
UNIT 18 INSTRUCTIONAL DESIGN IN DISTANCE EDUCATION

Structure

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18.1 INTRODUCTION

In the previous Unit-16 of this Block, you have read about instructional design for the classroom and about formulation of lesson plans. You have also read about the different phases of designing training programmes through the ADDIE approach (Unit 17). These units have given you a background for instructional design in different situations and environments. You have learnt from the previous units that instructional design covers curriculum design, planning of syllabus, lesson plans, Units/Blocks, courses/programmes, selection of content in courses or units, integration of methods, and media, and assessment strategies. Now in this unit, we will focus on the specific components involved in instructional design for open and distance education (ODE) i.e. the relevance and significance of designing materials in open and distance education (ODE). We will take up both self-learning materials that are print based as well as instructional design for audio and video programmes. You will read in detail about designing interactive multimedia (IMM) and designing e-learning in Units 19 and 20 of this Block. This unit will help you to also connect the previous knowledge related to theories of learning and different instructional design models and will thus help you to apply theoretical knowledge and understanding to design print, audio and video components of ODL.

18.2 LEARNING OUTCOMES

After going through this unit, you should be able to:

- explain the need for designing instructional materials in distance education;
- discuss the concept of curriculum planning;
- explain the process of designing instruction for self-learning printed materials; and
- explain the theories and models of communication process for designing audio and video programmes in ODL.

18.3 NEED FOR DESIGNING INSTRUCTIONS IN OPEN AND DISTANCE EDUCATION (ODE)

Heterogeneity in student population, demands careful and systematic designing of units/courses to cater to individual needs. The open and distance education learners have different socio-educational backgrounds, experience and aspirations. So, there is a need for designing instructions in ODE. (Refer Unit 12, Section 12.3 and Table 12.1)

18.3.1 Characteristics of Open and Distance Education Learners

Let us now try to understand why there is a need for designing instructional materials in open distance learning. As you will recall distance education is different from classroom education. It is a mode of education in which the teacher and students are placed at a distance from each other. The teaching process involves self-learning printed material as well as different forms of technology. These could be audio and video programmes, online programmes, and web based portals. Learning could be synchronous as well as asynchronous. The learners who study through distance education demonstrate their own unique characteristics. This includes diverse educational backgrounds, different age groups, socio economic backgrounds as well as geographical dispersion. This heterogeneity amongst learners places them at different points in the learning cycle. Therefore, the open and distance learning system provides for flexibilities which includes giving expanded registration periods of admission, credit accumulation of grades, examination system that are different so that each learner can attain 'mastery learning' at their own pace and place. This system also permits students to study according to their choice of subjects as well as place and time. The designing of distance learning materials is distinct because the learners are self-learners and therefore are autonomous learners. They are self-directed and formulate their own learning goals. Most learners are mature and have their own life experiences. This makes distance learners and their learning habits different from learners of formal education. In other words, the characteristics of open and distance education learners are: demographic, diversity, self-motivation, learning factors, subject background, resource factors etc.

In view of the above, it is necessary that the instructional design in distance education should be based upon the above characteristic of the distance learners and the unique features of the open distance education system.

18.3.2 Goals, Aims and Objectives

Before designing any material, it is also necessary to reflect upon the goals and aims for which the course is being developed. Goals refer to the broad statements and general education goals that the concerned educational system follows. The vision and mission of every institution is derived from educational policy and is reflected in activities aimed to achieve these goals. The programmes of the institutions are also developed to achieve these goals. The goals are then reflected in the aims and objectives of the programme which in turn are reflected in the courses and its curriculum. There is a close relationship between overall goals and the curriculum of the courses.

18.4 INSTRUCTIONAL DESIGN FOR CURRICULUM PLANNING

Let us discuss the concept of curriculum planning before we go onto instructional design for self-learning print material. According to Jenkins and Shipman, (1975), “a curriculum is a formulation and implementation of an educational proposal, to be taught and learned within schools and other institutions and for which that institution accept responsibility at three levels: its rationale, its actual implementation and its effects.”

According to Rowntree (1992), curriculum refers to “the total structure of ideas and activities, developed by an educational institution to meet the needs for students and to achieve desired educational aims.”

According to Hass (1987) “a curriculum is all the experiences that an individual learner has in a programme of education whose purpose is to achieve broad goals and related specific objectives which is planned in terms of framework of theory and research or past and present professional practice.”

A curriculum is an inventory of items of information, skills etc., which have to be taught to the students. A curriculum is a charter or a plan or a framework which prescribes the educational activities of an institution. Thus we see that a curriculum is a plan or a framework which contains goals which are reflected in the set of educational objectives. Based upon the goals and objectives, the curriculum contains relevant course content, which includes activities that forms a part from the planned learning experiences. The teacher creates a teaching learning environment through an appropriate transactional strategy for attaining the goals and outcomes. The curriculum also contains the evaluation strategy to access whether learning has been actually achieved by the learner.

A curriculum in open and distance education may be based upon its philosophy and use of technology. For instance, the curriculum could be subject centred or learner centred. The approach could be the subject area approach i.e. the curriculum is organized around the different areas of particular discipline. It could also be a broad field's approach, wherein the curriculum combines a few areas and is built around these areas. The third approach could be that of a social problem approach wherein the curriculum deals with major problems of social importance. The fourth approach could be the emerging needs approach in which the learner needs are placed at the centre and therefore learner development is considered most important. In distance education, different approaches are used while developing the curriculum. The curriculum planning is usually done keeping the learner at the centre. At this stage, you may like to understand the difference between curriculum and instruction. Curriculum refers to ‘what’ aspect of student experiences, while instruction deals with delivery or execution of these student experiences. Curriculum includes instruction. The systems approach to *course planning* is often followed in distance education. In this method, the first step is that of identifying learner needs which is followed by stating the objectives with relevant resources as well as deciding on the choice of methods to be adopted and the development for course materials. This is followed by the feedback and subsequently an evaluation to see how the course planning is taking place and what changes need to be made in it.

Check Your Progress 1

Note: a) Write your answers in the space given below
b) Compare your answers with those given at the end of the unit.

1. Describe the concept 'curriculum' in your own words.

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2. Differentiate between curriculum and instruction.

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18.4.1 Course Planning and Sequencing the Curriculum

The next most important aspect is of transforming the curriculum into a programme/course. There are different models that have been adopted by ODL institutions. But these follow a basic common philosophy i.e. the philosophy of breaking down the curriculum into small chunks of learning so that it can be easily handled by the self-learner. Let us now look at the model followed by IGNOU for course planning. The IGNOU model has the following components.

- **Programme**

A programme designates the area of study of a discipline, the study of which would lead to a qualification. This programme could be a certificate, diploma or undergraduate or post graduate programme. It could also be an awareness generation or life enrichment programme.

- **Courses**

Each programme comprises the sub areas of the overarching programme and each course takes up a particular theme. Depending upon the level of a programme, the number of courses would vary. Therefore, a post graduate degree programme would have more courses as against the certificate programme. Similarly, the weightage of each course would also depend upon the number of credits that have been assigned to that particular course.

- **Block**

The block is the next component of the course and comprises yet another dimension of the course. Each block may contain 4 to 5 units.

- **Units**

A unit is a self-contained component of the block that takes up different learning concepts as identified in the curriculum. A unit in turn is structured and consists of sections sub-sections which are systematically numbered and have scope for self-check formative assessment as well as activities to create interactivity for the self-learners.

Thus ODL institutions can structure the curriculum into modules, lessons, units based upon the basic philosophy of having small self-contained units for easy comprehension by the self-learner.

18.4.2 Sequencing the curriculum to develop a course

Another aspect of course planning relates to the arrangement of topics of the curriculum. There are different ways to do this. According to Romiszowski (1986), Rowntree (1992), Freeman (2005), a curriculum can be sequenced using the following methods:

Table 18.1: Sequencing of curriculum

Method	Explanation
Topic wise	Identifying the topics and placing them in any order
Cause and effect	Identifying the phenomenon and the relationship between its cause and effect
Structural logic	Identifying a logical sequence of the topic
Problem centred	Identifying a problem and working out its solution (including using case studies)
Spiral	Using the inter connectivity between topics to build the concept
Chronological	Using a time based approach
Backward chaining	Using the solution to study the path taken to reach the outcome
Loose network	Studying the topic connecting them in a loose network

18.5 INSTRUCTIONAL DESIGN FOR SELF-LEARNING (PRINT) MATERIALS

As you may be now aware, the learner in an ODL system is an autonomous learner and is separated from the teacher by a physical distance. It is often said that Self-Learning Materials (SLM) performs the task of a 'teacher in print'. This is because the learner is at a distance, however all characteristics of the face to face teacher have to be transmitted through the materials. According to Holmberg (1983), the course material must be written in a conversational and personalized manner and the teaching learning process is a 'guided didactic conversation' that is taking place within the material. As you have read earlier, Michael Moore (2003) in his Theory of Transactional Distance stated that the greater the flexibility in the learning material, the lesser would be the distance between the teacher and learner. According to him, three variables, namely structure, autonomy and control, in the learning process were responsible for impacting the degree of distance between the teacher and learner. Effective self-learning materials can be developed based upon these theories.

According to Murthy (2005), the characteristics of effective learning materials are as below:

Self-explanatory: The content of the SLM has to be such that it provides clarity to the learner. It must be logically presented and move from simple to difficult. There must be consistency and continuity in the content.

Self-contained: The material must be self-sufficient and the learner should be able to obtain all relevant information within one cover. Therefore, it should be self-sufficient with content, evaluation, activities as well as

reference so that the learner is able to obtain a complete learning experience within the material itself.

Self-directed: Keeping in mind the fact that the teacher is at a distance, the material has to be written in such a manner that the learner is directed through the process of learning. The material should therefore be able to guide, instruct as well as have a scope for interaction and motivation.

Self-motivating: One of the major problems of self-learning is that learners may experience a lack of motivation. Therefore, the material must be able to stimulate learning and arouse curiosity within the learner and therefore drive the learner to achieve his/her learning goals.

Self-evaluating: The material must also be able to provide the learner with an opportunity to do a self-assessment periodically. Therefore, there must be scope within the design to incorporate formative assessment in the form of self-check exercises, areas for reflection, activities as well as points to ponder. This component would also help the learner to pace their learning and identify the areas which need reinforcement as well as more attention by the learner.

Self-learning: This is the most important aspect of ODL materials as the learner is a self-learner and therefore all materials have to have self-learning as the central theme.

Thus we see that the purpose of good SLM is to ensure that it creates interactivity and is able to motivate learners to study on their own. The personalized language as well as the format has to be designed to engage with learners and support their learning.

Check Your Progress 2

Note: a) Write your answers in the space given below
b) Compare your answers with those given at the end of the unit.

1. Describe the various characteristics of SLM.

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2. Give any two methods of sequencing the curriculum.

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18.6 FORMATS OF SLMS

Self-instructional units are a combination of interactive instructional steps and access devices, which helps a learner to easily access and assimilate the contents. A ‘format’ is the design of a unit adopted by an institution in respect of placement of various components of the unit, and it varies from institution to institution. Let us look at some instructional design formats used for developing ODL materials.

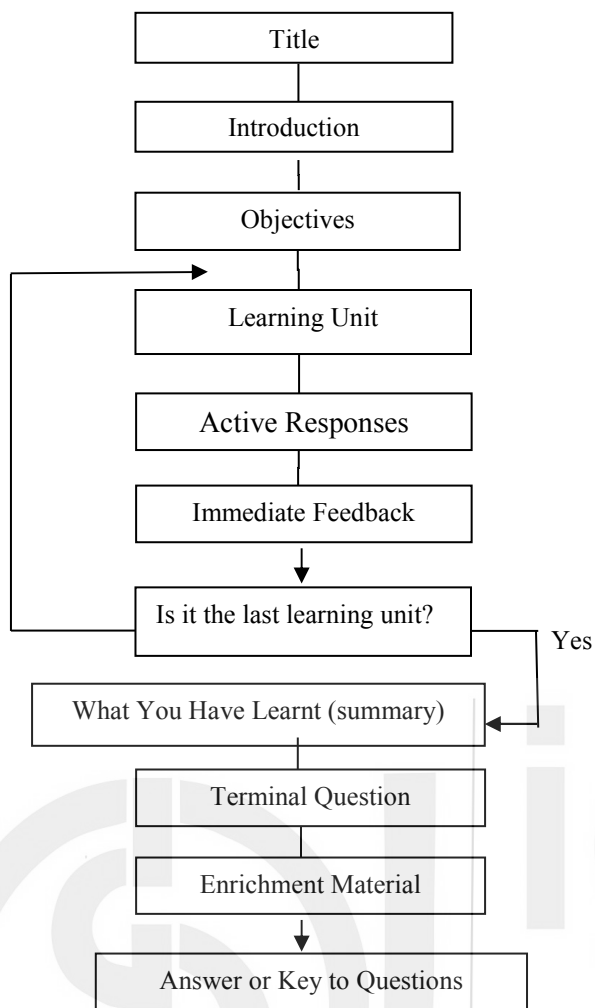


Fig. 18.1: Format 1, Instructional design for SLM
Source: Biswas, G. and Priyadarshini, A. (1999), pp. 197

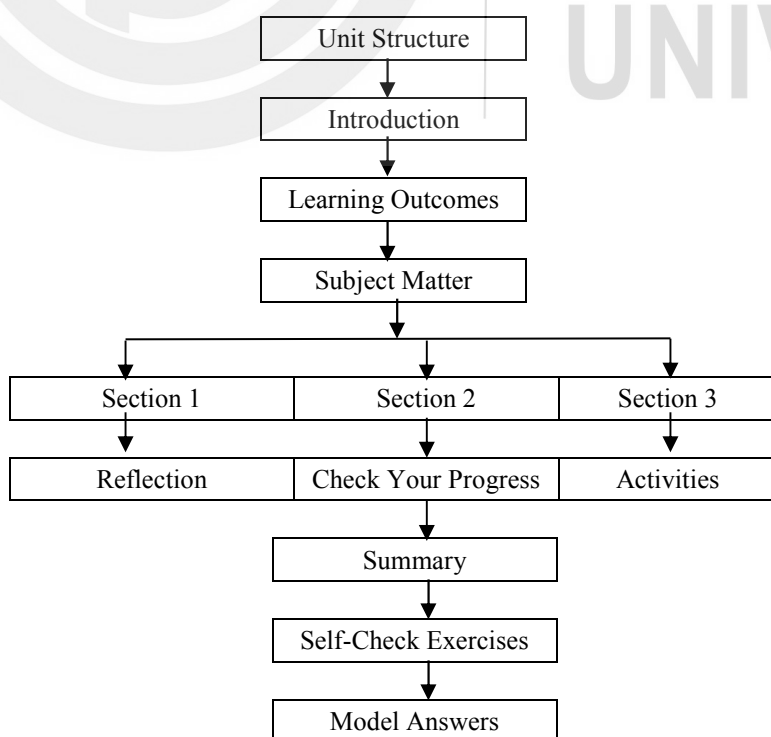


Fig. 18.2: Format of Instructional design for SLM: IGNOU Model

18.7 WRITING A SELF-LEARNING UNIT

Let us now discuss the methodology for writing a unit. This design may vary depending upon the level of the course as well as the discipline for which it is being written. For instance, the unit design for a Post Graduate degree course may be different from that of a course for young adolescents in a School level programme. However basic tenets remain the same i.e. to provide instruction to students who are self-learners. Let us look at the components of a unit as below:

A unit is divided into three parts. Look at Table 18.2.

Table 18.2: Components of a Unit

Part	Component	Purpose	Examples
I	Introductory part	Acts as an advanced organizer (Ausubel 1960). Introduces the unit and links to the previous and future units	Unit no., Unit title, Study hours, Unit structure, Learning Outcomes
II	Teaching learning part	Presenting the content of the unit in a self-learning format and content is presented in personalized manner	Sections, Subsections, Learning activities, Check your progress, Illustrations, Charts, Tables, Question for reflection boxes
III	Concluding part	Summarizes the unit and links to the next unit	Unit summary, Evaluation questions, Glossary, Answers to check your progress questions.

I. Introductory Part

The beginning of the unit acts as an introductory section. This part gives the learner an overview of the unit and therefore contains the unit number and unit title. In some cases, it may indicate the study hours also. Some other important components are:

i) Structure

This part of the unit lists out the different sections that are to be covered in the unit. It helps the learner to view at a glance the contents of the unit. It also mentally prepares the learner about the number of hours that would be needed to study the unit.

ii) Learning outcomes

The learning outcomes are to be based upon the curriculum and the identified competencies to be achieved. A unit begins with learning outcomes which are to be in behavioural terms and indicate the competency that the learner is expected to achieve upon completion of the unit. You have read about learning outcomes in Unit-13 of Block-3.

The unit writer needs to plan the textual materials in such a way that each section of the unit is based upon one learning outcomes of the curriculum, as given below:

Learning outcome 1	⇒	Section 1	⇒	Check Your Progress 1
Learning outcome 2	⇒	Section 2	⇒	Check Your Progress 2
Learning outcome 3	⇒	Section 3	⇒	Check Your Progress 3
Learning outcome n	⇒	Section n	⇒	Check Your Progress n

Fig 18.3: Relationship between Learning Outcomes sections and CYPs in the Unit

iii) Introduction or overview

The purpose of the introduction of the unit is to prepare the learner for studying the unit. It also prepares the learner to be mentally alert to begin the study and acts as a link between the previous unit of the course. Therefore, it presents a preview of what has been learnt so that the learner can connect to the forthcoming content of the unit. The introduction also creates a learning environment that motivates the learner to proceed ahead in the unit.

II. Teaching Learning Part

This part is the main body of the unit. A unit writer has to consider many aspects before starting to write this part i.e. the theoretical foundation, logical sequencing of the topic, ordering the content, self-assessment exercises as well as planning the reflection exercises within the unit. Let us read more about how to write the main body of the unit.

i) Sections and sub-sections – Theoretical Foundations and Models

The section and sub-sections constitute the main body of the unit. They contain the thematic area as well as the learning activities aimed at achieving the learning outcomes. Here the unit writer has to give sufficient thought to decide upon the presentation of the topic. There are different approaches and models that can be adopted. The unit writer may choose the Behaviouristic school of thought. (Unit 2, Block-1). The writer could also use the Cognitivist school of thought (Unit 3, Block-1). Another approach could be the Constructivist approach (Unit 4, Block 1) wherein the students create their own activities for learning. Here the unit writer could develop the content with the help of case studies and real world examples. For instance, the unit may begin with an activity in which the learner is required to discover, interact and draw a conclusion.

The unit writer may adopt the models such as those provided by Dick and Carey (Unit 5, Block 2). Another model is that of Component Display Theory (CDT). You have read about these models in Block-2, Unit-5.

The unit writer could also develop the main text based upon the nature of the discipline. For instance, a course may be designed using a chronological sequence where as another area may adopt a parallel theme approach where all the topics are presented as standalone areas and can be studied on their own. Another approach can be the concentric circle approach where one concept has a bearing on the other and flows from the previous idea. Yet another approach can be of cause-effect chain where the learner studies the causes that lead to a particular effect and therefore the learner is able to understand the relationship between two events. The unit writer may also take up a structural logic approach which is based upon the nature of the discipline and therefore one concept builds upon another concept and therefore the content has to be ordered in a logical manner. An approach that is often used by social scientist is that of a problem-problem centred approach. Here the learner is presented with issues and problems that need to be studied so that a solution can be identified. Yet another approach is that which is the spiral approach in which the content is developed from simple to difficult and each spiral is connected to the earlier one. In some cases, the unit writer may also adopt backward chaining approach where an event or

situation is presented first and then the learner is exposed to the events that were responsible for creating that situation. This implies that the learner would move backwards to understand the complete situation.

Activity 18.1		
Given below are the Gagne’s 9 events of instruction. Please try to plan the relevant instruction. One example is given for you.		
Event No.	Gagne’s 9 events of instruction	Plan of Instruction
1.	Gain attention of the learners	Share a related anecdote, cite the latest statistics related to the topic, show a cartoon
2.	Inform learners of the objectives	
3.	Stimulate recall of prior learning	
4.	Present the learning content	
5.	Provide guidance for learning	
6.	Elicit performance (allow time for practice)	
7.	Provide timely feedback	
8.	Assess Performance	
9.	Enhance retention and transfer	

ii) Principles of Ordering the Content

The sections and their development follows certain established learning principles. According to Romiszowksi (1981), there are four principles of ordering content and these must be kept in mind when introducing a new topic. These are as follows:

Principle		
Simple	⇔	Complex
Known	⇔	Unknown
Particular	⇔	General
Concrete	⇔	Abstract

Fig 18.4: Principles of Ordering the Content

iii) Planning self-assessment

The self-assessment in the unit has to be within the text as well as in the concluding section. Here the writer has to design formative assessment so as to continuously monitor whether self-learning is taking place. This formative assessment could be in the form of self- assessment such as ‘Check Your Progress’ or In text Questions. It could also be Learning Activities that the learner has to undertake or in the form of Reflective Learning so that the learner learns from their own experiences. This formative assessment serves as a means for reinforcing learning, as well as motivating the learner to proceed ahead.

According to Freeman (2005), some of the points to be kept in mind while designing the self-assessment tests for the SLM are as follows:

According to Freeman (2005), some of the points to be kept in mind while designing the self-assessment tests for the SLM are as follows:

- The items cover the relevant content of the unit
- The items cover the learning outcomes
- The items are appropriate to the study hours allotted to the topic
- The items are appropriate to the learning environment of the learner and do not need any external resources
- The test items are appropriate to the domain which is being tested
- The items are diagnostic in nature
- The time taken for answering the items is appropriate
- The items allocate a word limit

The unit writer can design different types of self-assessment questions such as objective type, multiple choice, very short answer, fill in the blanks and others. Let us see some of the different item formats that can be selected by a unit writer for assessing the different levels of Bloom's taxonomy.

Table 18.3: Developing assessment based upon Bloom's Taxonomy

Level according to Bloom's Taxonomy	Some Action verbs (examples)	Type of question
Knowledge	List Define Recognize Label	Fill in the blanks True and false Match the following Very short answers Multiple choice questions
Comprehension	Describe Distinguish Explain Compare	True and false Match the following Short answers Multiple choice questions
Application	Locate Apply Appreciate	Short answer Application of a principle Demonstrate skills to create
Analysis	Analyze Discriminate Utilize	Short answer Essay Report Project
Synthesis	Generate Integrate Summarize	Short answer Essay Report Project
Evaluation	Justify Interpret Assess	Short answer Essay Report Project

III. Concluding Part

The end of the unit presents the concluding part and here the unit writer needs to summarize the unit by presenting the main points of the unit. In addition, this is also the section where the learning that has taken place may be evaluated. This could be in the form of terminal or global questions that form the part of the summative assessment. This assessment can be

be essay type questions that require analysis and inform the teacher about the depth of the knowledge and understanding acquired by the learner.

The last section of the unit also contains the answers to the self-assessment questions. This section helps the self-learner to assess themselves and rectify their mistakes if any. The closing section may also contain the glossary where definitions are given for relevant concepts. It could also contain abbreviations used in the unit as well as references that have featured in the unit.

Thus we see that the end of the unit is a closing section where the learners have an opportunity to assess themselves before moving on to the study of the next unit.

Quality of an SLM is defined in terms of:

- Validity i.e. purposeful and internally consistent
- Practicality i.e. users can and do use the materials as designed
- Effectiveness i.e. learners experience the materials as intended and achieve the intended objectives

Check Your Progress 3

Note: i) Write your answers in the space given below
ii) Compare your answers with those given at the end of the unit.

1. What are the three parts of a unit?

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2. List the four principles of ordering of content.

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18.8 UNIT LAYOUT AND DESIGN: INSTRUCTIONAL DEVICES

In distance learning, there are different means for delivering the course content. This may be in the form of printed self-learning materials or through online mode. Print remains by far the most widely used medium for open and distance education. Perhaps it is still the best medium for open and distance learning (Keegan, 1983).

Therefore, in addition to writing the unit, the unit writer also has to ensure that the text layout and design supports the self-learner. Most institutions develop their own 'house style' for the unit layout and design. The unit writer has to follow the standardized design. There are however some aspects to be kept in mind by the unit writer. Let us now learn about the different instructional devices that a unit writer may use to construct the unit (Fig 18.5).

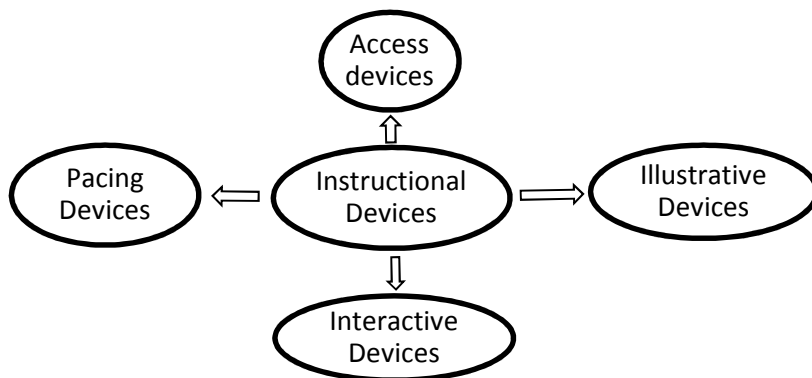


Fig 18.3: Instructional Devices

18.8.1 Access Devices and their Significance

According to Freeman (2005), access devices are the methods that are used ‘to help learners find their way around a piece of learning material’. Access devices help the learner to negotiate through the material as well as to help them make use of the materials. These devices are significant as they form guiding lights for the learner who are studying on their own i.e. they are self-learner and are studying at a distance. Access devices therefore help to make the material more learner friendly and personalized. Let us look at some of the access devices. A description of some access devices is as follows:

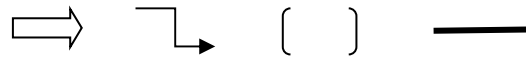
Table 18.4: Access Devices and their Significance

Component	Access devices	Significance
Introductory part	Title	To help the learner understand what is to be taught in the unit
	Structure of the unit	To give a bird’s view of the contents of the entire unit, so that the learner is aware of sequential progression in the unit
	Introduction	To present the unit and link it to the previous unit
	Learning Outcomes	To identify competencies in terms of knowledge, skills, attitude that the learner is expected to achieve at the completion of studying the unit
Teaching learning part	Division of content	To indicate the sections sub-sections, headings into which the unit is divided
	Check Your Progress(CYP)	To help the learner to self-assess his/her learning and monitor self-progress
Concluding part	Summary	To study the main points of the unit
	Essay Type questions	To analyze the issues raised in the unit
	Glossaries	To provide an easy explanation/ definition of various terms used within the unit
	CYP: Possible Answers	To self-assess and take corrective measures to improve learning
	References	To identify the sources and read the original texts referred to in the unit
	Bibliography/ Suggested reading/ Further reading	To read related books on the topic

Thus we see that the significance of access devices is to help the unit writer to bring the student as close to the content as possible. These devices help the learners find their way into the text. The Interactive Instructional Steps (IIS) perform the task of tutoring by providing subject matter in sections and sub-sections, followed by in-text questions, activities and so on.

18.8.2 Illustrative Devices

Illustrative devices are yet another important device to clarify concepts.





Illustrations help to provide guideline for effective use and also attract the attention of the learner.

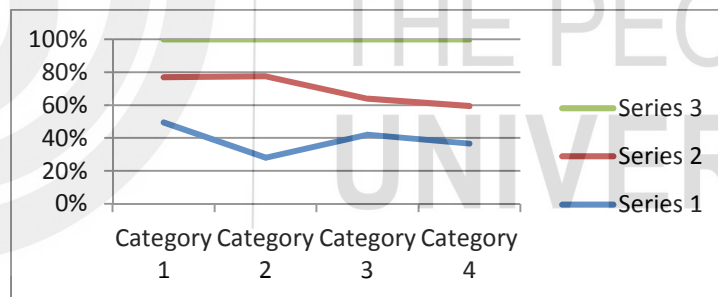
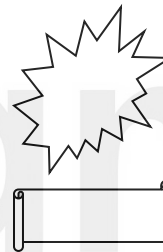
They can also be used as tools to recall the content and draw attention to a particular learning point. Illustrations also break the monotony of the content and act as motivational tools for the learner.

Some illustrations provide humour in the content.

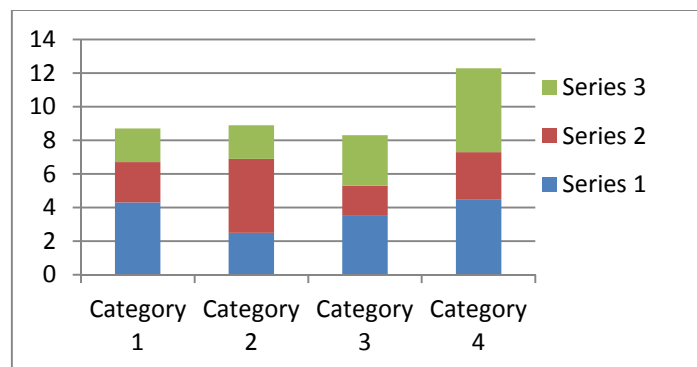


Illustrations are particularly useful for learners whose learning style is visually oriented. The unit writer makes use of any of the following:

- Drawings
- Cartoons
- Photographs
- Icons  
- Bullets
- Diagrams
- Tables
- Flow charts/Bar chart



- Figures
- Graphs



- Maps and Plans

18.8.3 Interactive Devices

Interactive devices are those that act as a tool for making the learning process more participatory. They encourage the learner to interact with the content for self-learning as well as for assessment. Some commonly used interactive devices include Learning Activities. In face-to-face classroom situations, a teacher may ask students to answer a question; take notes on his/her lecture, observe and record an experiment or demonstration, or do quick exercises. But in open and distance education, learning activities through printed SLMs aim at making learning effective and purposeful. A unit writer may develop learning activities that engage the learner in (a) Thinking (b) Writing (c) Doing.

Revisit Activity 18.1 – Does it make you think and write and do?

Some other learning activities are in the form of interactive questions. These could be Check Your Progress or Short Answer Questions with model answers or Exercise with possible hints at the end of the unit.

18.8.4 Pacing Devices

Pacing devices are devices that pace out the course i.e. they set a timetable for events to take place in the delivery of a course. According to Gibson and Graff (1992), pacing helps learner to complete the course and ensures that there is reduced dropout. Such pacing devices may be in the form of decisions taken as to when and how much of the course is to be given to the learners at a particular time, when the academic counseling is to be held, when the assignments are to be completed and when the examination is to be held. While pacing may be a policy decision of the ODL institutions, however it has an impact upon the way in which the materials is designed and delivered. Unit writers have to aware of the institutional policies so that the units conform to the pacing format.

Check Your Progress 4

- Note:** i) Write your answers in the space given below
ii) Compare your answers with those given at the end of the unit.

Describe the access devices in a unit. What is the significance of access devices?

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Activity 18.2

Develop a complete self-learning unit on a topic of your choice.

18.9 INSTRUCTIONAL DESIGN FOR NON-PRINT (AUDIO VISUAL) MATERIALS

Let us now move ahead to another aspect of instructional design i.e. how to design materials for non-print audio-visual materials.

In earlier units, you have read about the different learning styles of learners. Some learners learn by visual mode while others learn by hearing mode (audio). Some learners also learn better by reading and there are others who learn by audio and visual methods (visual, audio, reading, kinesthetic-VARK). The essential aspect for learning to take place is that of effective communication.

18.9.1 Theories of Communication and their Educational Implications for Designing Audio/Video Materials

“Communication is the art of successfully sharing meaningful information with people by means of an interchange of experience. The important word is ‘successfully’, which implied that a desired behaviour change results when the receiver takes the message” (Walklin 1993, p.164)

In distance learning, as you know the teacher and learner are placed at a distance and communication is taking place through print or non-print materials which leads to learning. There are different technologies by which communication takes place. The non-print learning materials include audio/video materials as well as e-resources. In this section let us learn more about non-print learning materials

As you will recall communication essentially means the exchange of ideas between the sender and the receiver. According to Shannon and Weaver (1949), the primary function of communication is to reproduce as faithfully as possible a message from one place to another place. According to Rodger, communication is a process by which people create and share information with one another in order to reach a common understanding. Communication has major education implications especially in distance education as it is the basis by which information knowledge skills are transferred through a medium from a teacher to the learner. In fact, different types of materials form the teacher in print or non-print.

Communication can take place in both verbal and non-verbal ways. While verbal communication includes the exchange of words, through which knowledge is transferred, it also forms a medium for motivating the learner, personalizing the teaching as well as receiving feedback from the learner. Non-verbal communication which takes place through non-print media is also an effective method of teaching. This involves the ways of communication other than using words. It also includes the use of body language in communicating experiences. The image of the teacher and the expression and emotions used during the communication have an effect upon the learning experience of the learner. Similarly, the gestures, and other mannerisms used during the communication have an impact on the learner. In addition to this the creation of presentations, handouts or use of sign language are also effective means of non-verbal communication.

In order to understand the development of material, it is important to also understand the different theories of communication. These theories have

educational implications for designing of Audio/Video materials. Let us also see their educational implications.

1. **Mathematical theory:** According to Shannon and Weaver (1949) the communication process is divided into different components that is the source, transmitter, signal and the receiver. The message is converted into a signal which is transmitted through a channel to the receiver. The channel forms the medium that connects the sender to the receiver. This theory was used in the field of engineering and mathematic but has substantial educational value, as during the teaching learning process the teacher forms the sender who has to transmit information/knowledge to the learner who is the receiver. A teacher may communicate with 25 or 50 or 100 learners. In the case of distance learning these number become larger. The use of technologies of mass media such as television, radio, other electronic media form the channel through which educational content is transmitted to large number in an effective manner.

The educational implications of this theory is that there is a great deal of information that is passed on by a variety of media and in the case of distance education where there is a diverse group of learners with different learning styles, there is high chance of a number of different media being used. Thus the availability of media helps the learner to choose what is best suited according to his/her learning style.

2. **Information theory:** This theory deals with the transfer of the messages and other information which may be verbal or non-verbal from one source to another. Here there is also scope for a two-way communication and therefore it is highly relevant for distance education. Large quantity of data can be transferred through different channels. There is ample scope for teaching along with feedback between the teacher and the learner. The provision for feedback helps in improving the quality of teaching. The implication of this theory are that due to the scope of feedback and two-way communication, which is possible through audio/video programmes, there is a scope for providing immediate feedback and increasing the level of interaction between the teacher and learner. This also serves as a stimulus for the learner to continue his/her learning and stay motivated.
3. **Free press theory:** According to this theory, a person should be free to express himself/herself and this freedom of expression is seen as a fundamental human right. While this theory was essentially aimed at the freedom of press, it has educational implications. Due to the vast growth of mass media technology and the freedom of publication through them, it is necessary to be responsible while communicating in the public domain. In the case of distance learning where the communication is to a mass audience, therefore due care must be exercised in the communication.
4. **Social responsibility theory:** According to this theory, the media has a social responsibility and must follow certain principles while printing or broadcasting. As technology becomes widely used by all sections of society and learners of all age groups, the need for maintaining self-regulation by all is important. It is also necessary that responsibility is demonstrated at all stages of operations, whether it is preparing the materials, identifying the objectives or interacting with the learner, such social responsibility has to be demonstrated.

18.10 MODELS OF COMMUNICATION

There are many models of communication. It is stated that as per Aristotle model, there are five factors of communication- speaker, speech/message, audience, effect and occasion. Shanon and Weavers model (1949) used the mathematical theory about which you have read in sub-section 18.6.2. Other models include Newcombs (1953) as well as Scramm's model (1954). In this section we will study two models which are closely related to open and distance learning.

18.10.1 The Bates Model

Bates (1995) had presented a model for developing open and distance learning courses. According to Bates (1995) while preparing courses, extensive pre-planning and design are necessary for distance learners, who often are working largely on their own schedules and perhaps independently. This model can be considered as a general road map to follow. Bates Model is known as front-end system design. It has four phases. These are:

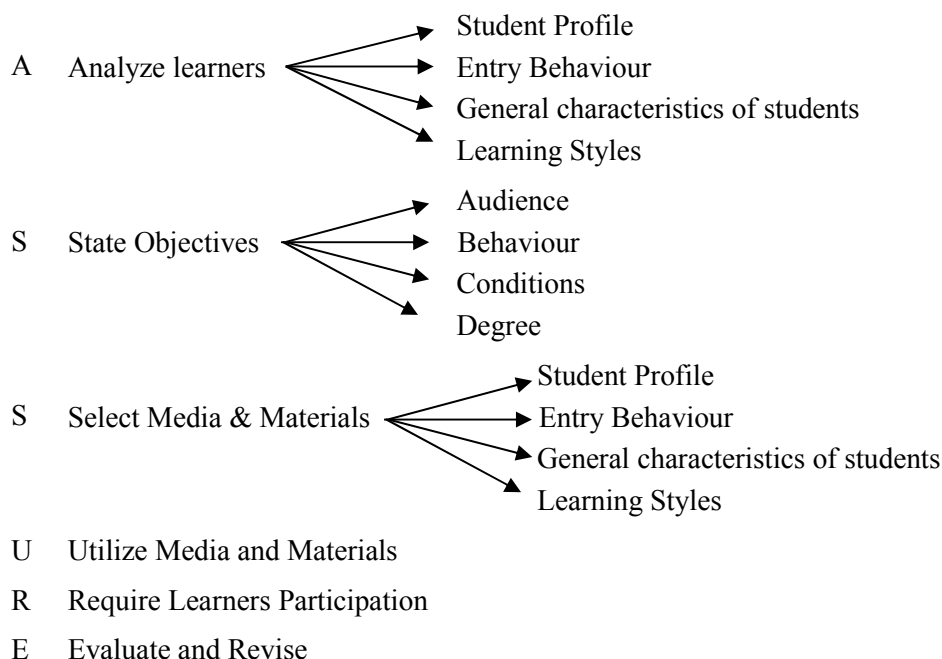
1. Course outline development,
2. Selection of media,
3. Development/production of materials and
4. Course delivery

This model also addresses ADDIE elements (Refer Unit 11, Block-03). This model focuses on building on components of a SLM. These are i) Structuring content ii) Student activities iii) Providing clear, necessary & timely feedback. This model focuses on integration of technology in the delivery of ODL courses.

The Bates model for selection of media is also known as the ACTIONS model wherein the instructional designer must take into account the Access of the selected media, as well as its Cost of development, the Teaching function in terms of its effectiveness, the Interactivity of the material, whether the material is able to be Organized within the existing facilities, the Novelty factor of the material in its ability to attract the attention of the learner, as well as the Speed with which the material can be developed and delivered.

18.10.2 Heinich, Molenda, Russel and Smaldino ASSURE Model (1999)

The next model that we will study uses the ASSURE model. You have already read about this model in Block-2 Unit-5. The ASSURE model can be used for learners with different characteristics and therefore is useful for distance learners. As you will recall in the ASSURE model A is for analyzing learners, S for stating the objective, S for selecting media and material, U for utilizing media and material, R for requiring learner participation and E for evaluating and revising. In this model, Heinich, Molenda, Russel and Smaldino have presented various means by which teachers can select media for improving their teaching learning. Similarly, they have also described how to use the media for effective teaching.



This model focuses on media and materials selection. The well written text and accompanying media components & websites are excellent resources for teaching at a distance.

Check Your Progress 5

- Note:** i) Write your answers in the space given below
 ii) Compare your answers with those given at the end of the unit.

1. Explain the ACTIONS model for instructional design of non-print materials.

.....

2. Describe the main components of ASSURE model

.....

18.11 LET US SUM UP

This unit deals with the design of self-learning print and non-print materials. There is a need for designing instructions in open and distance education as student- population is heterogeneous. The teacher and students are placed at a distance from each other, therefore the print or non-print materials form the tools for teaching-learning. ODL materials follow a systems approach for constructing the curriculum. There are different models for course planning and sequencing the Curriculum. In the model followed by IGNOU, the curriculum is broken down into smaller chunks that are demarcated as Programme – Course – Block – Unit. The arrangement of topics of the

curriculum can be through different methods such as topic wise, spiral, sequential, problem centered, cause and effect, structural logic. Effective learning materials have certain characteristics, which include that they are Self-explanatory, Self-contained, Self-directed, Self-motivating, Self-evaluating, Self-learning.

Self-learning materials follow a format based upon certain principles. ODL institutions decide on a standardized format for their programmes. This is called the 'house style'. A unit is divided into three parts: introductory, teaching learning and conclusion. Each part plays a role in the learning of the student. There are also certain established learning principles for ordering the content as well as designing the self-assessment exercises. The unit layout and design are instructional devices which also play an important part in helping the learner to negotiate through the materials. The instructional devices include access devices, illustrative devices, interactive devices and pacing devices. There are also different models for designing audio-video materials. These include the Bates model and the Heinich, Molenda, Russel and Smaldino ASSURE model. A unit writer has to keep in mind various theories and models to develop good quality print and non-print SLM.

18.12 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress 1

1. Curriculum is an inventory of items of information skills which a plan and forms the framework for obtaining the goals and objectives. It includes the relevant course content, planned learning experiences as well as the transactional and evaluation strategies. Please refer to section 18.1.
2. According to Rowntree (1991), curriculum refers to “the total structure of ideas and activities, developed by an educational institution to meet the needs for students and to achieve desired educational aims.” Please refer to 18.4 and add other definitions.

Check Your Progress 2

1. Please refer to section 18.5
2. Please refer to section 18.4.2

Check Your Progress 3

1. The three parts of a unit are introductory, teaching learning and concluding part. Please refer to section 18.7
2. Four principles of ordering. are simple to complex, known to unknown, particular to general and concrete to abstract. Please refer to 18.7

Check Your Progress 4

Access devices are those devices that help the learner to navigate through the material. The significance of the access devices is to that they help the material more learner friendly and personalized and bring the content closer to the learner. Please refer to section 18.8.1.

Check Your Progress 5

1. The Bates model is called the ACTIONS model where ACTIONS indicates access, costs, teaching function, interactivity, organizational function and novelty and speed of the media that is to be used in the material. Please refer to 18.10.
2. The ASSURE model can be used for learners with different characteristics. The steps of the ASSURE model are analyzing learner, stating objectives, selecting media and materials, utilizing media and material, requiring learners' participation and evaluating and revising. Please refer to 18.10.

