but also contribute to a better society for all, you should be able to

- Identify the needs of the distance learner and explore the various categories of learner support in the light of the identified needs
- Examine the concept of the learning cycle, identify the different stages in the learning cycle and describe the various forms of support required by the learners and provided by the relevant stakeholders

Source: *Introduction to Learner Support in ODL.* ODL104-J, p. 36 (UNISA)

EXAMPLE 7. Sample objectives at the course level

4 TEACHING MOTHER TONGUE LITERACY

4.1 What will you need to teach your learners in their first language?

By the end of the first language literacy programme, learners should be able to:

- Read with meaning and write their own thoughts.
- Write personal letters and address envelopes.
- Fill in simple texts that learners come across in their own lives. (Examples are forms in their first language. You will need to collect examples of these for use in your classes.)
- Tell the difference between different types of text and understand the meaning of text.
- Use basic punctuation (capital letters, full stops, question marks, exclamation marks, direct speech marks).
- Follow simple instructions, e.g. the instructions on grocery packets, posters and notices, stories, information text, reading pictures. (Collect examples of these and bring them with you to class.)
- Write their own life stories.
- Describe their life situation in writing.
- Discuss HIV/AIDS - how it is transmitted, how to prevent it, how to deal with people who are HIV positive.
- Know their rights as South African citizens.

Source: Institute for Adult Basic Education and Training (UNISA)

EXAMPLE 8. Sample objectives at the module level

Objectives

At the end of this module you should be able to:

- identify where you fit into the teams you are part of and how those teams fit into the organisation

- explain how a team can be more effective than the sum of the work of the individuals within the team

- explain the importance of effective working relationships

- establish your team role style

- analyse your and other team members' strengths for team working

- deal with difficult working relationships

- identify the goals of your organisation and of your team

- identify team and individual SMART objectives

- review targets and objectives regularly

- review team members' performance

- set performance indicators

- provide feedback and give criticism constructively

- help to motivate the team.

Source: *Administration for Business* (National Extension College, Cambridge)

Why learning objectives are needed

Why do instructional designers attach so much importance to learning objectives? A simple example illustrates the main reason for preparing objectives: Imagine that you are asked to prepare a very short course and you have the choice of preparing it to specification A or B, as below. Which would you prefer to work to?

Specification A

Basic word processing

Specification B

By the end of the unit, learners should be to:

- explain the function of a word processor

- start a word processing program

- create a new document

- type and correct text in paragraphs

- save a document.

You would probably prefer to work to specification B because it is precise and clear. Specification A is so vague that you would have no idea what to include and what to exclude.

There are many other benefits to using objectives. First, there are benefits for the instructional designer. For example, learning objectives help the designer choose media, create activities and plan self-tests and assessments. Second, tutors also benefit since the objectives show them what they should expect their students to be able to do and what the main points of the course are. Finally, students can use objectives to help them choose a course, check their progress and so on. These points (and others) are summarised in Table 9.

TABLE 9. Some of the benefits of learning objectives

	Beneficiary		
Benefit	**Instructional designer**	**Tutor**	**Learner**
Help to create appropriate progress tests	✓		
Help learners to check their own progress			✓
Help the designer to decide which media to use	✓		
Help the designer plan activities	✓		
Help the designer create appropriate assessments	✓		
Help learners decide whether the course suits them			✓
Make clear what the learner has to do	✓	✓	✓
Help learners allocate their time			✓
Make clear what is expected of learners		✓	✓
Highlight the key learning points		✓	✓
Break down complex material into simpler chunks	✓	✓	✓

Source: Mager (1962), Race (1992) and Rowntree (1994b)

How to write objectives

In Mager's (1962) original conception of an objective, it had three parts:

• the terminal behaviour – what the learners should be able to do,

• the conditions under which learners should be able to do it, and

• the criteria for judging 'acceptable performance'.

These three components can be seen in Example 9.

EXAMPLE 9. Sample of a three-part objective

Learners should be able to cut a steel bar using a computer-controlled lathe to an accuracy of one part per thousand.

The three components are:

• **behaviour:** cut a steel bar,

• **condition:** using a computer-controlled lathe, and

• **criteria:** to an accuracy of one part per thousand.

In practice, designers do not usually feel the need to be so precise: the degree of precision that is necessary in any given circumstance is always a matter for the instructional designer's judgement. On the whole, though, it is better to be more precise than less. For example, consider the objective: Learners should be able to cut a steel bar. This clearly has little use as a specification for designing learning materials – it is just too vague.

Verbs in objectives

Perhaps the most important thing to think about when writing objectives is the verbs that you intend to use. Compare these two examples:

1.   Learners should be able to understand the causes of inflation in given scenarios.

2.   Learners should be able to explain the factors that caused inflation in given scenarios.

The first says 'understand', but because it does not describe any observable behaviour on the part of learners, how will you know if they have understood or not?

The second says 'explain', which implies a verbal or written argument. Here is a behaviour that we can observer (and assess), so (2) is a better objective than (1) – better because it is more precise and more observable.

Table 10 shows a list of verbs that are best avoided in objectives and verbs that are useful to use in objectives.

TABLE 10. Verbs to use and avoid in objectives

Verbs to avoid	Accept, appreciate, be aware of, consider, enjoy, examine, explore, have a good grasp of, know, realise, recognise, understand
Verbs to use	Break down, calculate, categorise, change, combine, compare, compile, compose, compute, contrast, convert, create, criticise, define, demonstrate, describe, design, devise, differentiate, discover, discriminate, discuss, distinguish, estimate, explain, give example, identify, illustrate, draw inference, interpret, judge, justify, label, list, match, measure, modify, name, operate, organise, outline, paraphrase, point out, précis, predict, prepare, produce, re-write, recall, select, separate, show, solve, state, sub-divide, summarise, transform, translate, use

3.4 CONTENT ANALYSIS AND PLANNING: WHAT TO INCLUDE?

3.4.1 INTRODUCTION

Romiszowksi (1986) defines three basic approaches to planning content:

- topic-orientated,

- concept-orientated, and

- task- or objective-orientated.

These methods are discussed below, along with their strengths and weaknesses.

Issues for instructional designers

1. What topics shall I include in a given course?

2. What methods are there for collecting data on possible course content?

3.4.2 TOPIC-ORIENTATED APPROACH TO CONTENT

In the topic-orientated approach to content, you start from the topic. (This approach is essentially the traditional syllabus approach.) You break down the topic into its components (if a hierarchical subject) or its associated sub-topics (if not hierarchical). In Example 10, part of the topic design for a course on word processing is shown. The main topic appears at the top of the diagram and, at each successive level, the topic is broken down into more and more detail.

**EXAMPLE 10.** Sample of a topic approach to content
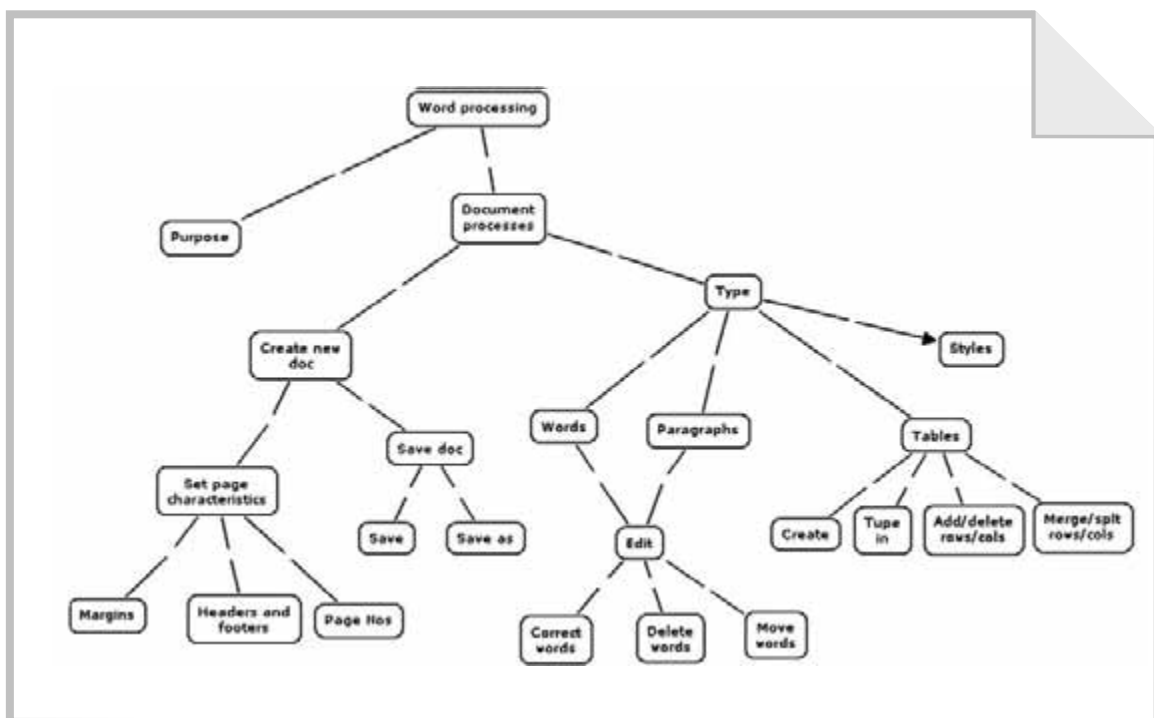
Most teachers find this method fairly easy to apply since it is so widely used in education.

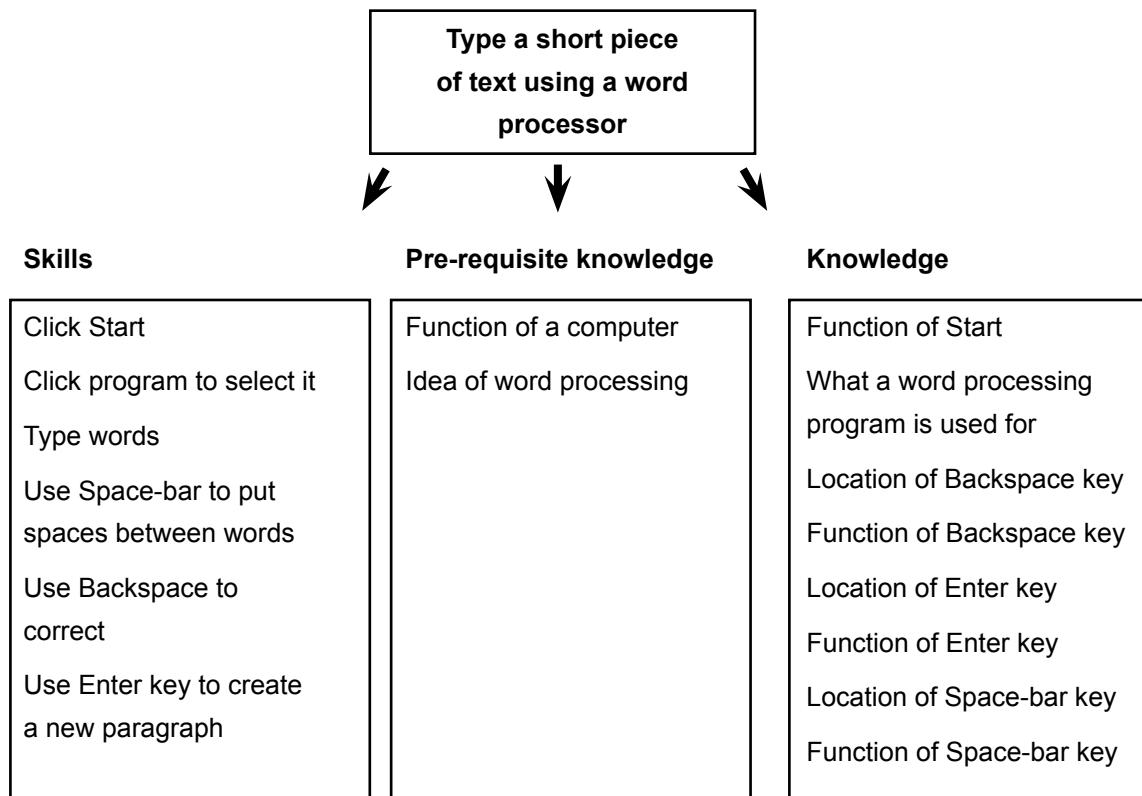## 3.4.3 CONCEPT-ORIENTATED APPROACH TO CONTENT

This approach is similar to the topic-orientated one, but focuses on concepts rather than topics. It is an approach that can work well in concept-rich subjects (such as the sciences), but is difficult to apply to subjects where the content is more open (e.g., literature). A sample of a concept map on learning outcomes can be seen in Example 11. The map is composed of concepts (each in a separate box), linked by verbs or verb phrases that show how the concepts relate to each other. Such maps are an excellent way of establishing an intellectually coherent structure to what is to be learnt. They also help to clarify the relationship between the different concepts, providing an idea of teaching order.

EXAMPLE 11. Sample of a concept approach to content
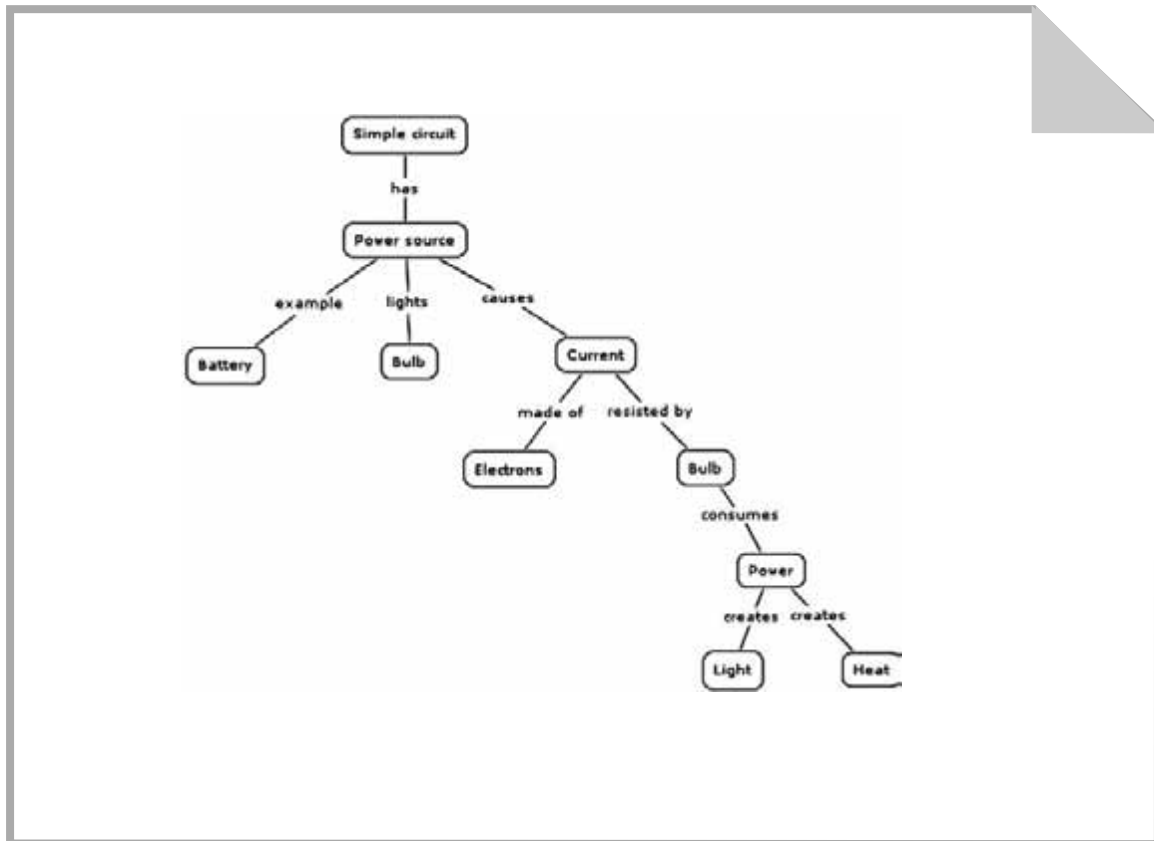
3.4.4 TASK- OR OBJECTIVE-ORIENTATED APPROACH TO CONTENT

In this approach, you start from the overall achievement that you wish your students to have and then break it down into learning objectives. Example 12 starts with the overall course outcome of 'type a short piece of text using a word processor'. It then breaks down into its skills and knowledge components (outermost columns in the figure) and the pre-requisite knowledge that the instructional designer will assume when writing the course. If the example were more complex, the overall outcome might be first broken down into some fairly large outcomes and then those be broken down in turn into smaller outcomes. However, the overall principle here is the same whether the course is small or large: all the content objectives are derived from what the learner must be able to do to achieve the overall course outcome.

EXAMPLE 12. Sample of an objective-orientated approach to content

Type a short piece of text using a word processor

Skills	**Pre-requisite knowledge**	**Knowledge**
Click Start	Function of a computer	Function of Start
Click program to select it	Idea of word processing	What a word processing program is used for
Type words		Location of Backspace key
Use Space-bar to put spaces between words		Function of Backspace key
Use Backspace to correct		Location of Enter key
Use Enter key to create a new paragraph		Function of Enter key
		Location of Space-bar key
		Function of Space-bar key

This method avoids the problem of where to stop, since you only include items that are essential for the student to achieve the overall objective. Of course, you still have to decide whether items that you have identified are to be taught in the course (the outer two columns) or be assumed as pre-requisites, but that is a smaller problem than the one presented by the topic approach.

3.4.5 OTHER DIAGRAMMING METHODS

Both Rowntree (1990) and Romiszowksi (1986) describe other diagramming methods, all of which fall into the three basic types above. Which you use is a matter of personal choice.

3.4.6 SOURCES OF DATA

Whilst the instructional designer may be responsible for planning the content, he or she will draw on the expertise of others. When following the topic approach, the main source of data will be teachers who might be asked questions such as 'What do you think we ought to include in this course?'

The task method tends to take a more systematic approach to content. It usually starts with the instructional designer observing successful performers. For example, to create a task-based course on how to replace a car wheel, the designer would watch a number of good wheel-changers, note what they do and ask them questions about what they do. In this way, the designer can build up a picture of the knowledge and skills needed to change a car wheel. This method works best for simpler tasks. At the higher levels of professional work the method is confounded by the fact that professionals often make decisions and judgements that they cannot explain. This makes it difficult to derive a course's content simply by observation and interview (Schön, 1991).

3.5 METHODS OF ORDERING CONTENT

3.5.1 INTRODUCTION

Once you have decided on the content of a course, you have to put it into a suitable order for teaching. Often, there are many possible orders, any of which will work reasonably well. Some orders, though, will cause great difficulties for learners. It is therefore important to choose an order based on the nature of what you are teaching and which takes account of how your learners prefer to learn.

This part looks at the various possible methods of deciding on a teaching order, and gives some advice on choosing between those methods.

Issues for instructional designers

1. In which order should I sequence the topics?

2. What criteria should I use for sequencing?

3. Does the subject matter determine the sequence?

4. How does the sequence vary between sequential subjects and non-sequential ones?

5. How is order affected by an integrated approach to teaching a topic?

6. Do students always study in the order in which I present material?

7. How can I best order content given that learners learn best when they can link what they are learning to what they already know?

Source: Lawless (1994)

3.5.2 METHODS OF SEQUENCING WITHIN A COURSE

There are a number of ways in which you can sequence the units of a course (after Rowntree, 1990, and Romiszowksi, 1986):

- **by topic** – This method can be used when the topics can be studied in any order.

- **chronologically** – An approach that might well apply to a history course but could even be used for a maths course when looking at how a topic has developed over time. An example of this can be found in Toeplitz (1963).

- **by place** – For example, you might work outwards from the home to the world or work from the micro scale (inside a cell) to the macro (the whole organism).

- **by cause and effect** – Here you might start with a phenomenon and explore its causes and origins.

- **by structural logic** – In this case you follow the logic of the subject. Maths is often taught like this.

- **problem-centred** – In this case you identify a problem and explore its solution (e.g., how do animals survive severe weather?).

- **spiral** – In the spiral approach, the same material is revisited several times at increasing depths.

- **backward chaining** – Here you start with the end result and gradually work backwards through the course to explore how that end result is achieved. For example, in building a spreadsheet, you could start with a finished spreadsheet and set some exercises on using and critiquing it. Through doing this, learners start with an overall understanding of a spreadsheet and then gradually develop a deeper understanding of how it is constructed.

- **a loose network** – In this case the material consists of a loose collection of topics that can be studied in any order. This is a typical approach in discovery learning and topic-learning. It is also an approach that is suited to hypermedia, whilst being difficult to implement in print.

- **a PERT network** – PERT networks are usually found in project management but they can be used to sequence the topics in a course. The idea of dependency is central to PERT networks. In project management, 'dependency' means that one task cannot be started until another has been completed. In course planning, 'dependency' means that one topic cannot be studied before another has been mastered. Using PERT networks is only practicable if you have access to some suitable project management software.

3.5.3 FACTORS THAT DETERMINE SEQUENCE AT THE UNIT OR TOPIC LEVEL

The first point to note is that there is no one correct way to sequence a particular chunk of learning. (There are, though, plenty of wrong ways to do it.) In deciding your sequence, you first need to identify what constraints there are on possible sequences. These constraints usually derive from the nature of the subject matter (Romiszowksi, 1981). For example:

*   If objective A can only be achieved after objective B has been learnt, then the teaching for A must come after the teaching for B.

*   Where the objectives are closely related (e.g., steps in a process), then the teaching should follow that order.

*   Where the parts of a process need to be learnt separately but eventually linked, then the learning sequence needs to take account of this. For example, to serve in tennis, the learner must learn to throw the ball up, then learn to hit it with the racket, and then learn to do both things as one sequence.

Other factors that affect sequencing are the ones described in the section below.

3.5.4 BASIC PRINCIPLES OF SEQUENCING AT THE UNIT OR TOPIC LEVEL

When introducing a new topic, it helps to follow one or more of four basic patterns:

*   move from simple to complex,

*   move from the known to the unknown,

*   move from the particular to the general, or

*   move from the concrete to the abstract.

The first pattern (simple to complex) is probably intuitively obvious. The other three methods are less obvious, but all derive from the fact that people learn something better when it is rooted in their own experience.

Table 11 shows four approaches to sequencing when introducing a new topic.

TABLE 11. Four ways of ordering when introducing a new topic

Principle	Example
Simple ➔ complex	When teaching the present tense of verbs in a foreign language, teach the regular verbs before the irregular ones.
Known ➔ unknown	When teaching about which types of plants prefer which types of soil, first ask learners to consider the plants that grow where the learners live and the type of soil there.
Particular ➔ general	When teaching about the behaviour of acids, first consider some particular acids and then draw out the general principles of acids.
Concrete ➔ abstract	When teaching about democracy as an abstract, theoretical concept, first consider some particular instance of democratic systems.

Source: Romiszowksi (1981)

3.6 PACING THE COURSE

3.6.1 INTRODUCTION

Paced courses are ones in which various devices are used to require students to follow a timetable for the course.

Unpaced courses are ones where students are free to work at their own pace and can start and finish the courses whenever they like.

This part, using information from Freeman (2004), looks at the relative merits of the two types of course and the mechanisms that an instructional designer can use to pace a course.

Issues for instructional designers

1. Should learners be paced or left to study at their own pace?

2. What pacing devices can be used?

3.6.2 SHOULD LEARNERS BE PACED?

There are two ways to answer this question, each reflecting a different philosophical stance towards distance education.

Primacy of student autonomy

Those people who see distance learning as a means to promote student autonomy would probably say that learners should not be paced.

Primacy of course completions

Others believe that distance learners should be directed and supported towards successfully completing their courses. Such people would probably say that learners should be paced.

3.6.3 THE EFFECTS OF PACING

The evidence indicates that pacing helps students complete courses. Completion rates in one study of university level distance learning found that pacing led to doubled course completion rates (Coldeway, 1986).

In another study, Gibson and Graff (1992) described pacing as 'crucial' in preventing early dropout and went on to say:

> Providing assistance with pacing, timelines, detail, interface with other students taking the same course or with peer tutors, and incorporation of optional face-to-face or mediated distance meetings with the instructor represent just a few ways early direction and support could be provided [in order to prevent dropout]. One might hypothesise that these types of direction and support could be gradually diminished without a parallel diminishing of student success in later coursework.

It is also worth noting, that higher course completion rates are a key contributor to lower unit costs per completed course.

You may also need to take account of your learners' attitudes towards pacing. There is little research on this, but it has been found that university students taking selected modules by distance learning consider pacing to be acceptable (Holmberg, 1995).

3.6.4 PACING DEVICES

Pacing devices can be usefully classified under four headings as follows.

Release of materials

One way to pace students is to send course material to them in small amounts – say, once a week or once a month. However, this is expensive.

The advent of the internet has opened a new possibility here. When learning materials are on web pages or sent over the internet as attachments, the ODL provider can make the materials accessible on certain dates.

Events at fixed times

One of the most common ways of pacing is to have events that take place at fixed times, such as:

• tutorials held at local centres, and

• online tutorials (in this case, the tutorial might take place over a week).

Deadlines for completion of parts of courses

Another common method of pacing is to require that certain tasks be done by set deadlines. These include:

• assignments to be completed by given dates,

• online assessments to be completed by given dates, and

• exams to be completed on set days.

Pro-active interventions

Finally, the provider can pro-actively intervene to encourage students with their studies. For example, a tutor might telephone students once every two weeks to check on their progress and talk over the next bit of work to be done.

3.7 THE COURSE SPECIFICATION

3.7.1 INTRODUCTION

The course specification is the most important document produced during the development of a course since its function is to define what is to be produced. It is of particular importance where there is a team of people working on a single course, because the specification helps ensure that the various specialists work in an integrated and holistic manner.

Other terms are also used for course specification, such as blueprint, plan or outline.

Issues for instructional designers

1. Why do I need a course specification?

2. What should be included in a course specification?

3. What level of detail should be included?

3.7.2 PURPOSE

The purpose of a course specification varies according to its audience. In a large university, with multiple levels of decision-making, a course specification may be needed in order to gain agreement to offering the course, to support its contents, to validate it and to release funds for its development. In these circumstances, much of the format and content will be determined by existing university requirements.

At the other extreme, in a very small ODL institution, the instructional designer and any additional course authors may be the only people who use the specification. In this case, the specification is just a working document to help guide them in their development of the course.

So, a first step in developing a course specification is to consider who might use it and for what purpose. For example, apart from you as instructional designer, the specification might be used by authors, support staff and finance staff. Some of the possible users of a specification and the purposes to which they might put that specification are set out in Table 12.

TABLE 12. Main users of course specifications and the purpose for their use

User	Purpose
Instructional designer	• as the basis for commissioning work from others (e.g., authors, designers, web site creators) • as the basis for managing the development of the course (e.g., financial control, project management)
Authors[1]	• as the specification of what they will have to write, both in terms of content and instructional design format
Support staff	• as the basis for planning the support activities for the course
Marketing staff	• as a basis for preparing prospectus entries and other publicity
Registry staff	• as a basis for putting the course on the computer system • as a basis for accepting students into the course
Finance staff	• for budgeting and cost control

[1]The instructional designer may or may not be one of these authors.

3.7.3 WHAT TO INCLUDE

There is no definitive list of what should go into a course specification, but Table 13 is a useful starting point. Few specifications would contain all these items, so you need to pick from the list whatever best meets your institution's needs.

Under 'instructional design style' in Table 13, inclusion of a sample course unit is suggested. This raises another issue about course specifications: they do not have to be a single document. There does need to be *one overall document*, for everyone to use, but additional, more specialist documents can be developed to support the main one. These include a:

•   web site specification,

•   audio cassette specification, and

•   assessment specification.

The larger your institution, the more likely it is that you will need these additional specifications, since the work is more likely to be subdivided among specialist sections.

TABLE 13. Possible contents for a course specification

Aspect	Items to detail
General	• course title
	• course aims
	• learners' needs (e.g., why they are taking the course, what qualifications they need to gain, what they intend to do after the course)
	• learner vignettes to give authors a clear idea of the sort of students they are writing for and their personal circumstances
	• expected learning hours and the number of weeks over which the course will be studied
	• learner circumstances
	• pre-requisite skill and knowledge that will be assumed
Content	• learning outcomes at unit level
	• unit titles
Instructional design style	• typical activities for each learning outcome
	• media to be used
	• sample unit – this is probably the most effective way to convey to authors just how they should write
Tutorial support	• type of tutorial support to be provided (e.g., distance tutor, online tutor, workshops)
	• assignments to be submitted to tutors
Assessment	• assessment details (e.g., number of occasions when assessment will take place and the type of assessments)
Developmental testing details	• which parts of the course will be tested
	• how the testing will be done
Finance	• budget

3.7.4 STANDARD FORMAT

It is a good idea for an institution to have a standard format and contents list for a specification. This will help staff prepare a course specification that will meet the requirements of the various users.

3.8 THE COURSE GUIDE AND OTHER DEVICES

3.8.1 INTRODUCTION

Course guides (which are distinct from study guides) are devices to help learners orientate themselves to a new course and learn how to use it. Course guides also act as reference sources for use when learners have a problem with their course.

This topic also looks at course overviews, course maps and prior knowledge.

> **Issues for instructional designers**
>
> 1. What should be the contents of the course guide?
>
> 2. What should be the format of the course guide?
>
> 3. Should I include any pre-testing?

3.8.2 PURPOSE
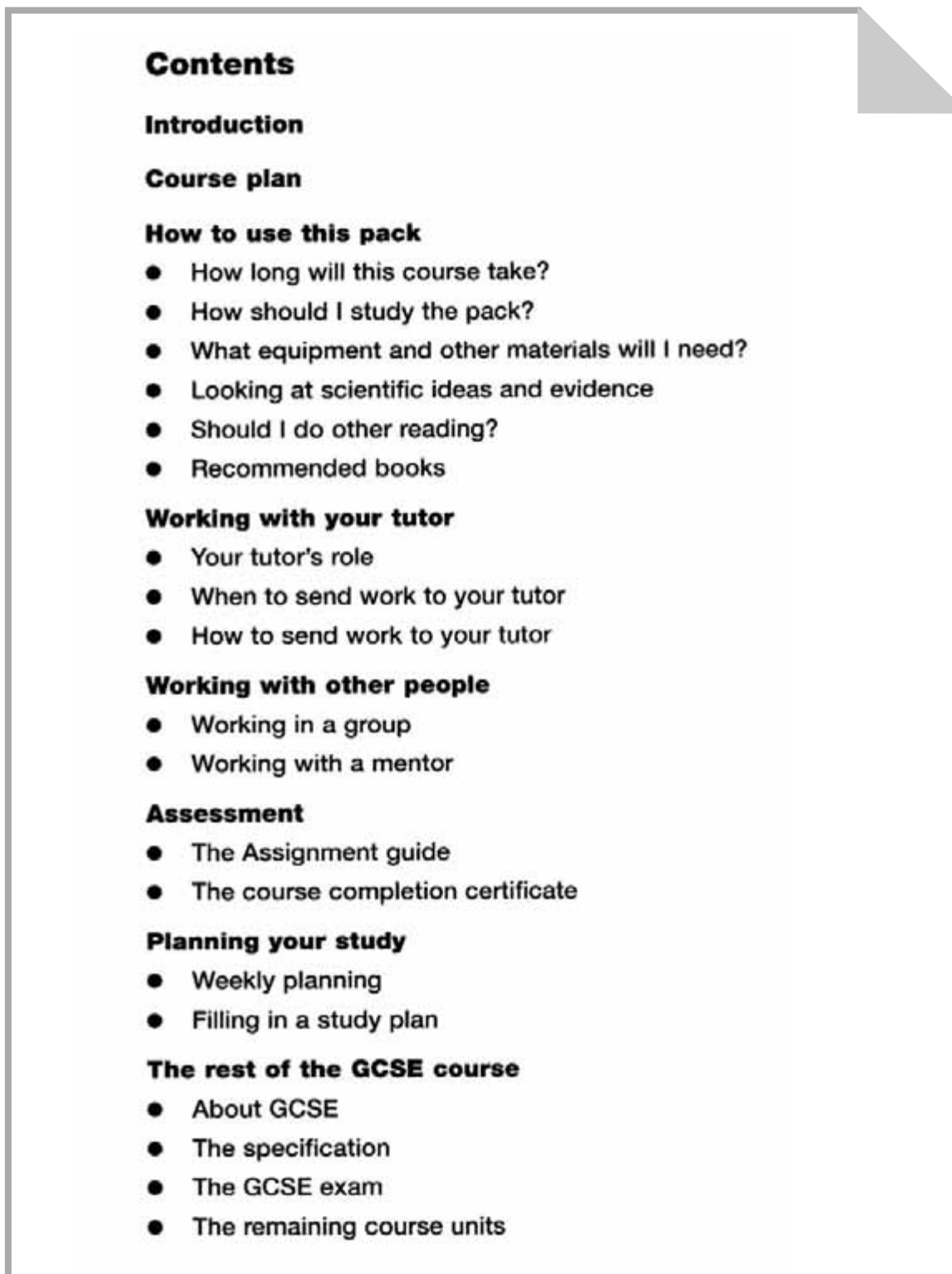
Course guides are developed for learners to:

- explain the aims of the course,

- outline the components and structure of the course,

- describe how to use the course,

- provide administrative information, and

- provide information on assessment.

3.8.3 CONTENTS

There is no definitive list of contents for a course guide, but a typical guide contains items such as:

- an overview of the course,

- the aims of the course,

- a statement of any pre-requisite knowledge and skills that the course assumes,

- a list of contents,

- an explanation of the structure of the course (e.g., how it is divided into units),

- a list of the various components (e.g., workbooks, cassettes, web pages) and some explanation of what they are for,

- a course schedule with dates of key events such as exams,

- details of the support system and who to contact about different types of problems,

- an explanation of the assignments to be submitted and the system for submitting them,

- an explanation of how and when the course will be assessed,

- an explanation of how to use the course (e.g., how to use activities, self-assessment and objectives)

- study skills advice (e.g., how to plan your time, how to make notes, how to learn from the web).

Two examples of the contents of typical course guides can be seen in Example 13 and Example 14.

EXAMPLE 13. Sample contents of a typical course guide (a)

Contents

Introduction

Course plan

How to use this pack
- How long will this course take?
- How should I study the pack?
- What equipment and other materials will I need?
- Looking at scientific ideas and evidence
- Should I do other reading?
- Recommended books

Working with your tutor
- Your tutor's role
- When to send work to your tutor
- How to send work to your tutor

Working with other people
- Working in a group
- Working with a mentor

Assessment
- The Assignment guide
- The course completion certificate

Planning your study
- Weekly planning
- Filling in a study plan

The rest of the GCSE course
- About GCSE
- The specification
- The GCSE exam
- The remaining course units

Source: *Getting Started at GCSE Biology* (National Extension College, Cambridge)

EXAMPLE 14. Sample contents of a course guide (b)

Contents

Source: *Introduction to Distance Education: Learner's Handbook* (International Extension College, Cambridge)

3.8.4 METHODS OF CREATING COURSE GUIDES

One way of developing a course guide is to start with the course specification and edit it to create a student version.

There are three main formats for course guides: printed guide, interactive guide and web course guide.

A printed guide

The most common format is a printed guide, often around 10–20 pages in length. This has the advantage of being fairly inexpensive to produce. However, there is much circumstantial evidence to show that learners either do not read guides in this form or, if they do, do not change their behaviour as a result of reading them. This problem is addressed by the next format below.

An interactive printed guide

In this format, the content of a normal printed guide is rearranged to make it an interactive learning experience. So, for example, instead of just telling learners what the course schedule will be and how to plan their time, the interactive guide sets tasks in which the learners draw up their own timetables (see Example 15). This approach is simply implementing what we know to be good practice in learning materials: that if learner behaviour is to be changed, the learners have to engage in the material, not just read it.

EXAMPLE 15. Sample page from an interactive course guide

Getting started at GCSE Biology
STUDY GUIDE

Assessment

The Assignment guide

You will find this at the end of the pack. It contains the three assignments that you need to complete, with advice on when and how to complete them. You can send these assignments to your tutor for feedback on your progress.

The course completion certificate

If you complete all the Assignments in the Getting Started course successfully, you will receive an NEC certificate. You will then be able to go on to complete the rest of the GCSE course, if you wish. (Information about the rest of the GCSE course is given at the end of this Study Guide.)

Planning your study

By planning out your course you will have regular targets to aim for and a sense of achievement as you reach them. The study planner that is provided with this pack will help you do this. Note down in the boxes below your answer to each of the questions.

● Where will you study? (At home? In the library? On the bus or train?)

● How often will you study? (Once a week? Twice a week? Everyday?)

● When will you study? (Early morning? Evening? Lunchtime? Days off?)

Source: *Administration for Business Level 3* (National Extension College, Cambridge)

A web course guide

This form of course guide is becoming increasingly popular. It is obviously a convenient way to deliver a course guide for a web-based course, but is also used for non-web-based courses. The attractions of this method are the ease of updating and the low cost of distribution. However, there is a risk that learners will never actually find the parts of the guide that they need, particularly if those parts are not listed on menus. Many web site users have enormous difficulties finding what they want on web sites (let alone finding things that they are not aware exist on the site). Nielsen (2002a) has drawn attention to this problem both generally ('users don't understand where they are in a website's information architecture') and with specific reference (2002b) to drop-down and scrolling menus (drop-down menus are often more trouble than they are worth and can be confusing …; scrolling menus reduce usability when they prevent users from seeing all their options in a single glance).

It is therefore likely that web-based course guides may present particular navigation problems that need to be addressed with care.

3.8.5 PRE-TESTS

Pre-tests are closely related to course guides and may even be incorporated within guides.

Pre-tests address a particular problem in ODL, where students often enrol at a distance or online: they may end up selecting courses for which they do not have the pre-requisite knowledge and skills. One way to overcome this problem is to provide a pre-test (Race, 1992), which can help learners decide:

- whether they have the knowledge and skills to start the course; and

- which parts of the course they need to do – some learners may already know parts of the course and can therefore skip them.

3.8.6 INTRODUCTIONS, OVERVIEWS AND ADVANCE ORGANISERS

Introductions and overviews are important in ODL courses, and can occur at various levels: course, unit and topic. See Examples 16–17.

The basic purpose of these elements derives from the concept of an advance organiser (Ausubel, 1960). This is a device that provides a mechanism to help learners make sense of what they are about to learn. It can take the form of:

- reminding learners of what they have already learnt (e.g., by providing a short summary of the key points of the previous topic);

- reminding learners of what they already know (e.g., in a course on marketing, reminding learners of their wealth of knowledge of advertisements and other marketing techniques);

- providing a map or chart to show how the new topic links to previous topics;

- providing an overview of what they are about to learn (e.g., showing a completed table in Word and saying 'In this session you are going to learn to make tables like this').

EXAMPLE 16. Sample course-level introduction

Introduction

The Key Skills Solution

This pack is part of the Key Skills Solution, a new modular series of materials that will provide a comprehensive learning route for the three main Key Skills at Levels 1 to 3: Communication, Information Technology and Application of Number. The series structure reflects the process of learning, applying and then evidencing skills, and supports both Part A and B of the year 2000 Key Skills specifications.

Applying Information Technology

This *Applying Information Technology* pack addresses Level 1 of the Key Skills specifications for Information Technology. It contains a number of sections that develop the skills required to meet the specifications. It can be used in conjunction with *Learning Information Technology* and *Evidencing Information Technology*. Self-checks assess students' confidence in the underpinning knowledge for each skill and refer them to worksheets in *Learning Information Technology* if more practice is needed. When confident in a range of skills, the student can work on the assignments in *Evidencing Information Technology* to generate evidence for the portfolio.


```
            Part A                          Part B

         LEARNING IT                    EVIDENCING IT

         APPLYING IT
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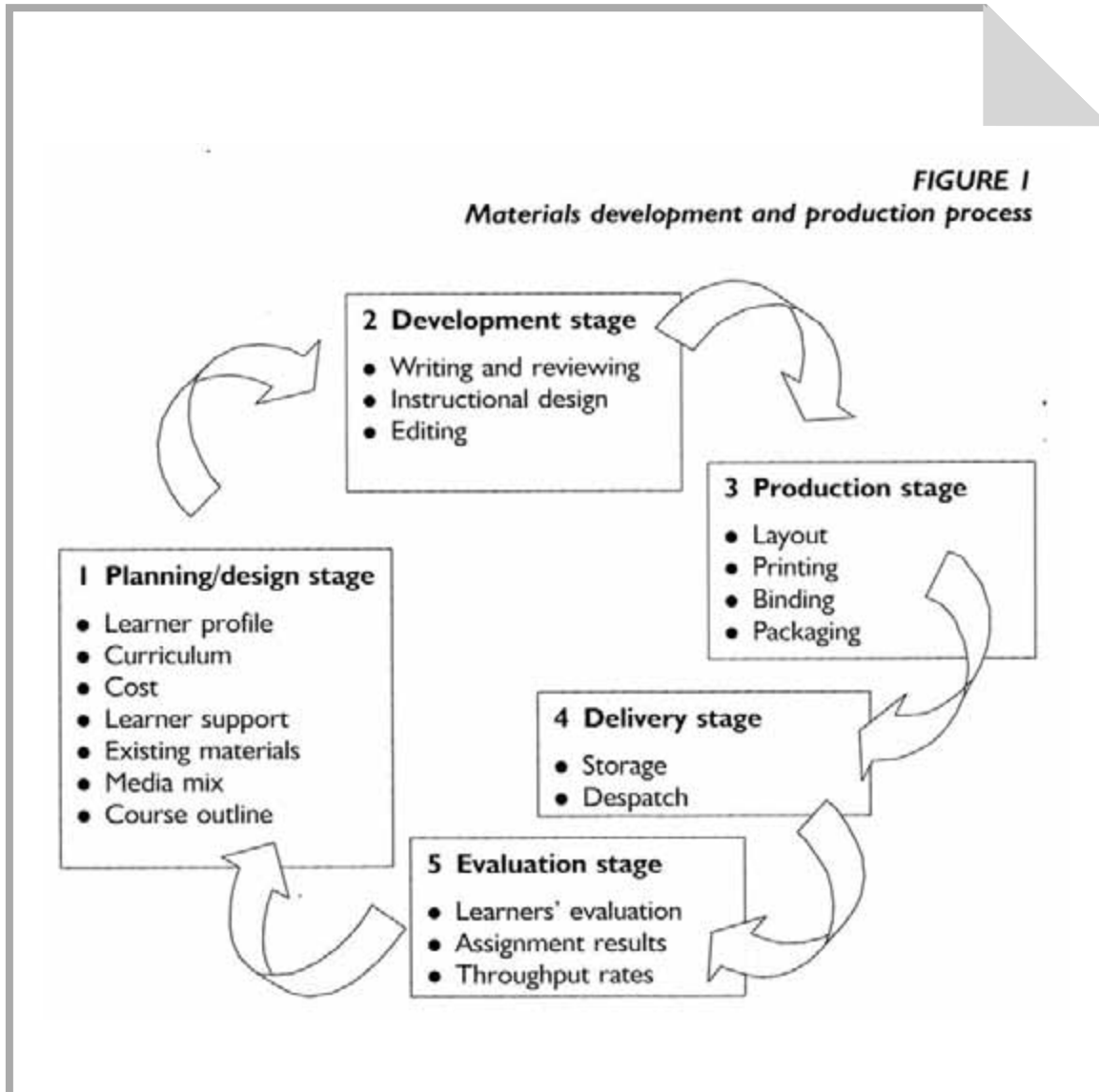
What is required for Level 1?

At Level 1 students must carry out short, straightforward activities that involve finding, developing and presenting information using text, images and numbers. They need to find different types of information and to decide how to explore and use it for a particular purpose. They must use appropriate methods for presenting information accurately and consistently. They have to produce evidence for two different purposes.

For further details on what is required at each level, please refer to:

- Key Skills Unit for Information Technology, published by QCA and

- Guidance on the Key Skills Units, published by QCA.

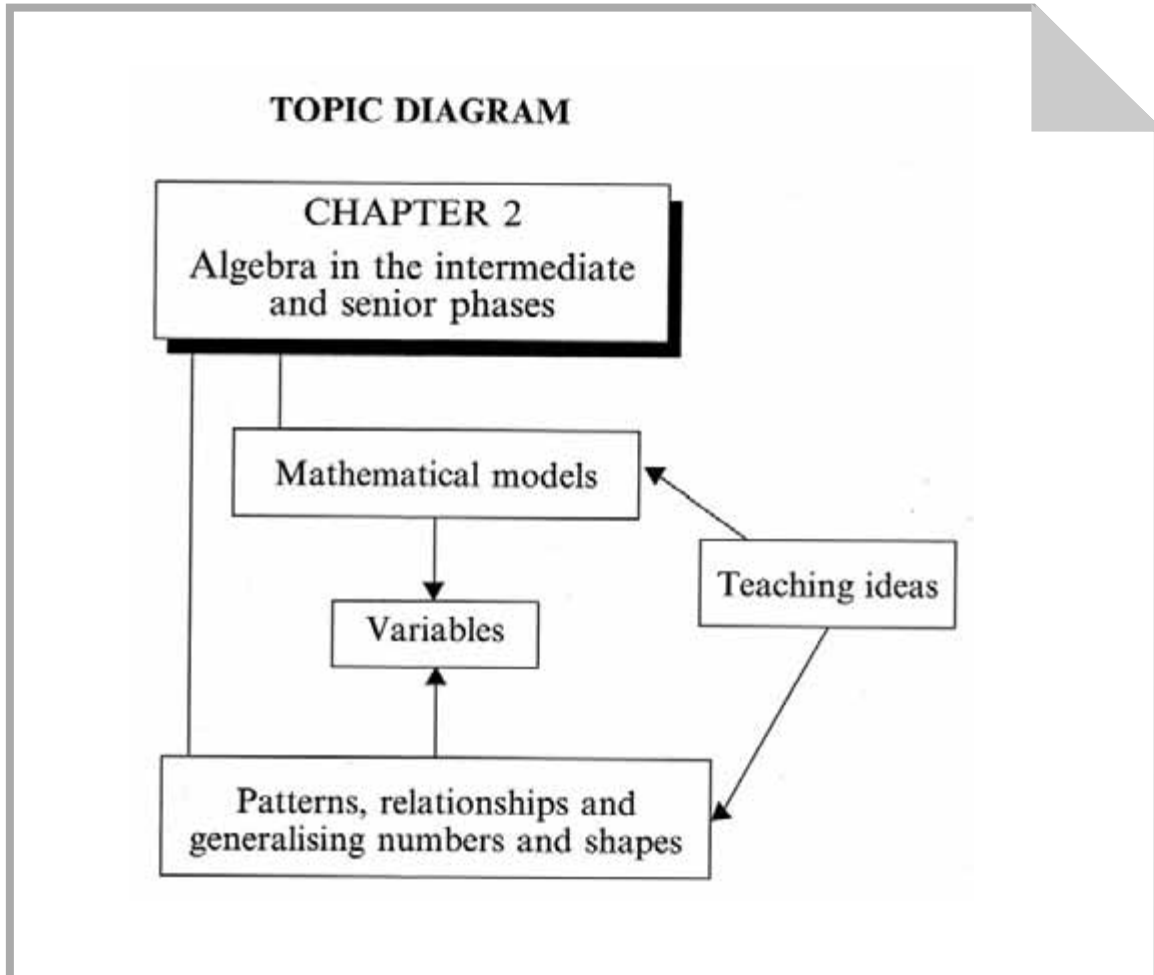These are available on the QCA website, www.qca.org.uk.

Source: *Applying Information Technology* (National Extension College, Cambridge)

EXAMPLE 17. Sample diagrammatic course introduction

FIGURE 1
Materials development and production process

2 Development stage
- Writing and reviewing
- Instructional design
- Editing

3 Production stage
- Layout
- Printing
- Binding
- Packaging

1 Planning/design stage
- Learner profile
- Curriculum
- Cost
- Learner support
- Existing materials
- Media mix
- Course outline

4 Delivery stage
- Storage
- Despatch

5 Evaluation stage
- Learners' evaluation
- Assignment results
- Throughput rates

Source: *Introduction to Materials Development in ODL*. ODL103-H, p. 16 (UNISA)

Topic diagrams

Topic diagrams can also be used as advance organisers, as in Example 18.

EXAMPLE 18. A topic diagram being used as an advance organiser

TOPIC DIAGRAM

CHAPTER 2
Algebra in the intermediate
and senior phases

Mathematical models

Variables

Teaching ideas

Patterns, relationships and
generalising numbers and shapes

Source: *Trigonometry, Algebra and Calculus*. NPD030-A, p. 5 (UNISA)