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## **BLOCK 2**

# **DEVELOPMENT OF COURSEWARE**

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## **UNIT 3      DEVELOPMENT OF COURSEWARE FOR THE PRINT MEDIUM**

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### **Structure**

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### **3.1 INTRODUCTION**

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The first two units of this course prepare you for designing courseware. After instructional designing the courseware has to be developed, and this unit will enable you to develop courseware for the print medium. Print medium remains essential for imparting text based instructions, even though the web is substituting it to a large extent. However, even web based text on being printed becomes information in print medium. Nevertheless, print and web media are used differently for delivering instructions. However, the writing style adopted for ‘text’ based instructions has many similarities. Therefore, this unit is although about developing courseware for the print medium but the understanding you gain will also help you to develop text for web based instructions. Further, courseware comprising instructions are ‘delivered’ to learners and learners need to learn on their own. Therefore, instructions need to be developed for supporting self learning (see unit 1). This unit discusses the characteristics of self learning material (SLM) and the style of writing for text based self learning. It also describes the various parts of a unit of a courseware; and the tools use for word processing and editing.

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### **3.2 OBJECTIVES**

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This unit will help you to:

- Describe the characteristics of SLM;
- Describe the style of writing necessary for developing SLM;
- Develop SLM for the print medium; and
- Develop text for imparting web based instructions.

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### 3.3 WRITING STYLE FOR PRINT MEDIUM

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Why should you learn to write for print/text based SLM? Read the following situations in box 1. You may be in any of these situations:

**Box1**

*Ranjit has to teach using the print medium and has to develop SLM for it. Rajni plans to use blended mode of teaching (see unit 7), and she plans to teach some content areas using text based instructions instead of lectures delivered orally. Rana has to develop a user manual for the product his organization develops. The manual has to be developed for describing the product and enabling customers to use it.*

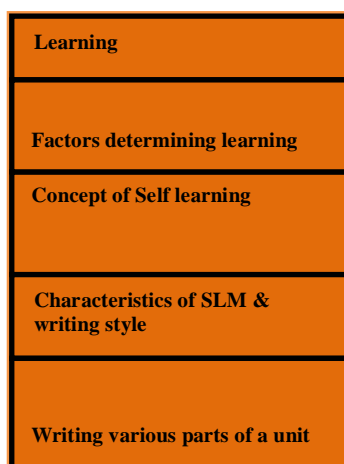
**How to write SLM?**

You must have read instructional manuals for gadgets like phone/television/ laptop that describe how these products are to be used. You are now reading a unit that has been written as self learning material (SLM) for a courseware. You have also read newspapers, books, and journals. Is the writing style same for all of these? An instructional manual describes the product and provides step-wise instructions for using it while this unit, does much more. It explains, elicits reflection, encourages practice, assesses and reinforces learning and thus teaches. Do newspapers, journals magazines, and books perform such functions? SLM is hence different from other text based content. You have read (Unit 2) that now the focus is on learning instead of instructions. Hence, the earlier term self instructional material is now replaced by SLM.

SLM is meant for helping learners learn but it is based on the concept of programmed instructions (see unit 1). Hence its development is guided primarily by behaviourism (Kasworm & Yao, 1992), and its pedagogy leads to individualised, teacher dominated learning (Anderson & Dron, 2011; Bates, 2016). You have read (unit 1, 2) that SLM is basically teacher centered and to make it learner centered elements like activities, questions and the like are included.

SLM is meant for supporting learning. Hence its development is guided by the factors influencing learning and especially the nine instructional events mentioned by Gagne (see unit 1). This embeds in it a teacher that draws attention of learners, questions, explains, creates and sustains interest, supports and assesses learning. SLM therefore has specific characteristics that make it suitable for pedagogic purpose. The writing style adopted for it needs to consider the following:

**Structure the content:** You have read about content analysis, for organizing and sequencing the content to be taught (Unit2). You have also learnt the use of concept map for organizing the content into themes and sub themes (Unit 2). As SLM is based on the concept of programmed instructions, you need to organize the instructions in a step-wise manner as logically sequenced frames (small segments of information developed for providing instructions-see unit 1). Frames should include content pertaining to the themes and sub themes emerging from content analysis. How will you sequence the frames? You have learnt in the earlier units that things with which learners are familiar can be taught first and new things subsequently. You have also learnt that beginning with more generic concepts we may proceed towards specific ones (see Figure 1).



**Figure 1-** Frames for teaching how to write SLM

**Developing frames:** We need to develop the content for each frame. When you begin to develop the content of a frame, see to it that it is linked to the previous frame. Logically sequenced frames have linkages but you can highlight these in the first few sentences of a new frame. For example you may say ‘you have studied the characteristics of SLM. Now let us examine how units can be written’. Further, each frame should have an appropriate heading that communicates what you are going to teach. See how we have done this in the units of this course.

**Activity**

Examine this unit and reflect on its frames.

For a concept that you would like to teach list the frames you will develop.

**Maintain learner-based approach:** SLM is prepared for learners. Hence, you need to keep learners active during the learning process. Questions and activities are means for keeping learners active. Further, we need to remember that people of different age groups have different interests and concerns. For example if you are developing courseware for developing communication skills for junior and senior level employees of an organization, cases, activities and examples may be different.

**Build linkage between new and earlier learning experiences:** At the very beginning of a unit you need to link the new experiences that you intend to provide to what you have already taught or to that which learners already know. See the introduction of the units of this course. You have studied the reason for this in the first unit.

**Make the content self explaining and self contained:** Learning materials that do not explain concepts fully require the learners to look for other sources of information. You need to make the content self explanatory so that learners do not have to depend much on other sources of information. You should also remember that explanations are easy to understand when these include **examples**. This is because examples concretise abstractions. For example lengthy explanations about ‘apps’ may not suffice but as soon as we give examples of apps for booking taxi, playing games, the explanation gets concretized. Similarly for a child, old age is an abstraction but the example of her grandparents concretises the abstraction. Examples of application of a principle/law/rule/ formula and the like clarify the concept better. Further, unfamiliar terms need to be explained using a glossary or an explanation immediately after using the term to lessen learner’s dependence on other sources of information including dictionary.

**Make the content self directing and self motivating:** SLM should provide necessary instructions and guidance in the form of directions, suggestions, hints and

clues. For instance, you may ask your learners to read relevant resources; read other units/sections of the course; reflect on an issue; carry out an activity, answer questions, and so on. SLM should also motivate learners. Learners, on being told that they have already learnt content related to the new unit feel confident and motivated. Providing feedback for self check exercises is also a way of enabling self-assessment of learning, reinforcing learning, supporting self-directed learning and motivating learners.

**Take care of the size:** Units in IGNOU are usually neither too long nor too short but moderate in size. However instead of being guided solely by the word limit of a unit you need to be guided by the adequacy of explanation. Therefore, the amount of content required for adequately explaining the concept is the right amount.

**Make the content interesting:** we need to arouse and sustain learners' interest to make them learn. Therefore, SLM needs an interesting introductory message that draws their attention. It should also list the concepts they would learn so that they know what they would learn and how it would benefit them. Cases depicting situations, questions and the like can be used for making the narrative interesting. Drawing learners' attention is not easy and sustaining their interest is even more challenging. Therefore, as continuous descriptions can be monotonous, we use techniques like interspersing the text with supplementary information. To draw attention we also use box with supplementary information, italics, bold and so on.

**Generate scope for interactions:** You have read (unit 1) that interactions support learning. SLM can suggest activities requiring interaction with peers but it cannot ensure it. However we can make learners interact with the content (SLM) by including dialogues like 'You have already read...'; 'you know that .. ....' 'What is your opinion?' and so on.

**Make the content suitable for adult learning:** SLM is used mostly by adults. Teaching adults is not the same as teaching children (see box 2). Children may not express learning needs like adults. Hence need assessment involving data collection for determining learning needs is essential for courses for adults. Moreover the content has to be interesting but at the same time it should be challenging and need based. Examples, activities, cases and other such pedagogic elements should be selected for an adult audience. This is because the width of experience of adults is likely to be far more than that of children and, examples, cases and so on can help them to relate learning to their experiences.

## Box 2

### How do adults learn?

Even though pedagogy generally implies teaching but it is actually the art and science of teaching 'children'. Andragogy is about teaching adults. Unlike children adults are aware of their learning needs and set goals for learning. Further, unlike children adults are mature, self motivated, and have experience. They also assess their readiness before taking a course and are also better managers of their learning. Hence, unlike children they evaluate the utility of the content. The content therefore has to be challenging, more problem-centered and above all need based. It should also include examples and activities that help them to relate it to their past learning as well as to day to day experiences. Further, being mature, adult learners can relate new learning experiences to past similar ones, think critically, and are more likely to look for content that is challenging (Commonwealth of Learning, 2005).

### Activity

- Read about adult learning.
- Compare how you learn now with the way you used to learn in your childhood. What are the differences?

**Create scope for practice:** Carr, Fung & Chan (2002) say that well-designed SLM with in-built activities promotes deep learning, critical thinking and activity based learning. The SLM should therefore include activities that help learners to put into practice the theoretical knowledge they have gained from the unit. This creates scope for learning by ‘doing’ and makes learning an active process.

**Create scope for reflection:** Reflection involves critical examination and hence, you need to include questions that encourage thinking. For example a question like ‘how can we encourage reflection through SLM?’ can make the learner think. If you ask questions beginning only with what, such as what are the features of SLM? It is likely that the learner will only recall what s/he has learnt but if you ask questions that begin with how/why it is likely that learners will ‘think’. Examples of such questions are - ‘think of something that you have learnt on your own and explain how you learnt it’. ‘How can media play a role in eliminating gender bias? Do films make us aware about social concerns? Have you watched any such film? Including scope for problem based learning also encourages thinking. The SLM should therefore include activities that require problem solving. Examples of such activities are ‘contact a sample of dropouts from your course and determine the reasons for dropping out’; ‘survey a sample of school going children who attend tutorials to determine the reasons for their attending tutorials’.

**Create scope for self assessment:** You have read that assessment of learning and feedback strengthens learning. Self check exercises and feedback are therefore included in SLM. These exercises make the learner stop reading to think, and thus consolidate learning before proceeding to the next section.

**Use personal touch:** Using first and second person –I, we, you in SLM, as a teacher does in his/her class, provides a personal touch. Hence, we use ‘you have read; we stated in the earlier unit...’.

**Define objectives:** SLM needs objectives (see unit 2). For instance, the units of this programme have instructional objectives that are in line with the objectives of the courses. Why should you state objectives? How should you state objectives? Read units 1 & 2.

**Ensure quality of content:** The content you include in the SLM should be authentic and up to date. While writing SLM you should collect and compile resources from authentic sources, read as much as you can, summarise the reading, and then write the text. Extensive research and intensive reading are essential for good quality SLM. We should also use quality illustrations and case studies that support the content.

**Communicate effectively:** The course ‘Selection and Integration of Technology in Educational Processes’ has units on communication. After reading these units you will understand that ‘noise’, i.e. barriers in communication should be minimum when message is transmitted from the source (SLM) to the recipient (learner). Hence while writing SLM, we need to ensure that we convey the message with clarity, and linguistic (related to language) barriers are minimum. For enhancing clarity we use-

- Transitional words and phrases that help us to move from one idea to the next. For example we use words like -however, moreover, further, furthermore, for

instance, for example, firstly, secondly, and so on for linking an idea to an earlier one.

- Examples are useful for clarifying concepts, ideas, and principles. However, we need to include examples that learners understand. Hence rice and chapati instead of spaghetti are examples for sources of carbohydrate that most Indian learners will understand.
- Use of appropriate illustrations like flow charts, diagrams, graphs, maps, tables and so on also support and clarify the text, and should be used. Images are also powerful means of clarifying things. Images strengthen explanations pertaining to life science.
- The message that the SLM communicates should be complete and we should not assume that our learner will complete what we leave unfinished. For instance if you say that the SLM should be written in a way that it facilitates learning but do not explain how this can be done, the suggestion will be vague. Similarly the suggestion to communicate effectively would remain vague without suggesting steps that describe how to do it.
- Clarity also depends on consistency. This means always giving the same message. For example if one section of the SLM says that hard work is the key to success and the next unit says that being smart is more important for success the messages would be confusing.
- Statements that make messages concrete add to the clarity. For example - 'write a short note', becomes clear when we say 'your answer should be of about 150 words'; 'the attendance improved substantially' is concretised (easy to visualise) when we say 'the attendance increased by 25 %'.
- We need to be concise and precise while writing SLM. Being concise means removing superfluous words, phrases, and sentences. For example, we are concise when we use 'neighbour' instead of 'someone living in a house close to my house', 'white' instead of 'the colour, which is white'. Preciseness is being to the point. For explaining self learning if we discuss at length the concept of 'self' we shall not be precise as our aim is to tell you about the 'material' developed for 'self learning' rather than 'self'.
- Writing style should be positive. Therefore, instead of saying 'learners will fail if they do not study regularly', we may say 'to complete the course learners need to study regularly'; instead of saying 'one who violates copy right laws is being unethical' we need to say 'it is ethical to respect copyright laws'.
- The language used for writing the text should be simple and avoid complex sentences, difficult words, idioms and phrases that learners may not understand. Familiar words and short sentences are better understood than long complex sentences. For example many learners are likely to understand large, and huge instead of humungous; enemy instead of foe, harmful instead of detrimental; without instead of sans. However, while learning the content, learners also learn the use of the language that expresses it. Hence if the courseware is for higher level of education, the content as well as language should be rich.
- We need to take care that the language is grammatically correct. We may engage a language editor for this.
- Use of active voice instead of passive voice is helpful. However, we are not suggesting that passive voice should not be used. At times passive voice is required and it may communicate effectively.



### Activity

1. Compare the following two sentences. Which one is easier to understand?
  - a. The SLM that Raghu received following his admission was read and reflected upon by him, the questions were answered, and the other tasks were also accomplished by him prior to the commencement of assignment writing.
  - b. Raghu received the SLM after his admission. He read and reflected on it. He also answered the questions and carried out other tasks. After that he wrote the assignments.

Thus we need to develop content which learners understand. 'Readability' of SLM is more when learners understand what they read. For this we must read the content we have developed several times to refine the language, simplify the content, add examples and make sure that there are linkages among sections. We also need to ask ourselves 'Have we explained the concept well before moving on to another concept?' The content you prepare will **require reading and refining many times** before it is meaningful to learners. You need to break complex sentences into simpler ones, replace difficult words with more familiar ones and check the clarity of what you have written, remove superfluous (unnecessary) words/sentences, and add linkages between sections.

It is more difficult to produce text than speech, and the difficulty of producing it slows the author down but tends to make the messages more thoughtful than speech (Scardamalia & Bereiter, 1994, cited in Collins, Neville, & Bielaczyc, 2000). Therefore, it is more difficult to teach through print medium than teaching orally but once we learn to do it, the message we communicate can have more depth and impact than spoken words. Producing SLM therefore requires practice, patience, and time.

### Read this

The school offers subjects Mathematics, Science, Social sciences, English and Hindi/Punjabi/Sanskrit at IX and X. The Co-scholastic area (Visual Arts as is known) covers Performing Arts and Creative Arts. The time table, –is divided into nine periods each of 35 minutes. Six periods are allotted to the compulsory subjects comprising the scholastic area. First period on Monday and Friday are for PPA. The teacher in-charge shares 'Value Based Quotation' such as 'food has to be secured, don't waste it' and explains the same by providing the relevant explanation.

The paragraph leaves us wondering about the context of the information, i.e. which school, where it is situated, why its activities are being discussed, and so on. Just like a frame/outline for a painting the information we provide needs a perspective. Contextualised information is meaningful. The narrative would have been contextualised if the paragraph began like this-

'While exploring the curriculum of the schools affiliated to CBSE, the scholastic and co-scholastic areas taught at the secondary level of a school at Ropar in Punjab were examined'.

We guess that 'IX and X' refer to IX and X standards. We try to understand "Visual Arts as is known" and move on without understanding what the author intends to communicate.

Abruptly a new aspect (Timetable) is introduced without *linking* it to the ongoing discussion about the subjects taught. Punctuations are also confusing. Further, there is logical inconsistency as a timetable is not divided but it divides the working day into periods of 35 minutes.

The author has therefore perhaps not thought about **'what'** s/he intends to communicate and **'how'** s/he should communicate it. The writer also *presumes* that readers are aware of the acronym PPA. Further, the writer has used 'quotation' instead of quote and this affects the meaning seriously. The linkage between subjects taught, timetable and teachers' activity is missing. Does a paragraph like this raise more questions than answers and explanations?

**Be careful about copy right:** You need to be careful that the SLM does not violate copy right. You must be sure to cite appropriately the content you take from various sources, including illustrations and open educational resources. In text citations as well as reference section that list the sources are essential.

**Carry out formative evaluation:** The SLM has to be evaluated after it has been developed, ideally by a sample comprising learners, and experts in the concerned area. Peer review and editing by an expert who functions as the content editor are also helpful for improving the SLM.

We have discussed several characteristics of SLM and the writing style adopted for developing SLM must consider these. You may also go through other resources like the following:

<https://www.slideshare.net/AshishKumar70/development-of-self-learning-material-14586249>

**Activity 4**  
Discuss the similarities and differences between a text book and SLM in terms of the characteristics of SLM you have studied.

**1. Access devices**

SLM includes access devices. Access devices help to make the content accessible (easy to grasp) for learners. The cover page of SLM blocks, title of the course, block and the unit that announce the theme and provide learners with an awareness of what they would learn are examples of access devices. Hence choosing the right title that communicates these succinctly is important. The list of content in every block, and the unit structure enhance learners' awareness about the content they will read. The objectives of the course and units clarify it further. Glossary of terms with which the learner may not be familiar may be included or these words can be explained within parenthesis after they are used. Recapitulation involves summarizing and restating the main points taught. The summary at the end of a unit helps recapitulation of learning, and is also an access device.

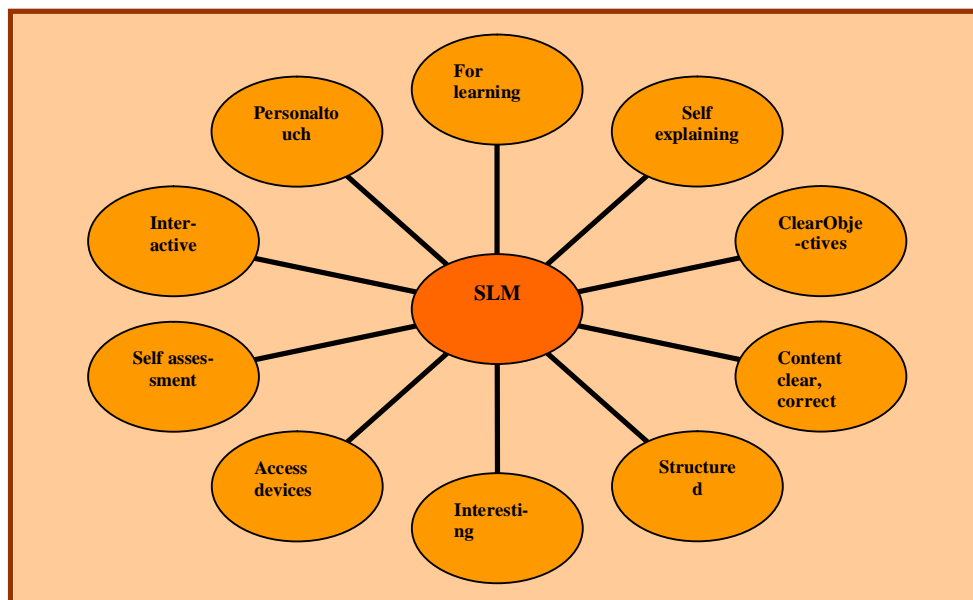


Figure 2: Characteristics of SLM

### Check your progress 1

#### Answer the following questions

1. How can we adopt cognitivist approach while developing SLM?
2. How can we adopt constructivist approach while developing SLM?
3. What are the usual barriers to communication?
4. What is readiness for learning? How is it taken into consideration while developing SLM?

### Box 3

#### How does IGNOU develop SLM in print medium?

Staff Training and Research Institute of Distance Education (STRIDE) of IGNOU organizes a training programme for developing the competencies required for preparing SLM. During the various sessions of the programme the trainees are taught how to write SLM for the print medium.

The content of the units written is edited by experts in the concerned field. The language of the content is also edited by the language editor. After format editing and proof reading, the SLM is ready for printing. The cover design of the block is designed with the help of a professional artist. The blocks are then printed and delivered to learners.

## 3.4 PARTS OF SLM UNIT

You have read the characteristics of SLM and the writing style you need to adopt for developing SLM. Now we shall discuss the main parts of a **unit** of the SLM for print medium. IGNOU's units usually have three distinct parts.

### 3.4.1 First Part

Check the units of this course. How do the units begin? A unit begins with a serial number and title. Every unit of a course has a unique **serial number** and a **title**. These aspects help to identify the unit and the title tells learners what the unit is about. The title is followed by the **structure** of the unit. It gives an outline of the

concepts included, their organization and relationship as well as their placement in the unit (See unit 2). This emerges from the content analysis carried out for the unit. You will find that even sections and subsections are numbered. Why? This is because it helps learners to navigate across the unit and indicates the organization of the subsections and sections of a unit.

The structure is followed by an **introduction** to the unit. How will you introduce the content to learners? Will you use questions? Read the introduction of the units of this course. Does it help you to recall your past learning? The introduction performs several functions. It links new learning to past learning. This makes the learner feel confident and motivated; it also provides a thematic overview of the content covered in the unit. The introduction thus includes elements that motivate, arouse curiosity, declare what the unit will teach, and link new learning with earlier learning. Thus it prepares learners for learning.

Next we write **objectives**. Objectives are short term goals, intent or aim of teaching. You have read (Unit 2) that objectives spell out the intended learning outcomes in terms of behavioural changes. Unit 2 also explains how objectives are written.

### 3.4.2 Middle Part

This part includes logically sequenced sections and subsections of texts for teaching the content. The content includes pedagogic elements like questions, dialogues with learners, exercises, devices for checking progress, illustrations, cases, supplementary information, and the like that clarify the explanation. This part thus explains the concept.

### 3.4.3 End Part

This part usually includes the following:

**Summary** of the content taught. It highlights the key learning points and helps learners to recapitulate the content they have learnt. After reading it, learners may go back to the sections they feel that they have not learnt well. Thus it can trigger revision.

**Unit End Exercises:** This includes questions &/activities that require application of learning.

**Hints/clues to check your progress** questions are provided as feedback.

**Possible/model answers or clues to check progress** - These provide feedback necessary for self evaluation.

**Glossary** of terms in case terms that need explanation have not been explained while using these.

**References and list of suggested reading.** References are needed for the information that has been taken from various sources. For citing the source we need to follow an internationally accepted style like APA, MLA, Harvard, Chicago Manual, etc. In a unit it is better to follow one particular style. For suggested reading you can provide a list of books/websites/journals that supplement the otherwise self contained unit. APA is a commonly used style and for understanding it you may read the content available at sites such as -<https://libguides.uta.edu/apa/ref>; <https://opentextbc.ca/researchmethods/chapter/american-psychological-association-apa-style/>

To know more about development of SLM visit <http://oasis.col.org/handle/11599/64>

### Activity

- Study how to write references using APA style.
- Use the APA style for developing a reference section when the source of information is a) book written by single, two and more author(s); b) website c) journal d) newspaper

For developing a unit, you may use other approaches. For instance, you can use the ‘scenario based learning’ approach. This approach describes a situation in which a person faces a problem. The nature of the problem is such that knowledge/understanding of a concept/process can address it. For example:

A teacher has to develop courseware but she does not know how to design instructions; an apprentice does not know the probable reasons for smoke coming out of the bonnet of a car; a trainee counselor does not know how to establish rapport with counselees.

The courseware begins by stating the problem faced by a learner/trainee and advises learners to read/watch/listen to the resources listed; and carry out activities and assignments listed for the course. Thus this approach introduces the reader to a real life situation, makes them confront a real problem and makes learning ‘situated’ and realistic. The learners thus use the resources listed in response to a problem confronted.

In this unit too at the beginning we have portrayed the problem (not knowing how to develop SLM) faced by Ranjit and others. We have also listed resources in suggested reading but we have taught the process instead of letting you read the resources and figuring out how to write SLM.

## 3.5 WRITING STYLE FOR THE WEB

Institutions may use their websites for providing access to the soft copy of self learning material and even scanned copies of printed content. Text based instructions in such cases are developed for delivery through the print medium but it is made accessible through the web. This allows learners to access content online and also allows them to take print outs. However, text based instructions are sometimes developed exclusively for web based delivery.

The Commonwealth of Learning (2005) says that there are three basic ways to provide instruction via the web:

- Present course material in web pages,
- Send course material as downloadable files, like those available at IGNOU’s e-gyankosh.
- Teach through discussion using online conferencing.

The third option may also use some amount of text to trigger discussions. Online courses may include downloadable files with content. However information is at times meant to be read from the webpage. Writing for the web is not the same as for print. We need to remember that to draw users’ attention and retain it, and to communicate your message effectively we need to adopt certain techniques (A guide to web content for Heriot-Watt University websites, n.d.). Nevertheless, the concept of learning, instructional design, and the characteristics of SLM are pertinent for development of text for print as well as web based. Hence, while reading the guidelines for writing for the web (A guide to web content for Heriot-Watt University websites,

n.d.) you will find that you are familiar with most of these and that you have already read these for the print medium. We shall discuss some of these, which are the following:

- Being succinct and precise are important. This is important for print but it is even more important for online content because reading on computer screen is a relatively slower process and is more difficult than reading printed content. Hence, it is better to avoid large amount of content while writing for web.
- Hyperlinks can provide access to additional information. While reading content on Wikipedia you must have come across hyperlinks. For example - for the 'teacher -student ratio suggested by the Right to Elementary Education (RTE) Act of India'. A hyperlink at 'RTE' can lead the reader to the concept of teacher -student ratio and another one to information about RTE.
- The content needs to begin with the focal point of the text. Those browsing the content are likely to read the first few sentences of the first paragraph. The opening sentence should therefore declare what the content is about. For example the first sentence may be- writing for web requires special skills. This draws the learners' attention and makes them feel the need for reading the content. The first paragraph should therefore state the key point and it can even state the conclusion. Hence, instead of a narrative ending with the conclusion you may begin the narrative by stating the conclusion. For example- 'Preventing a cyber crime is easier than retrieving the money stolen'; 'formative evaluation during courseware development is key to quality assurance'. 'Not telling a reader what the content is about means losing him/her'.
- Paragraphs need to be short and to the point. Reading using devices like tablets and phones with smaller screens is difficult. Therefore we should not compose lengthy paragraphs. We need to remember that print supports lengthy discussions, narratives and counter narratives but web is not ideal for this. However you may provide links to documents with detailed information.
- You can use the home page to show the unit structure, objectives and navigation tools leading to other webpages.
- Webpages must be linked but you need to structure the content. Unit 2 as well this unit explains this. We should develop and organise content on the web pages in such a way that every page in itself is meaningful and complete. Pages should also have separate headings, and within the page the content needs to be structured with headings and subheadings.
- Instructions should be direct. Therefore, you may say 'to enhance clarity construct short and simple sentences' instead of 'short and simple sentences should be constructed for enhancing clarity'.
- You should use first and second person, and use I, we, you.
- Use positive sentences (see earlier section)
- Use of active voice is preferable (see earlier section)

**Activity**

Which writing style do you prefer?

- a. "It is advisable for learners to submit assignments on time so that the last date is not missed".
- b. "Be sure to submit your assignments on time."

- The webpages need to present content neatly, without cluttering, use soothing colours, select colour of text and background that facilitate reading.
- Use the potential of web for non linear structuring of content. Unlike books, audio and video, which we start using usually from the beginning, and proceed in a linear way (in a line), web content can be read in a non linear way. We may begin reading about elementary education, reach the content about RTE, through the hyperlink used, and come back to the main content on elementary education. Creating such non linear sequencing is however challenging. It has to be created in a way that every web page is linked but is meaningful and complete. Such flexible navigation within content is usually not allowed by other media. Therefore, while writing for web you need to take into consideration that sequence of content can be nonlinear.

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### 3.6 WORD PROCESSING AND EDITING

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Most of you can perhaps carry out word processing. A word processor is software or a device, which is useful for creating and editing a document that may include text and messages in other forms like pictures. It allows you to give inputs (like text, pictures), edit it, and format it. It is easy to use these tools, and exploring **all** the features of the tool gives us an idea about its usefulness. We shall mention a few of these features. The third unit of the course ‘Computer in Education, describes this topic in detail. Hence in this unit we shall not discuss this at length but mention some of the features.

For writing an SLM unit you need to create a new document and save it using an appropriate file format. While creating the text there are many things that the tool you use for word processing will usually allow you to do. You may insert header, footers, text box, hyperlinks, and page number. You can also insert graphics like symbols, shapes, pictures as well as tables, graphs and charts. You can also copy, cut and paste text from one part of the document to another or even from another document /suitable source that you can access. You can search for a word/group of words within the document and replace it with other(s).

You can adjust the layout of the document by setting the margins. You can format the text by adjusting the alignment of headings, subheadings and the text under a heading; making headings bold, underlining, italicizing, changing the font, font size, adjusting the space between lines and paragraphs, using bullets and numbering, changing the case of words (capital, small) and so on. The facilities for deleting, shifting, inserting, spelling and grammar check along with tools for formatting help to edit the text.

You will find that there are many other things that word processing tool can help you do. Some free word processing tools are WPS Office Free, Google Docs, Dropbox paper, SoftMaker Free Office, and so on; and some free text editing tools are Notepad++, Visual Studio Code, Atom and so on. You may also read the resource-<https://www.oercommons.org/courses/integrating-word-processing-into-learning> to know more about word-processing and editing.

#### Using graphics in the content

Shruti wants to teach the theories of learning using the print medium. She selects the print medium as she has to explain the theories in detail. She intends to use graphics for explaining the text but she has very little idea about this and lacks the skills required for it. She explores the tools in her computer and examines the options for creating/importing graphics. She visualises the graphic and selects shapes and arrows

to link the boxes. She adds text within the boxes and formats these to get coloured design of her choice. Thus she creates a concept map of the content in the following way (Figure 3)



**Figure 3: Example of creation of graphics**

She explores the use of clip art to portray situations that indicate learning is a social process, and the use of Word Art to create its caption.

### Learning in a social setting

**Source:** Clipart collection, Microsoft

She explores tools that help in creating flow charts and uses these. Further she imports pictures from her own collection in the Pictures Library in her computer. She also explores repositories offering free to use images like Pixabay and selects images that will clarify the text. She finds that free to use animated images are also available and she can use these for depicting processes. She thus learns that there are a variety of tools for creating graphics as well as repositories with graphics having open license.

#### Box 4

Raster images like photographs are made of pixels, a pixel appearing as a single point in a display device, while Vector images are used for drawing lines and shapes. Unlike raster images, vector images can be scaled up without losing quality, i.e. you can enlarge these for getting a better view. Some of the commonly used raster graphic formats are gif (Graphics Interchange Format); jpeg (Joint Photographic Experts Group); png. Some formats for Vector images are - .svg; .eps

#### Check Your Progress 2

**Answer the following questions briefly.**

1. What are the characteristics of frames?
2. How can you make SLM interactive?

### 3.7 SUMMARY

This unit says that the factors determining learning need to be considered while developing SLM. It also says that SLM has specific characteristics that distinguish it from other printed materials. These characteristics are based on the factors that determine learning. Therefore content delivered as courseware through the print medium must have these characteristics. The web is also a medium for imparting instructions, and its text based instructions also must have these characteristics. The fundamentals of developing text for print and web based learning are same but web medium has certain specific requirements, like the need to avoid content load, stating the focal point at the very beginning, and the like. This unit also states that adults being self-motivated and mature can exert better control over their learning. Hence, SLM needs to take care of requirements of adult learner's needs and experiences.



The unit also highlights the need for clarity and cohesiveness in the SLM. Use of short simple sentences enhances clarity, and proper linkages among sentences and sections lead to cohesiveness. On the basis of the factors determining learning and needs of learners, especially adult learners, the characteristics of SLM have been spelt out. We have also discussed how to write a unit for SLM and the elements that should be included in the beginning, middle and end part of a unit. Finally we have briefly mentioned some of the word processing skills.

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### 3.8 UNIT END ACTIVITIES

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1. Select any topic. Develop a concept map for teaching it.
2. Discuss with a few adult learners the kind of learning experience they require for the topic you have chosen and reflect on how this can be provided through SLM.
3. Develop SLM for the topic chosen.

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### 3.9 REFERENCES AND SUGGESTED READING

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### 3.10 ANSWERS TO CHECK YOUR PROGRESS

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#### Answers to Check Your Progress 1

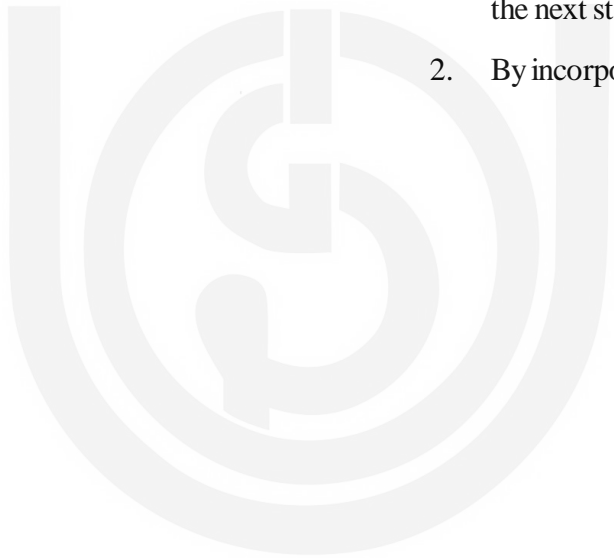
1. By linking new learning to past learning, developing content that has clarity, making learners think.

To know more you may visit <http://oasis.col.org/handle/11599/2559>

2. By suggesting activities like those requiring discussions, debates that learners may carry out in groups.
3. Readiness is one of the factors that determine learning and it is determined by maturity and previous knowledge of learners. Since SLM is designed for facilitating learning, its content and language need to consider learners' readiness.
4. Lack of clarity is caused by complex and long sentences, providing information without context, lack of linkage between ideas and sentences; not being precise and concise; unnecessary use of passive voice. Clarity is enhanced by adding proper linkages between sections, subsections, ideas and sentences. By using short and simple sentences, simple words, use of active voice; by explaining concepts and ideas with the help of relevant examples and illustrations.

### **Answers to Check Your Progress 2**

1. SLM development being based on the concept of programmed learning, it uses frames. Frames are small chunks of information that help to learn. The information in frame is for teaching a concept. Frames thus make learning a stepwise process and each step is strengthened before the learner moves on to the next step.
2. By incorporating dialogues, activities, questions, their answers, etc.



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# UNIT 4    DEVELOPMENT OF COURSEWARE FOR THE AUDIO MEDIUM

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## Structure

- 4.1 Introduction
- 4.2 Objectives
- 4.3 Power and Limitations of Audio Medium
- 4.4 Planning an Audio Programme
  - 4.4.1 Knowing your Audience
  - 4.4.2 Content Selection
- 4.5 Designing Message
  - 4.5.1 How to Design Message?
  - 4.5.2 Structuring Content for Audio Programmes
- 4.6 Formats of Audio Programmes
- 4.7 Concept, Idea and Treatment
- 4.8 Script Writing
- 4.9 Production of Audio Programme
  - 4.9.1 Audio Recording
  - 4.9.2 Editing
  - 4.9.3 Pre-testing/Pre-listening
- 4.10 Delivery of Audio Programmes
  - 4.10.1 Broadcast: Internet Radio, Community Radio & Podcast
  - 4.10.2 Utilisation: Broadcast and Non-broadcast Modes
- 4.11 Evaluation
- 4.12 Summary
- 4.13 Unit End Exercises
- 4.14 References and Suggested Reading
- 4.15 Answers to Check Your Progress

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## 4.1 INTRODUCTION

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Some of us need an ‘audio’ to wake up in the morning. What is it? It is the alarm. Throughout the day we receive several such audio stimuli in the form of conversations, radio programmes and so on, and many of these help us to learn. Since the last several decades audio has been used as a powerful medium to help people learn. This implies that courseware (used synonymously with programmes in this unit) can be delivered through the audio medium. Units 1 and 2 of this course explain the basics of courseware development, while Unit 3 focuses on courseware development for the print medium. This unit will enable you to develop courseware for the audio medium.

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## 4.2 OBJECTIVES

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After reading this unit, you will be able to;

- Describe the power and limitations of audio medium;
- Design message for an audio programme;
- Develop a script for an audio programme;
- Discuss the production techniques used for developing an audio programme; and
- Describe various modes of delivery of audio programmes.

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## 4.3 POWER AND LIMITATIONS OF AUDIO MEDIUM

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Before developing courseware we need to understand the nature of the medium that will be used for delivering it. Although we have discussed this in unit 2, nevertheless, now we shall discuss it exclusively in the context of audio medium. What are the strengths of audio medium? Radio, and audio programmes (courseware) delivered through CD/DVD have three main advantages over many other electronic means of delivering instructions (Thomas, 2001). These programmes are relatively more:

- accessible to both teachers and students;
- affordable in terms of the costs of production, distribution and use;
- appropriate for a wide range of teaching and learning purposes.

The terms radio and audio are used interchangeably but every radio programme is an audio programme, while an audio programme is not necessarily a radio programme. Only when audio is broadcast on radio, it is a radio programme. A radio programme reaches large audience spread over a large geographical area and this is its major advantage over an audio programme that reaches only those who can access the CD, DVD in which it is recorded.

Although, audio medium cannot show images, still it has several benefits. For example its cost of production and distribution is considerably lower than that of video programmes. Audio technology is also simple and easier to record and share than videos. Audio is also useful when it is used to complement/supplement print medium or is integrated with it.

Even though radio is mass medium it can personalise communication through encouragement and support for learning. We can reduce the drop-out rate through timely encouragement and support provided through radio programmes (Thomas, 2001). Moreover audio programmes can provide tutorial support for explaining concepts and experts' views on an issue. Audio also provides a cost-effective alternative to text (Deakin, 2014) especially when learners (like those visually impaired; without the ability to read) cannot use printed texts. Teaching through radio is also appropriate for teaching language or music when sounds are central to the process of teaching and learning (Thomas, 2001). Therefore, radio has been used in the field of education nationally and internationally since the past several decades. In 1971, the British Open University, in partnership with the BBC, used weekly radio programmes in support of its first four Foundation Courses (Thomas, 2001). Interactive Radio Counselling (IRC) has also been used by Indira Gandhi National Open University (IGNOU) since the last two decades. However, radio as a means for delivering instructions has limitations, which as per Thomas (2001) are:

- Radio programmes are broadcast at fixed time, when learners may not be able to listen.
- Since radio is a transitory medium, its programmes can be heard only once. The pace of a radio programme is also predetermined. As a result, students cannot pause by stopping the programme and think about what they have just heard.
- Radio is essentially a one-way medium. It talks to the student but it usually does not give the opportunity to interact.
- Radio uses audio, a sound-only medium, which lacks the visual dimension necessary for learning.

However, the first two limitations are addressed by the use of audio CD/DVD, while interactive phone-in programmes can address the third one.

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#### **4.4 PLANNING AN AUDIO PROGRAMME**

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Now that you are aware of the pedagogic potential of audio medium, let us study how audio courseware is developed. You have read that audio programmes need to be planned. Before planning audio production, you should ask yourself three essential questions (Thomas, 2001) (i) what needs to be planned? (ii) who should be involved in the planning and design? and (iii) how can the process be best organised and managed? While the first question helps to visualise the step-by-step planning, the second question leads to deliberations about the professionals who could be engaged in planning and designing an audio programme. The third question makes us think about the implementation of the plan.

The planning and design of audio courseware is usually executed at three levels. According to Thomas (2001) these are- Institutional Planning, which refers to planning the allocation of resources for audio programmes and usually involves planning for staffing and budgets; Series Planning involves planning a series of programmes for radio/ audio CD/DVD; Programme planning involves detailed planning and design of one/series of radio/audio programmes. Since the first level of planning is carried out by institutions rather than individual teachers, in this unit we shall focus on programme planning.

Some basic questions, which need to be answered for planning audio courseware, are (Lal, 2008):

- Communication for whom?
- With what instructional objectives?
- By whom?
- With what advance preparation and within what organizational and administrative framework?
- What is available, in terms of time and money?

The first point pertains to the target group's learning needs, previous learning experience, age, access to broadcast and non broadcast modes of instructional delivery; the second one pertains to the content and objective of courseware. The other issues are institutional, and especially the fourth point pertains to policies and organizational structure of the institution producing the audio. Therefore while planning audio programmes, you need to consider target profile (see next section) as well as institutional policies and resources.

### 4.4.1 Knowing your Audience

You read that for planning audio programmes we need to develop target profile. Your listeners are your target audience/audience/target group. For planning an audio programme and effectively communicating the message it is essential to know those for whom you are making the programme. You have read this in Unit 2 but we shall discuss it in this unit in the context of audio. According to Thomas (2001) at least three types of information is useful for knowing our audience. These are (i) demographic data-information regarding the audiences' age, gender, education levels, occupation, environment (e.g. rural/urban), etc.(ii) Knowledge, skills and attitudes-information regarding the audience's previous knowledge as well as their expectations from the course, their expertise, and their attitudes towards the subject matter; and (iii) Access, facilities and study skills-information regarding the audience's access to equipments for accessing audio, like mobile phone, radio; electricity; quality reception of audio signals; earlier experience of learning from audio, broadcast timing, which is suitable for learners.

Obtaining the information is a challenge. To gather accurate and authentic information, you have to carry out 'Audience Research' through surveys, involving administration of questionnaires as well as interviews (see unit 2). Since surveying the needs of all listeners is time consuming and expensive, you can obtain the information in an efficient and economical way by meeting focus groups. A focus group broadly represents the target audience and serves as a sample of the target population. The information it provides helps to create the audience profile.

### 4.4.2 Content Selection

The next step in planning is selection of appropriate content for designing the intended message. You need to consider the pedagogic strengths and weaknesses of audio medium while deciding the type of content you will select. For instance, audio is useful for teaching language, pronunciation, music, themes in history that can be taught by dramatization, and so on. Quiz programmes and storytelling can help to teach certain concepts (Das, 2008). Hence, if the nature of content is such that it does not require visuals, you can teach it using audio medium. Apart from the nature of content, the instructional objectives (see unit2) you have set for a programme will also determine the content you select for a programme.

#### Activity

Listen to any five educational radio programmes and critique the appropriateness of the content selected vis a vis the strengths of audio medium.

#### Check Your Progress 1

Answer the following questions, each within 100 words:

1. Why should you carry out audience research?
2. Mention three advantages of using audio for education.

## 4.5 DESIGNING MESSAGE

Courseware delivers educational message (instructions) and you need to design the message you intend to communicate. Unit 1 describes how courseware is designed. For audio programmes too, message designing is essential. Message designing is a creative process of integrating words, images, motion, sounds into a message that can easily and clearly convey an idea to target audience (Tan, 2010). Further,

successful, well-designed messages are found to be simple, memorable, easily understood, culturally appropriate and meaningful to the audience (Compass, n.d.).

### What is Message?

What is 'Message'? The term 'message' is considered as 'information (content) conveyed from a sender to a receiver (Pettersson, 2012). For example, this unit has message pertaining to development of courseware for audio medium. Similarly, an advertisement, you watch on the television, the news you hear on radio, the content of a newspaper article have 'messages'. The message is communicated by the sender with the intent that the recipient understands it. An educational message may inform, explain, encourage thinking, teach language, cooking, singing, develop positive attitude, for example, for washing hands, immunising children. Thus the message is for learning, and pertains to a particular domain(s) of learning (see Units 1 & 2). It provides a solution that helps the audience fulfil its learning needs.

### 4.5.2 How to Design Message?

Effective messages are clear, accurate, meet audience's needs, and appeal to the audience (Compass, n.d.), and this requires you to know exactly (i) for whom are you making the audio and what are their expectations from the programme, (ii) what kind of difficulties (learning needs) your audience/learners are facing, (iii) what performance/change are you expecting from your audience after listening to the audio? The answers will help you to draft the message.

Message designing involves creation of quality messages that effectively and efficiently influence the thoughts, feelings, and behaviors of the target audience (t, Rivers, Latimer & Salovey, 2008). These authors suggest two methods for designing messages. Although their suggestion is in the context of messages for health, nevertheless, these methods are useful for designing message for audio programmes in general. These two methods are - Message Targeting and message tailoring. Message targeting customises message to the 'shared' characteristics of the target audience. For example weak foundation in math may be a shared characteristic of learners of a math remedy class. Message is hence designed in view of this. Need Survey helps us to determine the shared characteristics of the target group. Message tailoring in contrast fits messages to individual characteristics of the learners, such as an individual's inability to understand Algebra. However, personalization of messages for individual requires greater investment. Hence, usually we carry out message targeting.

While designing message we need to focus on 3Cs (Compass, n.d.):

(i) **Command Attention:** This requires attracting and holding the audience's attention (see unit 1 for techniques for making learners' interested in the content). (ii) **Clarify the Message:** to ensure that the message is clear and can be easily understood. This requires that the message is simple and direct. Avoiding difficult words, and complex sentences helps. (iii) **Call to Action:** Making the audience act in the desirable way. This means that you must tell your audience precisely what they should do after listening to the audio programme. These are the general guidelines for message designing.

Message can be designed in different ways and instructional design is one of these (Pettersson, 2012). You have studied instruction designing (Unit 1) and know that instructional objectives help us to select the message (content). According to Pettersson there are six functional principles of designing message- (i) Defining the problems (ii) Providing structure (iii) Providing clarity (iv) Providing simplicity (v) Providing emphasis and (vi) Providing unity. The message should hence define the

problem, and it should be structured (organised into sections -see unit2), stated with clarity and simplicity and have focal points that addresses your learners' problem(s) (learning gaps). The message should also have linkages among its constituent parts so as to achieve unity in the content. Read the following examples to understand this.

### **Audio programme for teachers**

Audience: Teachers of elementary level

Desired learning outcome: After listening to the audio learners (audience) will list the measures for stopping school children from experimenting with drugs.

Message: Even elementary level children can start taking drugs and, teachers need to adopt various measures to stop children from experimenting with drugs. The measures should attempt to develop the courage and conviction in children to say 'no' to drugs.

Key message: making kids stopping from experimenting with drugs.

We thus 'define' a problem ( young children experimenting with drugs). The message is clear and it will be structured into an introduction that 'commands learners' attention' by saying that even elementary level children are not too young for experimenting with drugs. Thus it contextualises the problem to school situation and teachers' role and thereby clarifies the message. By spelling out teachers' role, it 'calls them to action'. The structuring of the message thus projects 2 focal points –age of experimentation and teachers' role. The various parts of the message structure are about teachers' role and there is thus unity.

### **Audio programme for the second target group**

Audience: General Public

Audience Characteristics: Lacking information about the extent of spread of drug addiction and its consequences.

Desired learning outcome: Awareness about the spread of drug addiction and its consequences

Message: facts and figures highlighting the spread of drug addiction; consequences for society and families; key message - drug addiction is more prevalent than presumed and it has serious social consequences. The message thus identifies a problem, structures it and indicates the focal points.

### **Evaluating the message**

As a means of formative evaluation (see Unit 2), you must share the message including the key message with experts/colleagues and even a sample of the target audience and use their feedback for improving it.

### **Style**

The style of presentation depends on many factors. The target group is an important consideration. You may have listened to radio programmes for children. You may have also listened to radio programmes broadcast for teaching college students. You will find that the style of presentation varies. While for children you will not use serious lectures you may use these for college students. However it is not necessary that a lecture should not include humour. You may use interesting anecdotes and narrate these in a way that makes the discussion interesting.



### 4.5.3 Structuring Content for Audio Programmes

The content of a programme needs to be structured in such a way that it has a logical organisation (see Unit 2). Content organization involves sequencing the content (see Unit 2). Further, the structure is planned by giving due considerations to all the parts of the programme.

The structure should be such that you include at the very beginning of the programme an element to attract the audience. See the examples of messages pertaining to drugs. Both set alarm bells ringing and surprise audience with harsh truths. An interesting beginning is followed by content that tells the audience how the understanding gained from the programme is going to benefit them. After that solution for learners' problem (learning needs) and there after an ending which summarises the content and helps learners to recapitulate, could be included.

Suppose the general idea is to develop a media courseware for senior citizens, you may organize (structure) the message in the following way (Das, 2008).

- Introduce elderly guests who could talk about the joys and the problems of ageing.
- Deliberations on social, legal, transportation, and health services available for the elderly.
- Summing up

#### Check Your Progress: 2

Answer the following questions in about 100 words each.

1. How will you define message?
2. What are the principles of message designing?

#### Activity

Listen to any 10 radio programmes. Classify them under the following heads:

Suitable /not suitable for audio medium;

Suitable for target audience (Children/Young/Old/ General);

Content covered is appropriate/not appropriate.

### 4.6 FORMATS OF AUDIO PROGRAMMES

Which type of radio programmes, do you like the most? Some of you might be fond of drama, while some enjoy discussions. Discussions, drama, lecture, documentary, quiz, magazine, and the like are different formats of radio programmes. A format is a particular class / genre of programme. These formats can be used singly or in combination. Hybrid formats involve combination of any of these formats like Docu-Drama (Documentary + Drama) (Lal, 2008). For educational programmes, documentary, drama, talk, interview, story, discussion, recitation of poems are the most appropriate formats. These formats involve voice and music for emphasising the mood (Lal, 2008). Which format will you choose? Choice of format depends on several factors like audience's age, educational background, nature of content and the like. For example dramatization may work for children while 'talk' may interest adult learners.

The formats of audio programmes are the following:

- (i) **Talk:** This format is the oldest format on radio (NIOS, n.d.). It has been a tradition in countries like India and Britain to invite experts to speak on a specific topic (NOS, n.d.). But in teaching-learning scenario, you need to seriously think about this format with regard to its effectiveness. This is because talk may help to clarify concepts but it can be monotonous. Further for young children lengthy talk may not be interesting.
- (ii) **Interview:** It is a very popular format in mass media, be it newspaper, magazine, radio or television. The interviewer asks questions to interviewee(s), who may be resource persons/experts and thus elicits content for the audience. Suppose a teacher has won an award for innovations and you want to make an audio programme for communicating the innovative teaching methods, then 'Interview' format would be ideal for producing an audio programme.
- (iii) **Discussion:** This format facilitates the audience to get different perspectives pertaining to social, economic or academic issues. The moderator of the programme plays a crucial role and introduces the topic, conducts the discussion in such a way that participants get enough time to reflect and offer their views.
- (iv) **Features:** This format offers scope to integrate most of the formats, within one programme like interview, talk, drama and so on. The audio programme with this format contains real sounds, real people for example in markets, public rallies and brings their opinion and experiences.
- (v) **Drama:** It is more challenging to produce drama on audio/radio as against drama on stage or television. While a stage play has actors, stage, sets, curtains, properties movement and live action, a radio play has only 3 components-human voice, music and sound effects (NIOS, n.d.). In a Drama, voice of each actor is a character and it needs to be used effectively in order to create a visual image of the character as well as of a particular situation, so that the audience grasps these.
- (vi) **Magazine:** magazines are usually published on weekly, bi-weekly, fortnightly or monthly basis. In an audio magazine, you would find the editorial in the beginning followed by articles, reviews, interviews, discussions, talks and so on. However, magazine programmes are generally broadcast for a special or specific audience (NOS, n.d.). It is not a very common format as developing and delivering every week/fortnight/month requires sustained investment.

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## 4.7 CONCEPT, IDEA AND TREATMENT

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For producing an effective audio programme its Concept, Idea and Treatment are important. Developing a '**Concept Proposal**' is an initial step while planning the production. It involves a written proposal for the audio production. While developing the concept proposal also known as programme brief you should include short description of the subject matter, audience, objectives of the programme and other pertinent aspects. See the following example (Box 1 ) of concept proposal that reflect the plan for developing an audio programme. The proposal was developed for an audio programme developed by the Electronic Media Production Centre (EMPC), IGNOU.

### Box 1

**Title of the Programme:** Integration of Technology in the Teaching –Learning Process

**Target Audience-** Mainly the students who have enrolled in the programmes- PGDET and those who have opted for the area of specialization- Educational Technology (ET) of MA (Education). The target audience would be at least graduates.

**Medium:** English

**Instructional Objectives:** After listening to the audio programme, learners should be able to:

Explain the process through which technology can be integrated in teaching-learning processes.

**Summary of content (message):** Technology facilitate teaching and learning. Technologies are often used only by teachers for supporting teaching. However, when teachers and learners both use technology for facilitating learning, there is technology integration. This is achieved through well defined processes that integrate technology into instructional processes.

**Rationale of the Programme:** To supplement the information provided in the printed courseware **Format:** Interview

**Duration:** 15 minutes (Signature Tune and Announcement -1 minute; Introduction of the Theme -2 minutes; about 3 -4 questions and answers -10 minutes ; Summing Up-2 minutes)

**Audio-** Talk; and music at the beginning and end of the programme

**Resource Persons:** 2 Subject Experts (Interviews and Interviewee)

Production time line including schedule of recording, editing and other post production processes: 5<sup>th</sup> -19<sup>th</sup> June 2017.

### Idea

What is an Idea? Idea communicates the concept. For example for producing an audio on 'Waste Management' for the general public, you would like to communicate your "Idea" in such a way that the concept of 'Waste Management' is easily conveyed. For example you can

use the idea of 3R mantra-"Reduce, Reuse and Recycle" to communicate the concept. To develop an idea you need to read literature pertaining to the content. After forming an idea you need to reflect on its suitability for your audience? You may find alternative ideas for conveying the concept of 'Waste Management'. The proposal in Box 1 is for communicating the idea of technology integration in teaching-learning processes. The idea is to explain that technology integration means not only teachers but learners too use technology for learning.

### Treatment

Treatment contains the expanded descriptions and outlines each segment of the audio, and suggests different types of audio (narration, sound effects, music) to be used and how visual elements will be communicated through audio. For example for communicating a segment about someone waiting anxiously for a family member on a rainy night, sound effects of a clock ticking, the pendulum striking twice, rainfall,

crickets chirping, voice saying with anxiety that he has not yet come back and music that creates the mood of anxiety will make the audience understand that it is night, it is raining and make them feel the anxiety suffered by the character. On the other hand narratives about benefits of playing, sound of children shouting and laughing and suitable music can be included to make the audience visualise the situation. The content of the audio is thus expanded to show what the audience will hear, feel and think. Unlike a video, treatment for an audio programme will not include the details pertaining to visuals but communicates it verbally and through other sounds.

### **Sound effects to be used in the audio programme**

In an audio programme, apart from human voice, recorded sounds are used. These are music, sounds of nature like rainfall, birds singing, wind, breeze blowing, rustling of leaves, waves of sea, lightning; sound of vehicles, noise on the street, and so on. Sounds are inserted at appropriate points in the audio. Sound effects also known as action sounds, symbolize the atmosphere or a locale such as that of a battle field, rain, thunder, gunfire, fair, market, running train, etc. to heighten the effects of the content (Das, 2008). For instance ‘morning’ can be created by sounds of chirping of birds, crowing of roosters, etc. Sound effects of strong winds, and thunder can indicate a season or weather conditions. Background sound thus supports the programme, and enriches the experience.

Music is used for communicating different emotions like happiness, sadness, excitement, humour and so on. Similarly carefully used silence provides meaningful support to the programme. Silence when used continuously for a few moments can convey feelings like sorrow, death, tension. Sudden silence or sudden noise indicates tension in the situation. Thus sound effects are designed to serve the purpose of establishing locale, time, change of time and place, mood and so on. You can use those available in a studio or download open source sound effects.

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## **4.8 SCRIPT WRITING**

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After you have planned the audio programme and expressed your plan as a proposal, the idea of the message and its treatment, you need to write the script. The content to be communicated through an audio programme is turned into a script. However, for formats like interviews and panel discussions, the content is not scripted in advance but generated by the speakers on the spot. Nevertheless for these formats deciding an outline of what would be covered will help you in including the key points and in keeping the discussion focused. For example, for an interview on development of speaking skills, the expert (teacher) may be asked to describe the barriers to the development of speaking skills, the methods of developing speaking skill, and success stories from her/his classroom/school. However, these outlines do not comprise a script.

A script is required for formats like drama, talk, and so on. You may have listened to such audio programmes that were based on scripts. What are the features of the script? Writing for an audio script is writing for ‘hearing’ and it is referred to as ‘spoken word’ as against the ‘written word’. The spoken words are written down in the form of a script (NIOS, n.d.). You should remind yourself that *‘I am going to write for the ear, not for the eye’*. As our primary concern is that an educational audio courseware should have clarity, therefore, the content should be such that hearing clarifies it. For example, a video script does not have to mention that a character is wearing red coloured dress but an audio script needs to clarify it if the colour of the dress is significant for the programme.

The script should also be able to engage the audience and sustain their interest throughout the programme. You also need to be careful about the length of the script, especially because long duration programmes are not likely to sustain learners' interest. The script should therefore be able to clarify the concept and its key points comprehensively but without taking too much time. Hence it is better to revise the draft script and eliminate superfluous elements and repetitions.

The script is the key to any successful production and you need to consider the following elements of script writing for an effective script:

- **Hooking the Audience:** You should hook your audience (commanding attention- see the previous section on designing messages) at the beginning. It is very important how you begin the programme. It is a crucial moment as your audience will decide to listen to the radio/audio programme or turn their attention to some other activity. Hooking can be done by surprising the audience/ by creating curiosity/ by using humour and other such means suggested in Unit 1. You also need to tell the target audience what the programme is about. Therefore, in addition to drawing learners' attention, the introduction should also highlight the programme's objectives so that the audience is aware of the utility of the programme.
- **Writing as per audience profile:** When you write for the local audience/ target group known to you, you can use the language and even dialect of the locality and contextualise the script to their needs but these things are difficult while writing for a wide audience (Das, 2008). However, one major factor is age and, hence, writing style for children, adolescents and older people will be different.
- **Clarity:** It is important to have clarity in the script. You must write short simple sentence and avoid difficult words. A programme lacking clarity will not sustain learners' interest. The writer should therefore be a subject expert having thorough knowledge of the concept. Moreover when you write for the ear learners will have to understand the message after hearing it once, unlike text which they may read a few times for understanding.
- **Use active voice:** See Unit 3
- **Avoid assumptions that learners will understand:** Text often includes content within parenthesis (brackets) for linking the content to some other content, expanding abbreviations and so on but audio does not allow this. The script should clarify what the learner is expected to understand.
- **Creating pause:** Since, audio allows only transmission of information and disallows interaction, you need to make learners pause to think by asking questions like 'Do you agree with me?', 'Have you heard something like this before?', 'Listen to this speech, try to recognize the speaker'. Then you may answer 'You may not agree but it is true', 'You might have heard earlier but you might not have analysed why it is happening so frequently!', 'Could you recognise the voice? Ok! Let me you tell you... this is the voice of Netaji Subhash Chandra Bose!'
- **Reinforcement of Learning Points:** You need to reinforce the learning points by clarifying the concept (s) repeatedly so that it registers in the mind of your audience.
- **Linking all the Concepts/Learning Points:** From beginning to end, you need to link all the concepts so that these are not presented in a disjointed manner.

- **Include few concepts:** The content should not include more than a few concepts as attention span of learners, especially children is not very long. Therefore include few objectives.
- **Recapitulation/Summing-up:** The end part of the script is significant. The programme should not end abruptly. It should be smooth. It should also summarise the content and highlight the central idea or the main theme and reinforce it before the programme concludes. You can end on an inspiring note so that your audience/learner would be motivated to learn more after listening to the audio.
- **The subject matter should be thoroughly researched:** This is necessary so that it is accurate, up to date and relevant.
- **Avoid mentioning specific time and date:** The programme should not be written with specific time or date, as it is likely to be broadcast/ played repeatedly. For instance ‘good morning’ or ‘happy new year’ and the like should be avoided as the programme may be broadcast at a different timing.
- **The writing should not be the reproduction of the content from a text book/other sources:** It may be based upon the text to promote learning but it has to be adopted and rewritten for audio format.
- **Soothing music and appropriate sound effects:** These elements enhance the quality of audio programme.
- **Language:** Use language, which is easily understood and used by people in their daily life. It should not sound too formal. While writing for the audio programme, we should also address the audience directly on a one to one basis, like you know, have you heard?
- **Take care of copy right:** Content used for audio should not violate copy right laws.

Writing an audio script is thus an art that requires mastery over the content, sound knowledge of the target audience, and also requires good story telling skills (Lal, 2008). A good story captures (hooks) the listener, keeps the audience interested and presents a problem and its solution with which the listener can identify. It can also include humour. Further transition from one part to the other part should be smooth. Hence new characters and themes are not introduced abruptly. A script needs all these features. Writing such a story (script) requires skills and hence training and practice.

### Testing the script

You should show your draft script to your peers/colleagues/friends and especially to your producer to find out whether the script communicates the message clearly. You may also show it to a sample of learners. The feedback can improve the script.

Read two sample audio scripts.

**Format:** Drama

**Target Group:** Primary School Children

**Duration:** 5 minutes

**Title:** Don't Waste Water

**Characters-4** (Mother, Father and 2 Children: Rohit & Ravi)

**A Female Voice (Mother) (calling out):** ‘Rohit, Ravi, wake up, you will

be late for school. The school bus will be here soon. Get up, hurry up, brush your teeth, after taking bath get ready, fast. (**Sound Effects:** Alarm clock buzzing, birds chirping).

**Child 1** (Ravi) saying lazily: 'okay ma, getting up '

**Child 2 (Rohit):** I got up, much before Ravi'.

**Child 1:** No, I got up first

**Mother:** Stop arguing. Hurry up, both of you.

(**Sound Effect:** Water falling from a tap; water splashing; children laughing and shouting)

**Father (in an angry tone):** What are you doing? Close the tap if the bucket is full.

(**Sound Effect:** Water falling from a tap, water splashing; children laughing and shouting)

**Father and Mother (in quick sequence):** What are you doing? You seem to be playing with water.

(**Sound Effect:** Water splashing)

**Rohit:** Look I am filling up the bucket and Ravi is throwing out water.

**Ravi:** No, not I, Its Rohit who is filling the basin with water.

(**Sound Effect:** Water falling from a tap; water splashing; children laughing and shouting)

**Mother:** We shall not have any water left in the tank today. Stop, both of you. Close the tap.

(**Sound Effect:** Water falling from a tap; water splashing; children laughing and shouting)

**Father:** Open the door, let me in, oh the soaps are in the buckets. The water is all soapy. Why are all the taps in the basins open? See how much water is flowing out? Close the taps, will you? Well there is no need; the water in the tank is almost finished.

(**Sound Effect:** Knock on the door; Water trickling)

(**Music:** indicating father's tension)

**Ravi:** Papa, my eyes hurt. There is soap all over my face, give me some water, quickly, quickly, please.

(**Sound Effect:** a child crying)

**Rohit:** Even one mug of water will do, please get me some, my eyes also hurt.

(**Sound Effect:** child crying)

**Father:** The water in all the buckets is soapy. The water tank has no more water now. There is no water left for washing your face. Go to school today with soap all over your face. You will come back to a dirty house and stay hungry and thirsty. There is no water for cooking, cleaning, and even drinking.

(**Music:** somber)

**Mother:** Water is not sunshine or air that you use as much as you want to. If you waste it you won't have any left.

(**Music:** somber)

## SAMPLE AUDIO SCRIPT

### Title: World Habitat Day

**(Dramatised Sequence: Two young colleagues are discussing in their office)**

**Ragini:** What happened Sangeeta? After reaching office, you have washed your face three times. Are you ok?

**Sangeeta:** Ya! I am fine but Ragini today I was trapped in a horrible situation!

**Ragini:** What happened?

**Sangeeta:** I saw today the real face of my City... What an Ugly Face of my Metro! The main road was littered with waste. The rain brought down the waste piled by the road side to the road and the dustbins have overflowed. What a filthy smell!

**Ragini:** Ya! I have seen this happening several times. When we will be get rid of this?

### (Change over Music)

**Narration (Male Voice):** Before going for work in the morning in a metropolis, there are many concerns. Do you know that one concern is whether the person who goes door to door, collecting waste will come on time? What, if the person does not come for one day? What, if this happens for 3 days? Not knowing how to dispose of waste is an individual's concern as well as a global concern. This is due to increased consumption, increasing production of waste and ineffective waste management strategies.

**Narration (Female Voice):** Waste Management is critical for sustainable urban development. The United Nations has designated the first Monday of October of every year as World Habitat Day. The purpose of World Habitat Day is to reflect on the state of our towns and cities. It also reminds us that we all have the power and the responsibility to shape the future of our cities and towns. The theme for World Habitat Day on 1 October 2018 is "Municipal Solid Waste Management".

**Narration (Male Voice):** Cities often spend a large proportion of their budget on Municipal Solid Waste Management. Solid Waste Management is a global issue that affects everyone. The amount of waste produced by individuals is growing daily. As a result, it often costs local authorities a large proportion of their budget to manage waste. Poor solid waste collection and disposal can lead to serious health problems from uncontrolled dump sites and waste burning. It also leads to polluted air and water.

**Narration (Female Voice):** Developing countries often have inadequate waste management systems due to lack of financing, poor awareness, poor governance systems and sometimes inappropriate applications of technological solutions. Poor collection and disposal of municipal solid waste causes local flooding and water pollution and accumulated waste provides a breeding ground for rodents and insects which spread disease. Marine litter and erosion of coastal dumpsites contribute to marine pollution.

**Narration (Male Voice):** Municipalities often spend a great part of their budget on waste management. Aside from high investment costs for equipment,



a sizeable number of staff is also required. The quality of a city's waste management system is often used as a guide to the overall effectiveness of municipal management. **Narration (Male Voice)**

It is well recognised that municipal waste management needs and approaches varies. UN-Habitat thus promotes an "Integrated Solid Waste Management Framework" which envisages: good waste collection services; environmental protection through proper treatment, disposal and resource management; cost-effective, affordable, and inclusive solutions which also recognize the role of informal and micro-enterprise sectors in achieving high rates of recycling. A change in public attitudes is also essential. This would minimize waste. Sufficient funding and solid waste planning including adequate landfill sites, can also help cities to improve the current state of solid waste management and save money. Citizens also need to be encouraged to adhere to 3R strategies: Reduce, Recycle & Reuse. Cities would certainly then become 'Waste-Wise Cities'.

### Check Your Progress: 3

Answer the following questions in about 100 words each:

1. What are the various formats of audio programmes?
2. Develop the Concept Note for an audio programme on 'Donate your Eyes'. What would be your main idea to convey the concept?
3. Discuss the features of audio script.

### Activity

Critique the structure and format of a radio programme.

## 4.9 PRODUCTION OF AUDIO PROGRAMMES

After planning the audio programme is produced. The process of the production of an audio programme usually involves three stages. These are- pre-production, production and post-production stages. We have already discussed the stage of Pre-production which includes 'Knowing your Audience', 'Selecting and structuring the Content', 'Designing the Message' and 'Writing the Script'. During the production stage, the audio is recorded in the audio studio and also at outdoor locations. Recording is followed by the Post-Production stage. Editing, Mixing and adding Sound Effects are carried out at this stage.

### 4.9.1 Audio Recording

There are four basic stages in Audio Recording (Oblivion, 2015). In the first stage the recording engineer decides the type of microphone (Uni-directional or Omni-directional, Condenser or Dynamic) to be used and checks the positioning of microphones placed for the participants and musical instruments. The second stage involves editing. At this stage, the recording is edited, and it includes tuning/balancing the voice, clearing up any noise (background sound, fumbles and other unwanted sounds). The third stage involves the mixing of the tracks when various sound effects and background music are mixed. In the fourth and final stage there is mastering, which is the most important aspect of the project (Oblivion, 2015). Mastering involves preparing and transferring the audio recording from a source that has the final mix to a data storage device (the master), which is the source from which all copies will be produced for distribution. To know more and practice, visit

<https://opensource.com/article/18/2/open-source-audio-visual-production-tools>

<https://opentextbc.ca/teachinginadigitalage/chapter/9-5-2-audio/>

### 4.9.2 Editing vs. Capsuling

You know that newspapers have editors. The content you are reading has also been edited by an editor. What about audio editing? Audio editing is like editing a written document but instead of manipulating words by deleting, replacing, copying, and pasting, we manipulate sound (Agarwal, 2014). This involves manipulation of audio to alter length, speed, and volume (Media music now, 2019).

Techniques of pre-digital age editing like taping on analogue tape and splicing by razor blades are now obsolete. Now audio editing involves the use of audio editing software. Selection of audio editor software depends on factors like purpose of using the editor, your skill level, and budget position. Some audio editors are - Adobe Audition CC (macOS, Windows), Audacity (macOS, Windows, Linux), okenaudio (macOS, Windows, Linux), Acoustica Standard Edition (macOS, Windows), and so on. Audio editing is, however, different from ‘capsuling’. Capsuling is a process of joining more than one programme (which are already edited as units of programme) for broadcast purpose without much use of editing techniques.

### 4.9.3 Pre-testing/Pre-listening

Before broadcasting the audio/putting on public domain, pre-testing/pre-listening is essential. Teachers can carry out academic preview to ensure that the content and pedagogy are appropriate. You also need to check that there is no gender bias, violation of broadcast code, copy right issues, etc.

#### Check Your Progress: 4

Answer the following questions in about 100 words each:

1. What is audio editing?
2. Why pre-testing/pre-listening is important?

#### Activity

Record the opinion of your friends/family members on ‘the Importance of Yoga’. Record an introduction and a summary for the content. Add these recordings to the first one by using editing software.

## 4.10 DELIVERY OF AUDIO

After print, audio is the most flexible and user-friendly medium which allows you to teach (Rowntre, 1999) but how can you deliver audio programmes to your audience? Which mode of delivery would you like to adopt? The mode of delivery of audio programmes can be broadly divided into two categories: Broadcast and Non-broadcast. Broadcast mode of delivery uses Internet Radio, Community Radio and podcasts, non-broadcast mode of delivery includes uses CD, DVD, etc.

### 4.10.1 Broadcast: Internet Radio, Community Radio and Podcast

Besides traditional medium like Radio/FM Radio, new media like Internet Radio, Community Radio & Podcast are being used for reaching the target audience. Let us discuss these:

- (i) **Internet Radio:** Internet radio includes audio services that are transmitted via the Internet (Techopedia, n.d.). We use the word ‘webcasting’ for internet radio as it is not actually broadcast through radio signals. It is a form of streaming media and the content is usually delivered live. Mostly, a traditional radio station simply streams its content over the internet in simulcast with traditional radio signals. The internet radio can be heard anywhere in the world if there is access to Internet.
- (ii) **Community Radio:** To deliver audio programmes to audiences with varied needs Community Radio is an important medium. Community radio is usually a short-range, not-for-profit radio station or channel that caters to the information needs of people living in a particular locality, in the languages and formats that are most adapted to the local context (Endvawnow, 2012). Community radio is usually run by volunteers with low-cost technology and is believed to be an excellent way to communicate with local communities.
- (iii) **Podcast:** A podcast is a digital audio file made available on the Internet for downloading to a computer or mobile device, typically available as a series, new installments of which can be received by subscribers automatically (Winn, 2019). The term Podcast is actually a combination of iPod and Broadcast. Although, podcasting started on an individual level to build a community of people with similar interests by posting message to them but today there are also podcasts from companies (large and small), radio networks, TV networks and so on.

#### 4.10.2 Utilisation: Broadcast and Non-broadcast

As far as Broadcast is concerned, Delhi Gyan Vani, FM Radio available online ([www.ignouonline.ac.in/gyandhara](http://www.ignouonline.ac.in/gyandhara)) is used for educational broadcast from 8am to 8pm. The Interactive Radio Counselling (IRC) Sessions are being organised regularly for IGNOU’s students by various Schools and Divisions of IGNOU. Similarly, eGyanKosh, a National Digital Repository is created to store, index, preserve, distribute and share the digital learning resources developed by the Open and Distance Learning Institutions in the country (<http://egyankosh.ac.in/>). Audios are available in this repository for educational purposes and this is a non broadcast mode of delivering the program. IGNOU’s study centres also have audio CDs developed by IGNOU.

#### Check Your Progress 5

Answer the following questions in about 100 words each:

1. What do you mean by delivery of an audio programme?
2. What do you mean by Internet Radio? Give some examples.

#### Activity

Listen to Community Radio Programmes for a week. Discuss the programmes that deal with local issues.

### 4.11 EVALUATION

You have read about evaluation of courseware in Unit 2. You have also read about the tools for evaluation and about formative and summative evaluation. Hence, we shall not discuss these in detail in this unit. Right from the script to the final courseware, formative evaluation is necessary. After the production of the programme it should be previewed and content experts, media experts and representatives of the target

group should be involved in the preview. Feedback can be obtained for the following (Lal, 2008):

- How far have the objectives been achieved?
- Is the content appropriate?
- Is the language appropriate?
- Is the pacing of the programme appropriate?
- Is the background music appropriate?
- Is the programme self-contained?

Summative evaluation reveals the impact of the programme and the need for altering the inputs. We have discussed this in Unit 2.

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## 4.12 SUMMARY

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In this unit, we first discussed how audio programmes are planned in keeping with the audience profile and learning needs. We also discussed the power and limitations of the audio medium and their implications for selection of content. Next, we explained how message is designed. We have also discussed how radio programme is structured, and the types of formats of audio programmes. Further, we have described the concept note, idea and treatment that involves expansion of the concept proposal. After that we have discussed how to carry out script writing.

We have discussed the production of audio programmes and have discussed the stages of recording, the process of audio editing, and the purpose of pre-testing. After that we have discussed the various modes of courseware delivery and evaluation of courseware.

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## 4.13 UNIT END ACTIVITIES

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1. Select a topic for audio courseware and develop its programme brief.
2. Write a script for an audio programme for generating awareness about traffic rules.
3. Mention the sound effects that you would include for a busy street; a play school
4. For developing an audio courseware on stress management for board examinees, select an appropriate format and develop a script. The duration of the programme should be of ten minutes and it should address adolescent learners.

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## 4.14 ANSWERS TO CHECK YOUR PROGRESS

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### Check Your Progress: 1

1. Hint: Audience is the key element and planning of an audio programme largely depends on the need of the audience. Audience research would help us to gather reliable and relevant information about the audience.
2. Hint :
  - (i) It is easily accessible-to both teachers and students
  - (ii) It is affordable-in terms of the cost of production, distribution and use
  - (iii) It is appropriate-for a wide range of teaching and learning purposes

### Check Your Progress: 2

1. Hint: The term 'message' is considered as information i.e. content conveyed from a sender to a receiver.
2. Hint: Six Functional Principles: of message designing are-
  - (i) Defining the problems,
  - (ii) Providing structure
  - (iii) Providing clarity
  - (iv) Providing simplicity
  - (v) Providing emphasis and
  - (vi) Providing unity

### Check Your Progress: 3

1. Hint: Talk, Interview, Discussion, Features, Drama, Documentary & Magazine
2. Hint: Main idea: Convince public with logical arguments about the need to donate eyes.
3. Hint: Hooking the Audience, bringing clarity, creating pause, reinforcement of learning points, linking all the concepts/learning points & recapitulation/summing-up

### Check Your Progress: 4

1. Hint: Editing is manipulating sounds
2. Hint: It is to confirm that our programmes are having no factual mistakes and the pedagogy and other aspects are appropriate.

### Check Your Progress: 5

1. Hint: reaching audience.
2. Hint: Radio through the internet

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# UNIT 5    DEVELOPMENT OF COURSEWARE FOR THE VIDEO MEDIUM

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- 5.1 Introduction
- 5.2 Learning Outcomes
- 5.3 Planning a Video Programme
  - 5.3.1 Need Survey
  - 5.3.2 Pedagogic Potential of the Video Medium
  - 5.3.3 Content selection
  - 5.3.4 Formulating Objectives
  - 5.3.5 Message Designing
    - 5.3.5.1 Formats, Pace and Style
  - 5.3.6 Structuring and Treatment
  - 5.3.7 Development of Concept Note
  - 5.3.8 Script Writing and Story Board preparation
- 5.4 Production of Video Programmes
  - 5.4.1 Shooting and Editing
- 5.5 Post Production Stage
  - 5.5.1 Pre-testing and Academic Preview
- 5.6 Delivery of Video
  - 5.6.1 Broadcast, Webcast, Live Streaming and Vodcast
  - 5.6.2 Utilisation: Broadcast & Non-broadcast
- 5.7 Evaluation
- 5.8 Summary
- 5.9 Unit End Exercises
- 5.11 References and Suggested Reading
- 5.12 Answers to Check Your Progress

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## 5.1 INTRODUCTION

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There is a saying ‘speech is silver and silence is gold’. We know that this proverb upholds discretion over verbosity. Not just verbosity but use of words can be eliminated when we use visuals for communication. Visuals have the power to communicate, often with greater strength than words. There is also a saying that ‘a picture is worth a thousand words’. This implies that visuals can be a powerful means of communication that does not necessarily require audio/text to describe it.

Making Video has become easy (Clarine 2016). However developing videos is not just recording an event using a camera but involves many more aspects. This unit is about the process of video programme production. It describes the pre-production stage when the video programme is planned; the stage of production; and the post production stage when the video programme is evaluated and delivered. You will find that some aspects of video development are similar to that used for developing audio, which you have studied in the previous unit but video being a different medium, content for it is developed in a different way. Many among you are not media

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professionals but may have the need to develop video programmes for teaching as all institutions may not have expert media courseware producers. You may need the help of experts for script writing, recording and editing the programme but a basic understanding of these aspects will enable you to work with experts as well as practice on your own. Hence these aspects have been described in this unit.

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## 5.2 OBJECTIVES

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This unit will help you to:

- Carry out the steps involved in planning a video programme;
- Discuss the steps involved in producing a video programme;
- Describe various modes of delivery of video programmes; and
- Evaluate a video programme

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## 5.3 PLANNING A VIDEO PROGRAMME

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Suppose you are responsible for a video production! How would you feel? Connie Malamed, an eLearning practitioner says that initially producing a video can be a bit unnerving but one needs to get on with it (Malamed, 2010). Malamed says

*“Did you ever end up on a project that required video and somehow you became the default expert? That’s what happened to me early in my career. At first, it was a bit unnerving. But like any hard-core eLearning practitioner, I just pretended I knew what I was doing and got on with things.”* (Malamed, 2010, page 1). This shows that production of video programmes is not easy. Video production is not just using a camera for recording. You need to plan a video programme. Before planning a need survey is carried out to understand the audience.

### 5.3.1 Need survey

Audience should be treated like a king. Why? The success of a video programme depends on the understanding of the target audience (English, 2015). In the absence of a strong understanding of who your audiences are, what they like and how they think, it would be difficult to create a video those appeals to them, and engages them (English, 2015). You have read (units 2 & 4) that the need of the audience is usually ‘surveyed’. Audience survey (need survey) involves data collection about the target audience using a set of questions to generate the audience profile (see unit 2). While describing the audience’s profile, the audience’s (i) demographic information and (ii) needs and interests are considered. The most common demographic categories include (Wroblewski, 2019) age, gender, marital status, number of children, occupation, annual income, education level, and other such factors. However in comparison to a questionnaire an interview helps to gain ‘insight’ about the audience and their needs (English, 2015). Holding interviews, and paying attention to the questions the target audience asks help to learn more about the audience (English, 2015). Let us study this **example** to understand this:

A city is facing severe water shortage. Initial survey followed by interview of a sample reveals that the audience includes people -of all ages except young children; prefer to communicate in a particular language; live in the outskirts as well as in the heart of the city; most are educated till school level; most have access to television; many often purchase water; and are interested in learning about ways for addressing water scarcity. The findings indicate the need for a video showing techniques of water harvesting.



### 5.3.2 Pedagogic Potential of Video Medium

Need survey reveals the learning needs and thus helps us to determine what needs to be taught. However we need to judge the suitability of the video medium for teaching the theme identified. You have read (unit 2) that every medium has unique pedagogic attributes (characteristics that enhance the capacity for teaching). What about video? With proliferation of technology, the costs of creating and distributing video has reduced dramatically but the unique educational characteristics of video are largely unaffected (Bates, 2015). Unlike print and audio, video is a richer medium in terms of its ability to present simultaneously still and moving images, spoken words, text, graphics, visual effects, and sound effects including music. Hence, as discussed in unit 2, for things that are learnt better by watching, video is a suitable medium. For example if the need survey shows that the audience needs to learn Instructional Design (ID) a teacher may not develop video programmes for teaching each and every aspect of ID. She may develop a video only for explaining the flow charts depicting the models of ID as these can be taught better by ‘showing’.

Let us study some of the features of the video medium.

#### (i) Presentational Feature

According to Bates (2015) video can be used to :

- demonstrate experiments or phenomena, particularly
  - when equipment or phenomena to be observed are large or microscopic, expensive, inaccessible, dangerous, or difficult to observe without special equipment like microscope, telescope.
  - when resources are scarce, or unsuitable for student experimentation because of the hazards involved.
- illustrate abstract principles through the use of specially constructed physical models (for example principles of financial management, models for predicting rainfall, stock prices can be explained by showing relevant processes);
- demonstrate changes over time through the use of animation, slow-motion, or speeded-up video (for example change of season, blooming of flowers, cell division);
- substitute for a field visit, by providing students with an accurate, comprehensive visual picture of a site, provide simulated experience in order to contextualize the topic (for example deep sea tours, flying an aeroplane).
- demonstrate correct procedures of using tools or equipments (for example using a fire extinguisher, using word processing tools)
- demonstrate practical activities to be carried out by students, on their own (for example experiments carried out at school laboratories).

Video programmes can thus be meant for different domains of learning (see units 1, 2) as they help to understand (cognitive domain), practice skills (psychomotor domain) and also inspire, build empathy and other positive attitudes (affective domain).

## (ii) Stop, rewind and replay features

A video programme that is not being broadcast, and is available as a CD , DVD or online has ‘Stop, Rewind and Replay’ features. This is useful for skill development through repeatedly playing the video and watching how the process is carried out. This is also true for professional development. For example teachers can watch the recordings of their teaching for self evaluation (Cassada & Kassner, 2018). What about the utility of videos for other professions?

(iii) Capacity to establish the relationship between concrete examples and abstract principles

(Bates, 2015). For example, abstractions like old age, childhood, pain, joy, embarrassment, drought, are hard to explain using text or audio but can be concretized through the visuals included in videos.

Initially video medium used to supplement print based/ classroom instructions but over the years because of its immense pedagogic potential, educational videos are being used independently. Many institutions are engaged in the development of educational videos. You must have watched television programmes showing in interesting ways, wild life, natural events, modern technologies and many other things.

### 5.3.3 Content selection

The message a video communicates is based on the content selected for teaching the topic. How do we select the content for an educational video programme? Content is selected on the basis of the pedagogic potential of video medium, and the requirement of the target audience. These two aspects, help us to formulate instructional objectives, which is the third aspect that guides content selection. We have discussed the first two aspects in the earlier subsections. We shall discuss the third aspect in the next subsection but before that we shall focus on research for content.

In order to develop quality video programme you need to carry out research for identifying sources of content. You must visit libraries including online ones for journals, books and other sources of information. You may also watch videos available on the topic. Discussion with experts, colleagues and other stakeholders as well as with those working at the field level like teachers, nurses, doctors, farmers, labourers and so on can generate content that you may use for developing videos. If you are developing a documentary on a tribe, extensive research and reading are required for acquiring the content of the video programme. Suppose, you produce a video that includes an interview, do you still need to research? The interviewee will provide the content during the interview but research would help to understand the interviewee and the work s/he has done. For example if you are interviewing an author it is better to read about the author and at least some of the books s/he has written. If you interview a sports person, reading about him/her and watching the recordings of some his /her matches will help. We should also remember that the content should be authentic, up to date and free from copy right issues. For example before using music, images, quotes, passages from books we must be sure that these can be used. Or else permission from authors is required.

The acronym VIDEO is formed by the first letter of the following guidelines that can help you in selecting content for video-

- a. **Visually unique (Never seen before)** - This is difficult to achieve. Nevertheless it is important that you do not re-make a video that already exists. You may search for videos on the particular topic and watch those available to avoid videos with similar objectives leading to duplication of content.

- b. **Inspiring** - The video should motivate viewers to emulate/ act as per the message communicated by it. For example after watching a video on water conservation, viewers are expected to save water.
- c. **Doable** - in case the video teaches a skill like how to take blood sample for a blood test, or use a tool for plumbing, the content should enable learners to develop the skill. However, this aspect also refers to the feasibility of the process taught. For example while teaching young children; the content should be such that children are capable of doing. This underlines the need to select content as per readiness and learning needs of the audience.
- d. **Enriching** –The video needs to enable learners to understand new things/have new attitudes/learn new skills. What the audience knows therefore has to be enriched. For example a video showing the Taj Mahal may enrich the viewers’ understanding about an aspect about which they are not aware.
- e. **Out-of-Box** -Innovative ways of problem-solving are more likely to engage learners. The acronym VIDEO comprising the first letter of each guideline represents the guidelines we have discussed.

### 5.3.4 Formulating Objectives

Audience research enables you to articulate the audiences’ learning needs. You may however ask a series of questions before articulating the needs in the form of instructional objectives. These questions are: Essentially, after watching the video (English, 2015):

- o What do you expect your audience to do?
- o What do you expect your audience to think?
- o How do you desire them to feel?

These questions will help you to select content for different domains of learning, and formulate objectives accordingly. You should also remember that you should set only a few objectives for a video programme. Why? More the number of objectives, greater will be the content load, which is unsuitable for videos.

We have discussed in unit 2 ‘how to develop objectives’. Now read these examples of objectives:

#### Example 1

After watching the video you will be able to:

- Explain the effect of sound pollution; and
- Describe the ways to address the problem of sound pollution.

#### Example 2

After watching the video you will be able to :

- Compare the features of plants growing in deserts and in water bodies;
- Explain the adaptive features of aquatic and desert plants.

#### Activity

Select a topic that you may like to teach at elementary/secondary/tertiary level. Write the objectives for the video you will develop for teaching the topic. To clarify the basis for formulating the objectives, describe the audience profile for each topic.

### 5.3.5 Message Designing

After selecting the topic, deciding the instructional objectives, and selecting the content we need to design the message the video programme should deliver. The message comprises content, which can be designed for entertainment, education or both. You have read that (unit 1 and 2) the content to be taught is ‘designed’ (instructional designing) for attaining the instructional objectives. When the message is intended for imparting instructions for learning the process of designing is called instructional message design (Pettersson, 2015). Let us see how this is done.

#### Tailoring the Content

Designing message includes tailoring the message. What is tailoring? We know that clothes are ‘tailored’ as per our needs and choices. In the context of video programmes developed for teaching we need to consider the needs of a small group (learners) instead of mass audience for whom films, television programmes, awareness campaigns and the like are developed. Even though programmes for masses are also tailored but educational videos are tailored for a specific and relatively more homogenous group. For example unlike a film, a video for teaching quadratic equations is for a specific audience. Tailored (or targeted) video therefore involves customising the content as per viewers’ needs and choices. For example, content of video programmes for elementary and secondary level children need to be tailored differently. Suppose a video is developed for teaching the concepts of markets to children of rural area you can tailor the content to include the roadside markets of villages besides malls and supermarkets of cities.

#### Activity

Have you watched a video programme that included content that was tailored for its audience? How was it tailored?

#### Steps for designing Message

For a video programme we need to remember that the message needs to be designed for teaching by ‘showing/demonstrating’. For example while print/audio describe the steps of an experiment in a science lab, a video needs to show the steps. The visuals should have the strength to minimize the need for explanations through audio/text. However, audio may be essential and some amount of text could be helpful. The credit pages at the beginning/end of the video, the title and other details of the production house are also usually presented through text. Text should not be used to explain visuals.

According to Pettersson (2015) designing message involves several steps. We need to begin with novel/unexpected events to hook the audience; inform learners about expected outcomes; help them to recall previous learning experiences; include only relevant information; organize the content; proceed from simple to complex; give prompts and cues (support) for learning; bring variation (in presentation of content to regain learners’ attention); provide examples; provide scope for practice; provide feedback; review (summarise). Do these steps seem to be familiar? These are the steps of designing instructions that you have already read (unit 1). Pettersson also says that the message needs to be simple, clear (in terms of the structure and language), and have high quality and unity (communicate the same meaning at every point), (see unit 4). As per Pettersson aesthetics is also important, and hence aesthetics of set designs, colors, dress of presenters/characters of drama and other aspects seen in a video are important.

You should also remember that instead of multiple messages the video programme should include only a few messages. The more messages the video content contains, the greater the risk of your audience getting confused. You must therefore resist the temptation to load the video with content. Therefore, even though a film of a few hours may be enjoyable, an educational video should not be too long. Videos used for MOOCs (see unit 7) are often of only 5-7 or at the most of 10 minutes duration.

### 5.3.5.1 Format, Pace and Style

Format, pace and style are some of the dimensions of message designing. Khan (2008) says that these aspects are decided on the basis of factors like audience characteristics, content complexity, teaching objectives, and intended use of the programme, and so on. Let us examine these.

**Pace:** Complex content (difficult to understand) cannot be understood by the audience if the programme is a fast paced one but at the same time audience may get bored if the pace is too slow. Pace of educational videos is not meant to be fast but with slow paced videos learners may lose interest. However, due to the lack of proper pacing, for instance when visuals move very fast or the commentary is too fast, the audience may not grasp the message. Therefore, the pace may be moderate and can vary as per the need of the content and the nature of the audience. For example people not well versed with a language will miss the message if the programme has a fast pace; we find some old films unlike new ones to be slow. You may have watched fast paced advertisements of cars, cold drinks, and so on that target the youth.

**Style:** The style of the video is determined by several factors. For example a video may be studio based or only outdoor/indoor location based or mixed. The style also includes the choice of using an in-vision Presenter (single/double) or Out of Vision Presenter (we may call it “Voice Over”). In case of latter we do not see the presenter. However, the style of presentation can also pertain to the style of presentation that may be informal, humorous, serious or a combination of these. You may have seen that the video programmes developed for raising awareness against open defecation, campaigns for polio vaccination adopt a style, which is informal but carries a serious message. A comedy includes humour, while a talk by an expert may be a serious presentation. Message for children is delivered with a style that would not be used for adults. The style of an advertisement of a car is different from that persuading people to donate organs. Therefore on the basis of the audience profile and the objectives of the programme you should select the style of the programme. The primary purpose of an educational video programme is to teach, but we should strive for a relaxed and informal approach that involves humour, and has interesting graphics, music and sound effects (Khan, 2008).

**Format:** During message designing the format of a video is decided. We have discussed ‘formats’ in detail in unit 4. There are many types of formats. These could be documentary (about real issues as against fiction), demonstration, illustrated-lecture (lectures using illustrations for clarifying the concept like a lecture on tigers that includes images of tigers, their habitat, preying habit and so on), drama, magazine, talk, interview, panel discussion, quiz, reality show, hybrid formats (combining more than one type of format) and so on. The same content can be presented in different formats but depending on the nature of the content, and the audience, some formats are more suitable. For example- in comparison to a talk a documentary is more effective for showing the impact of a natural calamity; talk may not be enjoyed by children; India’s space missions can be explained through talks and documentaries while a situation of bullying involving teenagers in a school can be shown through a drama. However, Khan says that some formats like talks and discussions are simpler

in terms of investment of time and money as compared to others like documentaries that require time, money and shooting at outdoor locales. We need to remember that format and style of a video would change the orientation of writing the script. Hence, these aspects should be chosen with care during message designing.

### 5.3.6 Structuring and Treatment

You invite audience when you develop a video programme for them but you can engage them if the message is structured well and there is proper treatment of the message. How will you carry out these steps?

#### Structuring content (message)

You have read in unit 2 that instructional designing involves structuring the content to be taught and sequencing it. The steps for designing the message suggested by Petterson (2015) (see previous section) are important for structuring the content. The structure needs to begin with an element that hooks the audience. You may lose your audience if you don't plan what you want to say at the very beginning (Murgatroyd, 2019). Unit 1 & 2 describe the use of cases, questions and the like for hooking learners. Next learners are told what to expect from the programme. The content is sequenced logically keeping in view the objectives, and as mentioned earlier it may end with a preview, which is the end message. Thus the programme must be structured into an interesting and clear beginning, an end and the 'subject matter' in the middle (Khan, 2008). Let us study an example but for understanding it we need to understand the concept of shot and a scene of a video. A shot is an uninterrupted clip recorded by a single camera which often forms the building block of the video content, while a scene usually comprises a series of consecutive shots that are recorded in the same location (Meng & Zhang, 2009). A video thus has several shots, and the shots at a particular place and time comprise a scene. Close up shots show facial expressions while long shots show the background and the surrounding.

For a video on indoor and outdoor play you may take an extreme long shot of children playing in a hall, long shots of children playing with plastic blocks, playing carrom; medium shots of a few children playing with dolls, close up of a child looking happy while jumping around. These shots will capture the indoor scene. The scene changes with various shots of children playing in the park. The scene again changes when children are playing cricket in a street. You may also take shots of the presenter explaining the differences between indoor and outdoor play. While developing the programme we need to decide which shot will be shown first. You may begin with a presentation or with shots of children playing but it has to 'hook' the audience. The subsequent shots show various types of indoor and outdoor play and their benefits. The end summarises the benefits and underlines the importance of play.

Reflect on the following:

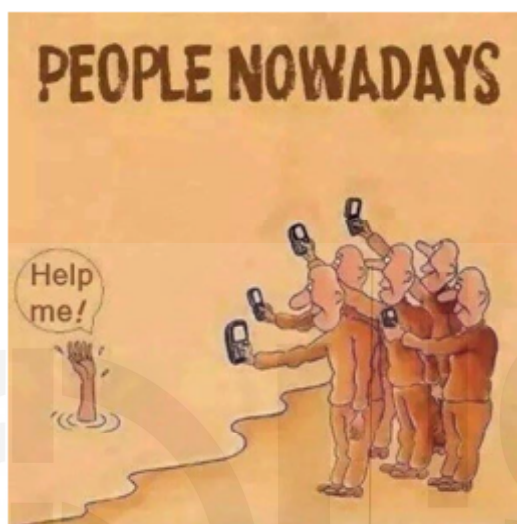
For a video based on this unit how will you hook your audience ?

Which film/ television serial did you enjoy watching? Did you like the beginning?  
Could you make out at the beginning about what you were going to watch?  
How did it end? Did you learn something from it? Do you think the structuring of the message contributed towards your learning?

#### Treatment

The main components of video being visuals, text, narratives and sound effects, their 'use' needs to be such that the message is conveyed effectively. Treatment is basically

an approach towards the development of a programme. As explained in the previous unit, the term 'treatment' contains the expanded description of the subject (the content), keeping in view the audience and the purpose or goal of the production. Treatment provides a brief outline of each scene, and probable locations for outdoor recording, and suggests different types of audio (narration, sound effects and music). We should remember that even though Video is not only a visual medium but an Audio-Visual Medium but we need to focus more on visual aspect of the video. Why? This is because the audience needs to interpret or make meaning out of the visuals/shots used in the video. However, we need to be careful about the choice of visuals as audience may interpret a visual differently. In such a case the instructional objective you have set will not be attained. See the following image:



How would this visual be interpreted? People now are selfish and trapped in mobile technology? Technology overpowers humanity? The visual is straight forward because of which its interpretations are more or less similar. On the other hand a visual of a child crying may be interpreted as the child being hungry/hurt/throwing tantrum. In case of educational videos visuals are used for communicating a particular message. Hence, the visuals as well as other elements like audio should be planned with care. The plan should be clarified through treatment, which is a brief but descriptive way to communicate the audio, visual and other pedagogical elements of a film/video to team members as well as to producer. For example a man falling down can make audience laugh if the audio and sound effects indicate fun and the close up shot of the man shows a funny expression. However the audience may be pained on seeing a man fall down if his expression, sound effects and music are intended for this. Unless these details for a scene are worked out in advance the message will not be effective. Hence, a visual of a child crying will be interpreted by the audience as crying because of pain if the visual preceding it gives an idea that the child may fall, from silence there is the audio of something falling down hard, and a child crying out. The treatment should therefore be written well. Writing a treatment is like making your road map for reaching your destination. Hence, you must decide the visual treatment of your video before venturing into the real shooting and production

#### Activity

How will you teach the benefits of regular exercise with the help of visuals like sketch, graphics, cartoon, dramatized sequence? What type of audio (sound effect and music will you select?)

A sample treatment is as follows:

**Concept:** Ups and Downs (**Source:** BBC Training Material, 1992, cited in

IGNOU(2008)

**Title:** Ups and Downs

**Audience:** Pre-school children, ages 3-5

**Subject:** “Ups and Down” is a conceptual video, which explores the terms – *up* and *down*. This five-minute work will present a fast – paced montage\* of images, which demonstrate either ascending or descending motion. In addition, visuals will depict the concepts of *up* and *down* in terms of physical location (i.e. objects in the sky or down on the ground). Editing for this video makes it rhythmic and accelerating in pace.

**Purpose:** “Ups and Downs” reinforces the audience’s understanding of the concepts of up and down. The video will make the audience aware that many objects in their environment can be defined in terms of up and / or down motion or position. Appropriate visual and audio effects that are appropriate, will reinforce these up and down movements. The visual of the video will be augmented by the use of nursery rhymes, which contain reference to up, and / or down.

**Location:** Various low land locations.

### Programme Structure

#### Visual Sequences

- \*\*Time lapse shot of sunrise
- Up and down movements and positions of children in playground.
- Up and down movements and positions of objects in a home.
- Up and down movements and positions of objects in a variety of urban settings.
- Combination of up and down movements and positions from playground, home and urban settings.
- Time lapse shot of sunset.

#### Audio Sequence

- Ambient sounds of children in playground.
- Mix of theme music and group of children reciting nursery rhymes, which contain references to up, and / or down.
- Theme music: Instrumental, Simple.

#### Video Elements

##### Visuals

Pacing for the video will begin with slower rhythmic motion to introduce the audience to the concept of the up and / or down motion or movement. The pacing will increase with the final montages of tighter, faster cuts of a mixture of all three areas, the playground, home and the urban setting.

**Sunrise:** The video programme will open with the time lapse shots of the sunrise.

**Playground:** Up and down movements and positions will be shown in an area familiar to most children, the playground.

- Children on a seesaw



- Sliding down a slide
- Bouncing balls up and down
- Children jumping up and down
- Children swinging on a swing

**Home:** Apart from the playground, children know their home environment. The video will therefore show items within the home, that children can relate to.

- Zipping up a zipper
- Pulling down a sweater
- Pulling window blinds down
- Lifting up a baby
- Toast popping up
- Lifting up a lid
- Walking up the stairs

**Urban setting:** The final area that will show up and down movement is the urban setting with:

- Flags going up a flag pole
- Planes taking off and landing
- Going up a ladder
- Elevators going up and down
- Helicopter lifting off.

**Sunset:** The video will close with a time lapse shot of the sunset with the sun going down.

### Sound Track

- **Theme music:** Instrumental, light, simple, upbeat. Original music appropriate to the audience and the subject matter. The tune will have a series of rising and descending chords.
- **Playground ambience:** The sound of children laughing and shouting.
- **Children singing:** A mix of cuts from Jack and Jill, Ring – around – the Roses, Hickory – Dickory Dock, London Bridge, Twinkle Twinkle Little Star. These will include such reinforcing lines as :

“Jack and Jill went *up* the hill,  
To fetch a pail of water,  
Jack fell *down* and broke his crown”

“Hickory, dickory dock  
The mouse ran *up* the clock,  
The clock struck one,

And *down* the mouse ran”  
“Ring around the roses,  
A pocket full of posies,  
Husha, husha,  
We all fall *down*”  
“London Bridge is falling *down*,  
Falling down, falling *down*,  
London Bridge is falling *down*,  
My fair lady”

We see that every scene is described in detail. Even though it includes technical terms like montage and time lapse photography, nevertheless, this gives you an idea about the extent of the detailing.

\* Montage-an editing technique that bring together multiple shots into a sequence to condense space, time, and information, like multiple shots of a product being produced in factory at different locations at different times being put together into a tight sequence.

\*\* time lapse technique of photography makes time appear to be faster like a plant growing up fast into a big tree, a child into an adult.

#### Activity

Suppose you have to produce a video on ‘Fire Safety’, write a visual treatment for making the audience aware of the safety measures to be taken at home.

### 5.3.7 Development of Concept Note

Before producing a video, you need to develop a Concept Proposal or Concept Note (see unit 4). It is also known as a Programme Brief. It is a blue print for the production process and ensures compliance with the plan developed for the programme. How will you develop it? Study the sample programme brief:

**Topic:** Multiple Roles of a Teacher

**Tentative Title:** Teacher does not just teach

**Target Audience:** In-service and Pre-service Trainee Teachers

**Duration:** 25 min

**Language:** English

**Objectives:** After watching this video, audience will be able to:

- understand different roles of a teacher in and out of the classroom, and
- carry out different roles, a teacher is expected to perform.

#### Content Outline

The video would help audience understand that in the present teaching-learning scenario, a teacher has to play various roles. Some of these roles are performed within the classroom and some outside the classroom. Further, now-a- days, a teacher is not a just a content provider but is a facilitator of learning; a counsellor who counsels learners for various problems; a manager who manages classroom and school, an organizer who organizes various co-scholastic and other activities; nurtures the school-society relationship. The video will portray all these roles played by a teacher.

**Format:** Illustrated discussion

**Style:** Informal, conversational

### Check Your Progress 1

#### Answer the following questions:

1. State the benefits of using video for teaching.
2. Which factors are considered for building the target profile?
3. What is a concept note?
4. What is meant by treatment?

### 5.3.8 Script Writing and Story Board preparation

A script is a structured way of writing to communicate the message designed for the video programme and is required by those involved in the video production. Script writing is an important and specialised task which should ideally be left to an expert (English, 2015). The craft of scriptwriting cannot be learnt overnight, and you need to learn how to show rather than tell (Malamed, 2010). How to write a script? You have read about script writing (unit 4). Even though some elements are common to audio and video scripts, writing for television/video is different. Video script requires the writer to essentially combine words and pictures (Khan 2008). Khan says that for this reason a script writer for a video programme must be as comfortable working with images as with words and this requires training to think in terms of visuals and sound rather than words alone. Second, the format and style of video are also important considerations for script writing. A script for a documentary would be different from that of a quiz. Third, a good script conveys the core message by using simple language which is easy to understand. In general we should keep sentences short, direct and to the point. A complex sentence structure is both difficult for the performer to deliver effectively and hard for the audience to comprehend. Fourth, a script should not include too many facts, and ideas. Fifth, we should try to establish a logical sequence of presentation. Khan suggests that we should adopt the language and style of the target audience, incorporating examples familiar to them. Hence the language and tone for nursery kids will be different from that of secondary level students. She also says that the secret of writing a successful video script lies in using informal language and a conversational style of writing. Sixth, the script should have a good beginning to hook the audience. Seventh, the texture of the script should involve proper pacing that includes thinking-time, and repetition of important points. Seventh, a good script also demands an impressive ending by recapitulating the points into a summary. Eighth, linking various concepts is essential to maintain a harmony throughout the video.

Some scripts (e.g. drama) are detailed enough to include even shot descriptions, dialogues, lighting and other elements, while some like that for discussions, interviews are merely outlines listing the talent involved, graphics, video inserts etc. (Khan, 2008). In either case the script serves as the blueprint for the video and as per Khan it provides detailed instructions to performers, technicians, camera persons, production crew and floor staff camera positions, about the kinds of shots to be taken, dialogues, commentary, sound effects, music, transition indicators, and so on. A complete script therefore contains the spoken word &/ dialogue, information about sound and music. By including the major visual elements which should accompany the audio it depicts important production information.

After the script is complete, we should prepare a storyboard which would help us visualise the way in which our video will be shot. A storyboard is a visual portrayal of lighting, colouring, framing, transitions and many other aspects of a film/video in a very clear term (English, 2015). It shows every shot of the video in detail, which

guides shooting and editing. In nut shell, a storyboard functions to inform the look and feel of the video (English, 2015).

For developing a story board we usually use the two-column type of format and describe the visuals (at times through sketches to depict situations like a teacher teaching, children playing in a playground) under the column ‘VIDEO’ and the narration, sound effects and music in the column ‘AUDIO’. The development of story board makes the scriptwriter think in a series of visual sequences and the accompanying audio (Khan, 2008). You shall read in detail the development of story board in the 6th unit. You may also visit <https://mooc.employid.eu/storyboarding-tutorial/> to know more about story board preparation.

An example of a story board

Visual	Audio
Text- Indira Gandhi National Open University presents	Music
Text -Teaching about measurement	Music
Many shots in quick succession showing children measuring their peers’ height, length of pencil, desk, milk in a cup, weight of a book	Music and sound effects
Presenter ( *mid close up)	How will you teach the concept of measurement? How did you learn this concept?
Presenter moving about among groups of children measuring different things	Often the best way to learn is by doing it. Children are actually doing, I mean measuring things. This group is measuring the volume of water using a measuring cylinder, while this group is trying to measure the length of their desk, using a scale....

\* As mentioned earlier, video shooting may involve extreme long shots, long shots, medium shot, medium close up, close up shot and so on. Close up shots are shot to capture the face.

### Script Testing and Revision

Khan (2008) says that we write a video script, mainly for the eyes and hence must transform verbal information into visual communication. The scriptwriter must be able to visualize the information to be provided and the script should instruct the viewers using visuals, rather than detailed narrations. Whether this has been achieved, and the video based on the script would fulfill the objectives needs to be assessed before the video is produced. The first step for this involves self-evaluation. Subsequently it has to be evaluated by experts, and if possible a sample of learners should also assess it.

### Recce

In case the script requires outdoor shooting you should go for Recce (reconnaissance) which means the process of visiting a locale for judging its suitability for shooting. It also involves the process of meeting people before shooting so that the appropriateness of the participants’ look, voice and background is assessed. The shooting begins after recce.

## 5.4 PRODUCTION OF VIDEO PROGRAMME

You have read about the 'pre-production' stage of video production. In this section we shall discuss the production processes.

### 5.4.1 Shooting and Editing

Production begins with shooting on the basis of the Story Board .

#### Shooting the video

How is a scene shot? Khan (2008) says that in an outdoor location or field usually single camera unit is used which shoots the action in a series of brief sections (takes) which are edited together into a coherent programme later in the post production process. However, as per Khan although studio shows can be shot using a single camera, using two/more cameras simultaneously is definitely beneficial as it provides greater flexibility, and makes the entire production process faster. Khan also says that when shooting is at a location outside the studio such multi-camera approach can become complex. However, while recording major events in the field, multiple camera set up is used with an OB Van (Outdoor Broadcast Van) which serves as a compact control room and is also equipped with signal transmission system. You may have seen such vans used by television channels when a major event in your locality is covered by media persons. However, a teacher developing a video on his/her own without such facilities may use a camera and practice shooting outdoor and indoor. As you practice you will learn that lighting is important. Outdoor, the position of sun during day time, is an important point to consider. Indoor lighting is also important so that the video is not dark. Capturing the background including sound, for example that of traffic, that of a busy street, is also important. The key to perfection is definitely practice along with the will for experimentation. To know more about this topic you may visit <https://opensource.com/article/18/2/open-source-audio-visual-production-tools>

#### **About a video studio and field production**

*Telecasts can be from any place but television studio affords maximum production control. The studio has three major production centers: the studio itself, the studio control room, and studio support area. The studio has even and level floor for easy movement of cameras, adequate ceiling height for lights and set design. It is acoustically treated and provided with large sound proof doors. A Studio also has three or more cameras. The studio control room has preview monitors, programme speakers, the image control (switcher), audio console, and lighting control board. The provision of intercommunication system (intercom) allows all production and engineering personnel to be in contact with each other, who otherwise operate from separate places with total sound proof walls. Director, production assistant, switcher, the audio engineer are in the control room, whereas floor managers, camera persons and the cast are all in the studio floor.*

#### **Field Production**

*When the production is outside the studio we call it field production. The major problem of field production is sound quality. Another problem is the crowd that gathers at the site of shooting. Unfavourable weather conditions could be another hazard for outdoor shooting.*

*Source: Khan, 2008*

## Editing video

Editing is an important stage in making video. It is an art of giving meaning to visuals by sequencing them in a particular order. Khan (2008) says that although editing technology has of late undergone revolutionary changes, the basic purpose of video editing remains the same i.e. putting different shots together to build a story. However the shots might not have been recorded in the order in which they will be finally shown in the programme. Hence, editing shapes and sequences a programme. However, it needs to be carried out by a skilled editor. Further, editing tool can be simple or sophisticated ones but online video editors including free ones are available.

Editing has not only a mechanical but an aesthetic aspect as well and can enhance the visual appeal. Some videos move from scene to scene smoothly where you don't notice the edits while some look disjointed and 'choppy' (Loehr, 1997). These two categories of video are different because of editing aesthetics. Aesthetics is maintained by positioning the shots in a sequence that is pleasing to the audiences' eyes. However, the best edits are those when your audience doesn't even notice (Loehr, 1997) the editing.

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## 5.5 POST PRODUCTION STAGE

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In the post production stage the video produced is formatively evaluated.

### 5.5.1 Pre-testing/Academic Preview

Pre-testing is essential before broadcasting. It determines the suitability of the designed message, and involves the process of gathering feedback from the target audience regarding the suitability of the material in terms of its understandability, credibility, and appeal (Compass, 2019). Academic preview by teachers, experts, students also help to determine the potential of the video to fulfil its objectives.

#### Check Your Progress: 2

#### Answer the following questions:

1. What is Script-writing? How does the format of a video influence the script?
2. What is editing?

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## 5.6 DELIVERY OF VIDEO

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Video may be broadcast/webcast/ delivered through CD/DVD. This depends on your planning at the phase of Instructional Designing.

### 5.6.1 Broadcast, Webcast, Live Streaming & Vodcast

In a broader sense, the word 'broadcast' means to transmit, to relay, to air, to beam, to send/put out, to put on the air/airwaves, to show, to screen, to televise, to telecast, to videocast, to podcast, to live-stream and so on. Besides traditional medium like television, you may use a range of broadcasting technologies for reaching the target audience. Let us discuss some of these broadcasting technologies:

(i) **Telecast:** Gyan Darshan (GD), a 24-hour educational television channel, launched on January 26, 2000 in India broadcasts educational videos. It is a great achievement in the field of educational broadcasting in India as a joint venture between the Ministry of Human Resources Development (MHRD) and Information and Broadcasting, Prasar Bharati and IGNOU. Since then, video programmes of IGNOU are being broadcast on Gyan Darshan in IGNOU Hour, primarily for its learners.

(ii) **Live-streaming:** Kramer (2016) defines live video streaming as sending the

content online, in compressed format and in real time to the end viewer. We do not need not to wait for the entire file to download, but rather view the content in 'packets' in a continuous stream like a live telecast of a cricket match. Non-live media like 'video-on-demand' and 'YouTube videos' are technically streamed, but not live streamed like a cricket match.

- (iii) **Vodcast:** While podcast is an audio file which can be broadcast and downloaded through the internet, a vodcast is a video file that can be broadcast as well as downloaded using internet (Capozzoli, 2007). Vodcasting, also called video podcasting or vlogging, is thus a step beyond podcasting (Rosenthal, 2006) and includes video along with downloadable sound files used for podcasts. Rosenthal (2006) suggests that the video files can be downloaded by simply subscribing to a vodcast. He further suggests that after downloading and saving these video files to a portable video player, you can watch the video at a time of your choice by making them independent of television programming schedules. According to Capozzoli (2007) online vodcasts can be created by recording talks on desktop with Webcam attached to the computer. However, Capozzoli suggests that all video channels should be private and protected by passwords in order to ensure student confidentiality and privacy.

### 5.6.2 Utilisation: Broadcast & Non-broadcast

You might have watched 24-hour Gyan Darshan Channel, a Free to Air Channel for many DTH (Direct-To-Home) Service providers including DD Free Dish. DD Free Dish, previously, known as DD Direct +, is India's only Free DTH Service provider. DD Free Dish DTH service is owned and operated by Public Service Broadcaster, Prasar Bharati (Doordarshan) (Doordarshan, 2019). It is also available online (<http://www.ignouonline.ac.in/gyandarshan/Gyandarshan.html>) and used for utilising IGNOU's video through the broadcast mode.

The Live Teleconferencing Sessions on Gyan Darshan Channel are being organised regularly for IGNOU students by various Schools and Divisions of IGNOU. Similarly, eGyanKosh, a National Digital Repository is created to store, index, preserve, distribute and share the digital learning resources developed by the Open and Distance Learning Institutions of India. (<http://egyankosh.ac.in/>). Videos are available in this repository for educational purpose. IGNOU's study centres also have CD/DVDs developed by IGNOU. Thus videos developed by IGNOU are utilised in non broadcast mode.

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## 5.7 EVALUATION

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You have read about evaluation of courseware in Unit 2. This unit makes it clear that right from the script to the edited video at every stage there is formative evaluation. Pretesting the script and the edited video, and academic preview are also steps for formative evaluation. Summative evaluation reveals the impact of the programme on the target group and the need for altering the inputs. We have discussed all these aspects in Unit 2.

### Check Your Progress: 3

#### Answer the following questions:

1. What do you mean by delivery of video programmes? Describe various modes of delivery
2. What do you mean by Vodcast? How is it different to Podcast?

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## 5.9 SUMMARY

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In this unit, we first discussed how video programmes are planned. We initiated the discussion with a discussion on selection of topic in the context of audience's need and potential of video medium. After that we have explained the process of need survey, the types of needs that are considered, importance of need survey and the role of the information gathered through need survey in developing audience profile and subsequently instructional objectives. After this we have explained how content is selected, the sources of content and about quality content. After that we have explained the steps of designing message, various formats of video, style and pace. Thereafter structuring the message logically, and treatment involving detailed description of all the elements of the video are explained. The process of developing programme brief and thereafter the method of writing script and developing story board are also explained. Next the processes of production stage comprising shooting and editing, how editing is done and the need for aesthetics in editing are described. Following this the post production stage comprising activities such as pre-testing and delivery of the video through various modes are explained.

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## 5.10 UNIT END ACTIVITIES

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1. Select a topic for a video courseware and develop its programme brief.
2. Develop a Story Board for a video programme on 'Clean India!'
3. For developing video courseware on 'Choosing a Career', select an appropriate format and develop a script. The duration of the programme should be of ten minutes and it should address young learners aspiring for a career of their choice.

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## 5.12 ANSWERS TO CHECK YOUR PROGRESS

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### Check Your Progress: 1

1. Video is meant for teaching by showing/demonstrating for clarifying processes, abstractions, changing situations and so on.

2. Variables like age, educational and social background, interest, etc.
3. A concept note briefly but succinctly describes the outlines of the plan for the video programme. It describes the key aspects of the programme like its objectives, audience, format, duration, and so on.
4. Treatment offers detailed description of the scenes. It includes a brief outline of each scene or sequence of the proposed production, in the order in which they will appear along with the probable locations for shooting ;and descriptions of the different types of Audio to be used (Narration, Sound effects, Music), as well as the purpose each will serve.

**Check Your Progress 2**

1. Script is a structured way of writing the information in terms of the audio and visuals.
2. Editing in video is an art of giving meaning to visuals by sequencing these in a particular pattern.

**Check Your Progress: 3**

1. Delivery of video programmes is reaching the target audience through broadcast, live-streaming , Vodcast
2. While podcast is an audio file which can be broadcast and downloaded via the internet, a vodcast is a video file that can be broadcast as well as downloaded using the internet.

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# UNIT 6 DEVELOPMENT OF REUSABLE LEARNING OBJECTS

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## Structure

- 6.1 Introduction
- 6.2 Objectives
- 6.3 What are RLOs?
  - 6.3.1 Characteristics of RLOs
- 6.4 What are the Benefits of RLOs?
- 6.5 Selecting RLOs
- 6.6 How to design RLOs with multimedia content?
  - 6.6.1 Instructional Designing
  - 6.6.2 Organising Instructions using four quadrant approach
- 6.7 How to develop RLOs with multimedia content?
  - 6.7.1 Authoring Tools
  - 6.7.2 Developing Storyboard
  - 6.7.3 Using Authoring Tools for assembling Resources
  - 6.7.4 Standards for development of e-content
  - 6.7.5 Organising instructions using four quadrant approach
- 6.8 Evaluation
- 6.9 Summary
- 6.10 Unit End Activities
- 6.11 References and Suggested Reading
- 6.12 Answers to Check Your Progress

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## 6.1 INTRODUCTION

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For teaching your learners would you like to use the resources that are available or re-create those that exist? Would you share the resources you develop? The 21st century is the knowledge age, which is characterized by the use of technology for accessing, creating, and sharing knowledge based resources. These resources support 'learning', and are hence, 'learning objects' (LOs). The LOs that are developed for sharing, being reusable, are known as reusable learning objects (RLOs). In this unit we have discussed the concept of RLOs. We have also shown how some of the steps of the ADDIE model of ID (see unit 1) have been taken for designing and developing RLO with multimedia content. Thus, while the earlier three units enable you to develop courseware for delivery through single medium this unit will help you to develop multimedia content, which you may develop as RLOs. This unit is thus about RLOs but it also focuses on the development of multimedia content that can be offered as an online courseware.

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## 6.2 OBJECTIVES

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After studying this unit you will be able to:

- Explain the concept of RLOs;
- List the benefits of using RLOs;
- Describe authoring tools; and
- Develop reusable multimedia content using authoring tools;

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## 6.3 WHAT ARE REUSABLE LEARNING OBJECTS?

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For understanding the concept of RLOs you need to understand the idea of LOs. An LO is a collection of content items, practice items, and assessment items that are combined on the basis of a single learning objective (Beck, 2010). As per this definition, content explaining the concept of learning, along with activities that allow learners to practice what they have learnt, and items for assessing learning comprise an LO. Further, as per this definition an LO has one instructional objective. How many objectives does the unit you are now reading have? Check 6.2 to find out.

Authors like Wiley (2000); Wiley & Edwards (2002) are of the view that an LO is any *digital* resource that can be reused to support learning. However, according to Learning Technology Standards Committee, IEEE (2002, reaffirmed in 2009) LOs are any entity, *digital or non digital*, which can be used, reused, or referenced during technology-supported learning. This definition unlike the earlier one, views LOs as digital as well as non digital content. South & Monson (2000) also say that LOs range from maps and charts to video demonstrations and interactive simulations. These definitions are thus broader than that of Wiley's definition. However, as per L'Allier, (1997) LO is the *smallest independent structural experience* that contains an *objective*, a *learning activity* and an *assessment*. As per this definition a map, a chart, and so on do not qualify as an LO. Why? This is because an LO is developed with an instructional objective and includes suitable learning experience, and items for assessment of learning. Hence, photographs, audio, and video files in themselves are *assets* that support the formulation of content for explaining concepts, facts and procedures (Wagner, 2002, as cited in Koh, 2017) but are not necessarily LOs. Further, LO is a small but an independent unit. This implies that the content of an LO is adequate for learning, and learners do not have to use other resources for understanding the concept. For example an image of digestive system is only an asset that supports learning. Since it lacks explanations of the structure and function of digestive system and includes just an image, it is not stand alone, i.e. an independent unit of learning. A stand alone content, requires instructional objectives, corresponding explanatory content, and assessment mechanisms. Cisco Systems, Inc. (2001) says that LO has a *single learning or performance objective*, that is built from a collection of *assets* that provide *static or interactive content* and activities for practice. As per this definition too, an LO has only one objective(s). However, it describes content as *static and interactive* types. Unlike static content, which you are reading now, interactive content responds to user's inputs and can even give feedback. For example you may have attempted online quizzes that offer feedback &/display scores as per the inputs you key in. You may have come across images (used for selling products) that we can enlarge, examine parts like the sole, heel, front part of a shoe, and read the descriptions popping up. Barritt & Alderman (2004) say that LOs have granularity, like a grain of sand/wheat/rice, and an LO is although small, nevertheless it is a complete unit. Definitions of L'Allier and Cisco underline this. Beck (2010) also

says that LOs are much smaller units of learning than courses, while Barritt & Alderman (2004) say that LOs are authored in small pieces, assembled into a database, and then delivered through a variety of delivery media.

Laverde, Cifuentes, & Rodríguez (2007) define LO as a digital *self-contained* and *reusable* entity, with a clear educational purpose, with at least three internal and editable components: content (comprising definitions, explanations, reading documents, links to other resources, videos, and the like), learning activities and elements of context (allows reuse in other scenarios). This definition like some of those you have read considers LO as *digital content*. Further like the definitions of L'Allier and Cisco it considers LO to have an educational purpose, i.e. *instructional objective*. Furthermore, L'Allier's definition includes the word 'independent' and in this definition we find the word '*self contained*' but both have the same meaning.

The definitions of LO that you have read give you an idea of the characteristics of LO. We also find that LOs have been interpreted in different ways (Barritt & Alderman, 2004). Churchill (2007) therefore says that LO remains an ill-defined concept. However, the idea of granularity and the aspects of L'Allier's definition provide a comprehensive view of LOs.

### Activity

You have read the definitions of LO. Does the unit you are reading now qualify as an LO? Justify your response.

You may have noticed that some of the definitions of LO include the word 'reuse'. A learning object which is developed for repeated use is a reusable object and a reusable object developed for learning is a reusable learning object (RLO). Mere access to resources however does not make them reusable. The resource besides being accessible should be suitable for repurposing to match the learning needs of those reusing it. For instance on purchasing a dress we get access to it but it is of little use if we cannot alter it as per our size. However, an RLO on 'development of SLM for print medium' developed with the purpose of training distance education teachers can be reused and repurposed for training employees engaged in developing user manuals for industrial products. Further LOs are stand alone components but these can be assembled and packaged into larger units like modules and courses. LOs can therefore be aggregated (Beck, 2010; Downes, 2004, as cited in Kinshuk & Jesse, 2013). The aggregation of LOs into larger units is however possible if the property of granularity is maintained (Koper, 2003). For example grains from different packets can be repackaged only if they do not stick to each other, i.e. are independent granular units.

### Box1

*Wayne Hodgins introduced the term RLO. He was inspired by his children playing with Lego building blocks (colourful plastic blocks with holes into which children fix other blocks and construct structures like furniture, houses, automobiles and the like). He says that his journey into the world of learning objects started while watching his children play with LEGO™ blocks (Hodgins, 2000).*

*Hodgins says that learning objects are fundamental elements of a new conceptual model for creating and distributing content, which is much richer and complex than its simpler building blocks. For instance, objects in text, audio, video can be combined to form complex content. Hodgins explains this with an example from the construction industry. He says*

*that construction of buildings provides a robust analogy for this as on average, 85 to 95% of the materials used nowadays in buildings be it commercial or residential, are pre-built components. Doors, windows, cupboards, sinks, tiles, light fixtures are all manufactured to meet specific standard dimensions and attributes, and these pre-manufactured objects are available, before the building is conceptualized, designed, or built. Hodgins says that RLOs are similarly built using multiple LOs.*

### 6.3.1 Characteristics of RLOs

You have read what RLOs are. What are the characteristics of RLOs?

**RLOs are meant for reuse and repurposing:** Copyrights restrict free use, and adaptation of copy righted products requires the author’s permission. Open licenses however permit users to adapt, i.e. repurpose the product but citing the original author is necessary. For content in public domain the author gives up ownership over it and the content is free for use even without citing the author. Without open license LOs cannot be ‘reused’ (see the unit on OER, MES-033).

**RLOs are meant for imparting instructions:** The very definition of LOs make it clear that these are developed for facilitating learning.

**RLOs have granularity:** Reuse and repurposing require an RLO to be small in size. However, size and scope of RLOs may vary, and an RLO may comprise simple learning experience or may be short course providing complex learning experiences.

**RLOs should have simplicity:** You have read that LOs are small. Hence their objectives should be few and they should not be loaded with content. As per software engineering principles, LOs should be as simple as possible, as simplicity greatly aids recombination and reuse, even though involvement of multiple perspectives supports learning (Boyle, 2003). For instance a text based LO describing the problem of receding ground water level has simplicity and is easy to share and repurpose but multiple perspectives are introduced by adding a video that shows its impact on farming and this strengthens learning and enhances the pedagogical value (capacity for teaching) of the RLO. Yet objects are most useful for instructional ‘reuse’ when they center on a single, core concept (South & Monson, 2000). Each RLO should therefore have a single learning objective (Boyle, 2003; Grunwald, Sabine & Reddy, 2007). However you can assemble several RLOs as per instructional needs.

**RLOs are self contained, independent entities with stand alone content** that is included specifically for attaining the instructional objective (Barritt& Alderman, 2004; Beck, 2010). Boyle (2003) also says that RLOs should be as far as possible free standing, and should not refer to content covered in another object. RLO should therefore be self contained. These are supposed to be independent as learners do not have to depend on other sources of information while learning.

**Activity**

Do you think the section ‘Introduction/objectives/summary/ a figure of thus unit’ could be an LO? Why? Which section(s) of this unit can be turned into LO?

**RLOs are stored and managed in repositories.** RLOs are mostly in digital format and this makes it easy to access, combine these into a course, update, store in repositories and curate (repurpose, for instance by adapting the content for meeting the needs of the course/learners for which the RLO is used). Some of the repositories

that provide access to e-learning materials are MERLOT (Multimedia Educational Resource for Learning and Online Teaching; <http://www.merlot.org>), DLESE (Digital Library for Earth System Education; <http://www.dlese.org>), SLOOP (Sharing Learning Objects in an Open Perspective), Orange Grove (<http://www.fldlc.org/harvestroad.htm>), Health Education Digital Assets (HEAL), Wisconsin Online Resource Center (<http://www.wisc-online.com/>). RLOs are managed by deleting outdated objects, updating objects, storing these systematically (Grunwald, Sabine & Reddy, Konda (2007).

**RLOs have metadata tags** comprising information that describes the content. This makes RLOs searchable and hence accessible. Meta means beyond. Meta data therefore means data describing the content of the RLO. For example a packet of chips bears information about the company manufacturing it, the ingredients, date of packaging, price, and other aspects. This information helps to locate the packet and guides our decision to buy it. RLO metadata can be as basic as the author's name, the RLO's title, subject, and instructional objective, audience profile or include details like course completion criteria, access rights, instructional strategy and the like (Barritt & Alderman, 2004). Barritt & Alderman cite the example of a book, which has metadata like the book title, author, ISBN, table of contents, publisher, and so on. IGNOU's courses and blocks also have metadata like titles and codes that help in locating these in e-gyankosh (IGNOU's repository of digitised content) or at a book fair. Keywords comprising words/phrases that describe the content could also be the metadata. For example, for the unit on instructional design (ID) the key words could be instructions, ID, and ID models. When key words are included in the search box, Search engines like Google, Yahoo search the web for the content.

**RLOs should be free of fixed format and cultural context:** An LO may be used in multiple contexts for multiple purposes (Beck, 2010). Hence it must be easy to adapt, update, and customize. Hence avoiding a fixed format while developing these makes their reuse and repurposing easy. For example while repurposing, if you want wider margins, captions in bold/italics, the format of the unit (RLO) must allow it. Further, RLO can be used by a wider audience if it is free of cultural context. For example food, dress, traditions, idioms, and many other things are related to culture and hence, understood only by those familiar with it. While developing LO the content has to be such that it is widely understood.

**RLOs need to have interoperability:** To understand this let us study these examples.

1. Rita speaks only Tamil and, cannot communicate with those not knowing Tamil;
2. Nita finds that her device (computer) cannot communicate with a particular file and generate meaningful outputs. The data in the file however becomes meaningful when she downloads Hindi font.
3. Sima finds a suitable RLO for teaching instructional designing. However she can use it in her course only if the LMS (a tool for offering online courses) she uses and the devices like phone, laptop, tablet, and so on that her learners use for accessing the courseware, can read and communicate with the data (content) in the RLO. She knows that her learners use different systems and devices and even mobile phones do not have the same operating system.

RLOs therefore need to be interoperable so that these operate across different platforms and communicate with other tools (Grunwald, Sabine & Reddy, 2007). Interoperability requires meaningful exchange of data across devices, systems,

applications and products, without the user having to take special initiatives. Developing RLOs that are ‘interoperable’ across different systems is therefore a major goal and a challenge, and to enhance interoperability RLOs are ‘packaged’ in a standard container format (Boyle, 2003). Pappas (2017) says that using HTML5 based eLearning authoring tool instead of Flash for creating RLOs is helpful as many learners use mobile devices that cannot play content created with Flash. You will read more about it later in this unit.

### Box 2

#### Read and reflect on this:

OERs (Open educational resources) (See unit 4 MES-033) and RLOs have several similarities. Both are developed for instructional purpose, meant for sharing, reusing and redistributing. Further both have metadata tags and are stored in repositories created for storing and managing these. Literature that clearly differentiates these two is however scarce. Authors like Kawachi (2014) are of the view that the RLO movement led to the concept of OERs that are open for use unlike the more restrictive RLOs. Kawachi (2014, p.9) says that “The early history of OER lies in the development of learning objects and in particular reusable learning objects...” He further says that RLO movement seemed to slow down largely because RLOs were not suitable for different e-learning needs, RLOs do not cater to users’ (teachers’ and learners’) individual needs, and also because it was difficult to adapt RLOs because of copyright concerns. Kawachi (p9) also says that “The key difference between those RLO and the current OER is the legal copyright labels attached to OER to permit others to reuse and adapt them without needing to get any further copyright permissions”. However many RLO like those developed by the School of Health Sciences, University of Nottingham (<https://www.nottingham.ac.uk/nmp/sonet/rlos/>) are licensed under a Creative Commons (an open license that allows reuse, see unit on OER, course3). This is in keeping with ‘reuse’ principle of RLO. Moreover ‘reuse’ and ‘copyright restrictions’ are contradictory. Hence, how can we impose restrictions on the use of resources developed for *reuse*? Is it possible that a new term (OER) was coined even though RLOs and OERs have similar functions?

### Box 3

The **National Repository of Open Educational Resources** is an initiative of the Department of School Education and Literacy, Ministry of Human Resource Development, Government of India. The Central Institute of Educational Technology, National Council of Educational Research and Training developed it and manage it. NROER has a rich repository with OERs (text, audio and video) organized in a theme-wise manner.

## 6.4 WHAT ARE THE BENEFITS OF RLOS?

The earlier sections give you an idea of the importance of RLOs. Let us explore it further. Knowledge society is a networked society that requires collaborative knowledge creation and knowledge sharing (Tan, Hung & Scardamalia, 2006) and technology helps these processes. The concept of RLO is in line with such views as it upholds knowledge sharing instead of repeated investment of time and other resources for creating resources that already exist.



Boyle (2003) says that good eLearning resources are expensive to produce. RLOs save time and money required for creating new ones. Therefore RLOs are being used in education, military, corporate sector and other areas for training programmes (Grunwald, Sabine & Reddy, 2007). In education face to face teaching can use RLOs for enriching/supplementing the content taught, resulting in blended learning. Distance education offered through online courses can hugely benefit from RLOs. We can upload RLO to the LMS used for offering the course and plug-in the new eLearning content (Pappas, 2017). RLOs can not only be used in a course but several RLOs also can be repurposed, formatted in a similar way, and combined to develop a course (Pappas, 2017).

Apart from saving resources, RLOs introduce more perspectives to the content taught. For example a teacher presents the problems commonly faced by adolescents of her country but adding RLOs bring in the perspectives of other societies too. Discussions and deliberations are enriched when multiple perspectives are involved.

We have discussed the rationale for using RLOs. Should we also allow others to use and repurpose the content we generate? Today collaboration is more important than competition and instead of closely guarding knowledge we need to share it. Further repurposing knowledge can enrich it. Learners also benefit as they do not have to enroll in a long duration course for learning one topic. For example a learner may be interested only in understanding the digestive system. Using an RLO on this topic would be more economic than enrolling in a physiology course. Moreover learners not having access to good libraries, online platforms with journals and books, and good teachers benefit when RLOs are used. Therefore, as per Wiley (2002) just as greater technological bandwidth enhances access to resources, RLOs increase teacher bandwidth and benefits more students by making good teachers available to more. Creating RLOs also benefit teachers, especially when developing it collaboratively using technology that supports distributed authoring (authors at different places create and edit content). New teachers can learn from experienced ones and everyone gets to learn from others in the team. However, there could be institutional and logistical barriers to reuse of RLOs (Berkins, 2016). Some of these barriers (listed on the ADL RUSSEL site at <http://adlnet.gov/russel/>, cited in Berking, 2016) are - the content generated is not stored in approved, accessible content repositories; creating, uploading, and maintaining metadata and or SCORM content packages (see 6.7.4) is a time-consuming process; creating and registering content in approved content repositories is time-consuming; and so on.

#### **Box 4**

You may be aware of IGNOU's e-GyanKosh. It is a National Digital Repository to store, index, preserve, distribute and share digital learning resources. These resources are guarded with copy right but apart from IGNOU's learners, teachers and learners of conventional universities; those preparing for competitive examinations; professionals and many others use these. Access to these resources is allowing many people to learn. Are these resources RLOs? Why? Resources in IGNOU's e-gyankosh have copy right. Moreover these resources include objectives, content, and assessment mechanisms but these are not granular and have not been developed with the intent of reuse and re-purposing.

## **6.5 SELECTING RLOS**

You may come across many RLOs but the decision to use these has to be taken carefully. Which aspects of the RLOs should we examine? A teacher being a

subject matter expert should check the authenticity of the content. Second, Koh (2017) says that absence of clear pedagogical purpose can lessen the effectiveness of RLOs. This makes it clear that RLOs should be imported into a course only if the RLO help to attain the course objectives. Third, RLOs that engage learners only in reading text or watching video, have a behaviouristic orientation (see unit 2) and are teacher centric as learners only receive information. Bannan-Ritland, Dabbagh & Murphy (2000) however say that not just the course with which RLOs are used, but RLOs too should support meaningful learning. RLOs that include activities to engage learners in thinking and doing make learning an active and meaningful process, and adopt learner centric pedagogies. For instance, RLOs that offer simulations and educational games require decision making by learners; RLOs requiring exploration of real problems like declining ground water level, pollution and so on, engages learners in problem solving.

Fourth multimedia provides a rich learning environment as it involves more than one sense (seeing, hearing) for learning. Hence RLOs with multimedia are more suitable. Fifth navigation within the RLO content should be smooth. Sixth RLOs need interoperability so that learners can access these on various types of devices.

### Check your progress 1

#### Mark the correct response:

1. All RLOs include LOs- true/false
2. LOs and RLOs both must be reusable- true/false
3. Metadata is not essential for RLOs-true/false
4. RLOs are accessible because of their interoperability-true/false
5. RLOs should have a fixed format-true/false
6. Use of RLOs saves resources-true/false

## 6.6 HOW TO DESIGN RLOS WITH MULTIMEDIA CONTENT?

You have read what an RLO is, its importance, and how you should select RLOs for your course. You have also read that RLOs are usually digital and can be integrated into an online course you are teaching. Therefore, a stand alone digital courseware that includes content in one or more media, has very few instructional objectives, and can be reused and repurposed is an RLO. Hence, in this section and the subsequent ones we shall focus on design and development of digital courseware. Before we discuss these let us study the concept of multimedia as RLOs may offer multimedia content.

What is multimedia? IGNOU uses *multiple media* for delivering instructions. This means that various media deliver content independently like a radio programme uses audio medium, print medium delivers SLM, video medium is used for a television programme. *Multimedia* integrates content developed for delivery through various media. The content is delivered using CD/DVD or it is delivered online. For example films and television programmes usually have multimedia content, which may include content in the form of text, audio, still and animated images.

You have read the strengths and weaknesses of different media in Unit 2. In educational multimedia different media complement each other. For example video has the potential for demonstrating processes and situations; text describes a

movement but an animated image shows it. Therefore the content in various media complement and supplement each other so that learners ‘see’, ‘hear’ and read. However, we should make sure that they do not see, read and hear the same thing. Hence an assembly of text, videos and audios that repeat the content hardly comprises multimedia. Therefore, a video that show a person delivering a lecture, the content of which has been explained through print duplicates the content. Instead it should show what the print cannot.

### **6.6.1 Instructional designing**

You know that a courseware is designed before it is developed and you also know how it is designed (Units 1,2). An RLO imparts instructions. Hence development of an RLO should begin with an instructional design. Let us study this example:

Sima uses the ADDIE model for developing RLOs. In keeping with this model she has to- analysis, design, develop, implement, and evaluate the content developed. Let us see how she takes these steps.

#### **Analysis of target audience needs**

Sima’s develops the demographic profile of her learners and assesses their learning needs. She finds that they lack the understanding of learning. She also finds that most of her learners -are graduates; prefer English as the medium of study; and use their mobile phone, laptop, tablets and sometimes desktops for working online.

#### **Designing content**

Sima knows that the RLOs need only a few objectives, and should avoid content overload, but at the same time these should include stand alone content. Therefore she sets only one instructional objective - ‘learners will be able to describe the process of learning’. She analyses learning along its approaches (see unit 1). For each approach she organizes the content and selected the media for delivering it. She decided to use text based resources to define and explain the approaches, images including a flow chart for describing information processing, an audio recording that explains the flowchart; and short videos that demonstrate learning in various situations.

#### **Developing content**

Sima developed metadata tag for the RLO and mentioned the title of the course, her contact details and that of her institution, the instructional objectives of the RLO and the type of audience that would benefit from it. Sima developed some of the resources (see 6.7) and procured some that had open license. After that she developed exercises for assessment. Sima carried out formative evaluation of the content (text, audio and video) vis a vis the instructional objective, with the help of her colleagues.

#### **Implementation and Evaluation**

Sima assembled the resources in various media (see section 6.7) and implemented the course by delivering the content and assessing learning. She used the data pertaining to learners’ achievement, and their feedback for summative evaluation.

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## **6.7 HOW TO DEVELOP RLOS WITH MULTIMEDIA CONTENT?**

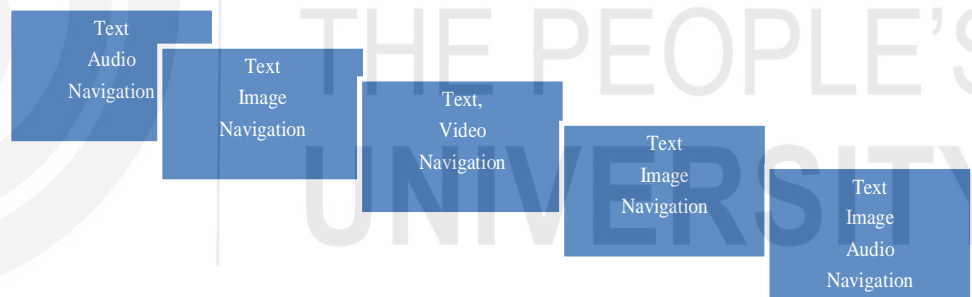
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After designing the phase of development begins. You need to follow the processes described in the earlier units for developing courseware for print, audio and video media and if you need multimedia content you can develop content for each medium.

However, how will you assemble these? Even if you procure open source content, which may be LOs or may be just resources for learning like documents explaining a concept, diagrams, and so on, or if you already have these, ready in your repository, you will have to assemble these for a multimedia product. How will you assemble these? Assembling content in various media requires special tools (authoring tools) and skills. We would like to remind you that multimedia content is not just a collection of isolated elements in different media but each one of these helps to facilitate the attainment of the overall instructional objective of the multimedia content. Hence each element you include must strengthen the others. For example visuals projecting drought support text describing water scarcity.

### 6.7.1 Authoring Tools

What are authoring tools? Multimedia authoring tool is also known as an authorware, as these are softwares that help us to author content. Authoring tools are software applications, used for developing eLearning products, and these are useful (for teachers) as programming skills are not required for creating content with these tools (Berking, 2016). Hence teachers can use these tools. Authorware allows simple learning experiences like reading text, watching video to complex ones like participation in simulations, gaming, virtual worlds (an environment in which the computer/phone user can participate. For example users can be the citizens of a virtual society and interact with other users [virtual citizens], drive a car, carry out an experiment and so on). However, a common feature of these tools is that these offer templates on which multimedia elements like text, graphics, video, etc. can be organised and edited. A template is a pre-formatted fixed space like that you get on opening a file for making slides for presentation. The space serves as a screen for placing content (Fig.3).



**Figure 3: Templates with screens for placing content (text/audio/visuals)**

Barritt & Alderman (2004) say that new authoring tools allow the repurpose and reuse of LOs, and some of these can also support the creation of simulations, media elements, mechanisms for interactions, and so on (see box 5 ). They also say that either these tools can be used or else other tools that help to develop these elements can be used, and the elements developed thus can be assembled using an authoring tool. For example you can use tool for word processing and editing for creating text, tools for creating and editing graphics, tools like spreadsheets for analysing data, tools for recording and editing audio and video and use an authoring tool to assemble the elements you have developed. Barritt & Alderman therefore say that the use of traditional media tools for creating sound, graphics, simulations, or video are still necessary. Authoring tools can be used to assemble these and to build interactivity into the content.

**Box 5**

**What type of learning experience can authoring tools help us to provide?**

Authoring tools can perform a variety of functions. Let us explore some of those described by Berking (2016). Specialized simulation development tools can be used for developing simulations. A simulation helps to provide learning experiences like flying aeroplane, carrying out hazardous experiment, and the like and is used extensively in games, military training, automobile manufacturing and many other sectors; Some tools help to generate content for collaborative learning; Even though most authoring tools can now deliver content to mobile devices, there are tools for generating content for mobile learning (m-Learning); There are also tools for developing pedagogic elements like graphics, audio, video, and animation files, educational games, virtual role plays (that learners watch and critique), intelligent tutoring systems, and the like. Thus authoring tools can help to create various types of content for providing different types of learning experiences. Authoring tools also help in creating mechanisms for assessment like quizzes, and help in tracking learning outcomes, passing scores, learners completing activities of the course, and so on.

Quality of the multimedia content depends on the content included and on technical expertise in assembling, repurposing, presenting and packaging these. Teachers have the understanding of content but may not have the technical expertise. Therefore, Watson (2010, as cited in Cinici & Altun, 2018) says that they should be provided with technical support. However some tools are easy to use and teachers do not have to depend on technical experts for developing content. Nevertheless, using some tools may involve a longer learning curve (graphical representation of learning attainment vis a vis the time taken. Easy things have a shorter learning curve as learning takes less time) as learning to use these requires a lot of practice and hence time. To know more you may visit <https://slejournal.springeropen.com/articles/10.1186/s40561-018-0060-3>

### **Which authoring tool will you select?**

Now that you have an understanding of authoring tools, you may be wondering about the best authoring tool. This depends on various factors like whether it would be an open source/freeware/proprietary tool (see box 6); capacity to use the tool given that some require a steep learning curve; type of learning experiences to be provided, i.e. simple ones like watching a video and reading text or complex ones like simulations; capacity of the tool to generate SCORM/other standard compliant content (discussed later in this unit), the scale at which the content will be published, and other such aspects.

#### **Box 6**

##### **Free, open and proprietary tools**

Free tools- users can run, adapt, and redistribute without legal restrictions like skype, Adobe Reader;

Open source tools- Mozilla's Firefox web browser; Python programming language; Apache HTTP web server are some examples of open source tools. These tools have a source code that is publicly available but under a license that gives users the right to use, adapt, and distribute the software;

Free and open source software: is free as well as open source like Google chrome, Audacity for editing audios, and the like.

Proprietary: owned by an individual/company with restrictions on use; and the right to use can be purchased.

Berking (2016) says that for selecting an authoring tool it is necessary to consider the technical characteristics of output (content generated). Some of these mentioned by Berking are - the authoring tool should generate content that supports many media file formats see box 7 ); enable automatic scrolling of content on mobile devices; produce output supported by a wide variety of platforms (like Mac, PC), browsers (like Internet Explorer, Chrome, Mozilla, Firefox) and their older versions, and screen sizes (like that of smart phone, tablet, desktop); support responsive design so that the content dynamically adapts itself to tablets, mobile phones, and desktop computers, and different version of the content is not required for each device; requires a minimum of players and plug-ins, especially proprietary ones; support creation of a desktop executable file that can run on CDs or DVDs or run on the desktop after being downloaded from the intranet.

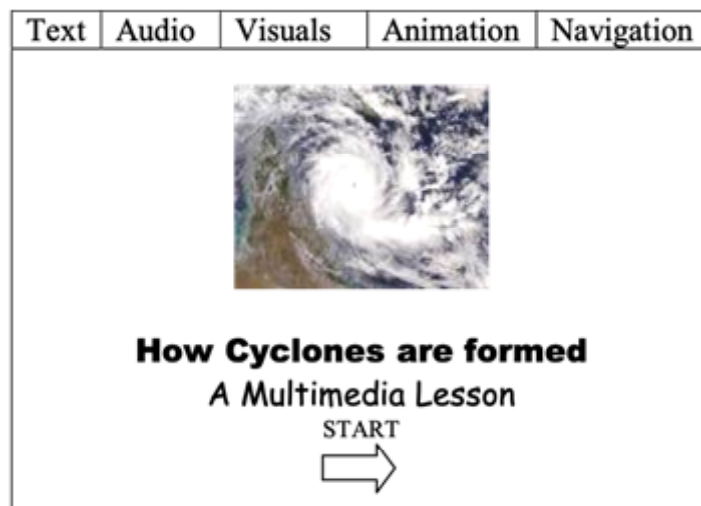
**Box 7**

What is file format? File format is the structure of a file that tells a program how the data within the file is organised so that the program can retrieve, recognize and display it. Examples of file formats-.doc, .pdf, for word documents; .htm, .html for Web files; .MP3, .WAV,.WMA for audio; MPEG-4, Quicktime, AVI, H.264, for video; JPEG, GIF, PNG for graphics; SWF, GIF for animations)

You may also visit <https://etd.vt.edu/howto/accept.html>

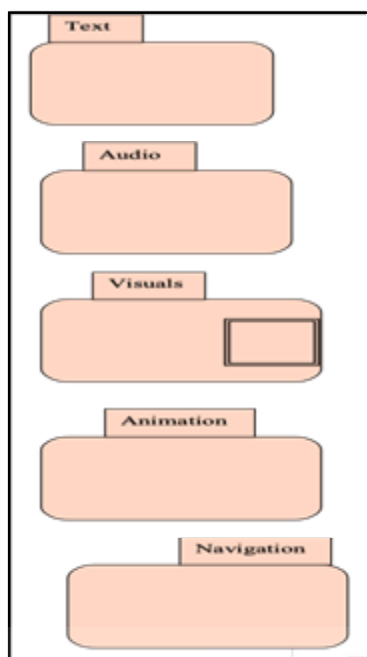
**6.7.2 Developing Storyboard**

Assembling content in various media needs a plan, which is developed in the light of the instructional objectives. You have read in unit 5 that a story board is a full graphic expression of ‘what’ the screens will look like, what pictures (still and moving) will be seen, and what audio and text will accompany the images (Khan,2008). What is a screen? You may have used an ATM machine and found that a screen shows options for language - English/Hindi. By selecting an option we navigate to the next screen, which may display options like services, mini statement, balance information and so on. By clicking on one of these options we navigate to another screen with some more content. Therefore multimedia content needs to be visualized and organized as screens, and each screen can be planned using a story board. The story board should indicate all the elements as well as the links for navigation. Khan therefore says that a well prepared storyboard indicates everything that can be seen or heard or experienced by the user. Examine the components of the story board in Figure 1.



**Figure 1: Story Board for a screen** (source: MES 034, Designing Courseware, IGNOU, 2008)

Let us now examine Figure 2.



**Figure 2:** Components of a screen (source: MES 034, PGDET, IGNOU, 2008)

Figure 2 shows the five components used in the screen of Figure 1. The components also known as elements are text, audio, visuals, animation and navigation buttons (Khan, 2008). Each component needs to be indicated on separate cards/boxes. If the text is short, like a caption, it can be included in the box/card meant for text. Similarly for the audio the card/box should mention the audio file to be used. The card/box for visual describes the visual as static/animated image/ video clip/video and the corresponding file. Cards/boxes for video and audio also mention their duration. Except navigation, it is not necessary that all the components are present in every shot/screen. Depicting navigation is however important for visualising how learners can move across the screens. According to Khan some key navigation buttons are start, end, next, previous /back, home, etc., and we need to mention on the card/box, the type of navigation button and what its action would lead to.

Khan (2008) says that a clear and detailed storyboard helps to visualize the content, its layout and other important aspects. She cautions that it has to be developed with care as making corrections after the content has been developed could be difficult. Aesthetics of the content is also important. Images should be used only if these explain the content better. The font, style, animation, special effects, and the like should be chosen with care so that there is no jarring effect. Animating text can be avoided if it has no pedagogic purpose. Animations should therefore be used for meaningful communication, not merely for adding effects. Colour combinations should also be soothing and contrasts created with light background and darker text colour enhances readability. We need to remember that rich colours and stylish designs may decorate the content but not necessarily make it readable. Similarly loud background music of an audio may make the narration inaudible. Too many objects and too much text on a screen should also be avoided.

### 6.7.3 Using Authoring Tools for assembling Resources

You have read that authorwares can be used to create content, and also used for assembling resources that have been developed/procured and stored. The latter option is easier and authoring tools provide a template into which the resources are imported. Even those who have not used such authoring tools for creating multimedia



content are likely to have authored multimedia content. When? Many of us before delivering speech/lectures make slides for presentations. Power point is one such commonly used tool but there are many others including those which are not proprietary. Therefore, it is very likely that you have some experience of authoring content. However presentation programmes like power point allow the inclusion of elements in various media, addition of animations and pop ups (for including references, glossary, etc.) but it is not suitable for offering large amount of content, and there could also be loss of interactivity, and reduced interoperability (Kilimenko, 2013). Therefore for developing e-content including multimedia RLOs, authorwares are better options than softwares for making presentation. A courseware, which may be an RLO also needs to be delivered after it has been developed (Box 9).

### Box 9

**How do we develop and deliver online courses?** Tools for developing and delivering online courseware are usually different and while authorwares are used for developing content, a Learning Management system (LMS), a software helps to host and offer online courses. An LMS helps in administration, documentation, tracking and reporting learners' participation and performance, besides providing scope for interaction through discussion forum, threaded discussions and so on. Usually it is not used for content creation but some recent ones are allowing content creation as well and hence function as authorwares. Learning Content Management Systems (LCMS) applications are however basically platforms for administrative activities, content management, storage, delivery and assessment but these tools also integrate authoring functions that help to create content (Berking, 2016). Similarly Authoring tools are not strictly used for authoring content but also for hosting and delivering content and managing learning by tracking results, providing feedback and so on.

Some authorwares are rapid authoring tools. These softwares are useful for online content development and are useful for quickly developing web-based content including courses with interactive and multimedia content. These tools are simpler to use (Berking, 2016) and can help to create, use and repurpose and publish content (making content accessible from any computer with an Internet connection). These tools can be in the form of plug - ins. While using presentation programmes (like power point) as an authoring tool, plug-ins can be added for making it a rapid authoring tool for creating interactive multimedia content and publishing it. There are many such free add-ins that you can use. Unlike plug-ins some authoring tools are standalone products that need to be installed in the computer thus dispensing the need for installing a software to operate it. There are also cloud-based authoring tools. These tools do not have to be downloaded and installed in the computer but are entirely online. These tools are installed on a cloud server and use the web browser as the application interface. You can create content individually or collaboratively along with your co-authors using these tools. This is called distributed authoring. Users can access these tools anytime, anywhere provided they can access the internet. From content creation to publishing, all activities are online with these tools. Content is also saved to the cloud and is stored there.

### A Case

Let us read a teacher's narrative of her experience of using an authorware for developing and delivering a multimedia courseware. The author of this



courseware had no previous experience of using an authorware. As she requested anonymity, we address her as N.

N wanted to design, develop and deliver a short course as an RLO with multimedia content for teaching photosynthesis. She explored several authorwares and selected the free trial version of a web based authorware that could help her to design develop, publish, host and deliver her course. It also allowed her to track her learners' progress and achievement. She created an account and logged in and explored the features of the authorware. She found that the tool would provide her with templates for building every component of the course right from its metadata to introduction, objectives, content, and assessment and so on, and the tool was also quite user friendly. It also had word processing and editing tools for creating text based content.

N selected the colour and lay out of her courseware, font for the title, and included 'The process of photosynthesis' as the course title, and her institution's logo. She used the template offered by the tool for describing her 'audience profile'. After that she used the template for writing the introduction to the course and highlighted what the course would offer to learners.

Next she developed the instructional objectives. She found that she could write these in her own way or use the template that guided the development of instructional objectives. Using the template meant describing 'what' and 'how', learners would learn and the 'learning outcomes'.

After that she developed the frames (content for various sections). The authorware provided her with the option of adding subsections and sections and thus structuring the content she generated and she could edit the content she had created earlier. She could therefore edit the text, remove or add elements in various media like documents, graphics, videos, and audio.

While creating a section of her course content she found that the template was like a page. The space at the left of the space for content creation listed options like text, images, interactivity, quiz and she could 'drag and drop' any of these into the space for content creation (Figure 4) and either create or import LO from her store of objects in her computer or even from online sources like Youtube. For example after dragging in the option for text creation she could develop text/import a document with text



**Figure 4** Template for creating a section by assembling objects. The dotted arrows represent drag and drop options into the space meant for content creation/import.

For detailed text she imported documents stored in her computer but for brief texts like headings and captions she carried out word processing using the authorware. The tool for creating and editing text was the same as that she used on her computer. She found that the objectives she had imported for

creating content into the template were stored in ‘my library’ within the tool. Importing these elements (documents, video, pictures) was also simple and the process was the same as that adopted for attaching files to e-mails. Further videos on you tube could also be used. She added captions for the elements she imported and made the content interactive by adding buttons for navigation.

For creating assessment tools she found that there were many options like fill in the blanks, matching text, multiple choice and open ended questions. She could drag in and drop any or even all of these and using the template for generating quiz and giving feedback for wrong responses, she could generate quizzes. The tool also had mechanisms to calculate scores, provisions for carrying out learner satisfaction survey, and allowing learners to download certificates after passing the course. N previewed the content and found that it was ready to be published. The tool was cloud based and it allowed her to publish the course using a private link, within a website, on its cloud, intranet, and the LMS she used.

### Activity

We have narrated N’s experience. After reading her experience you should use an authorware for creating e-content. There are many free authoring tools. Some proprietary tools also allow free trials and cloud based ones do not even have to be installed in your computer. Use any one of these and explore its features. Develop/procure the content you would like to use and use the too for developing multimedia content for a topic you would like to teach online.

## 6.7.4 Standards for development of e-content

A digital courseware can be used as an RLO if users can use it in the LMS they use for delivering courseware. Suppose you plan to purchase a charger for your phone you need to specify the phone you use but while buying a DVD for watching a movie do you worry whether your DVD player will be able to play it? The DVD can be played on a DVD player manufactured by any company. To ensure this, DVD movies are developed as per certain standards (SCORM Explained 101: An introduction to SCORM, n.d.). Online courseware is usually offered using an LMS. Just like DVDs and DVD players, the courseware and LMSs need to be compatible. RLOs and the system like LMS through which it is offered therefore need to be compliant to some set standards. The Advanced Distributed Learning (ADL) project of the U.S. Department of Defense, has set Shareable Content Object Reference Model (SCORM) specification (Barritt & Alderman, 2004). However, SCORM standards being technical in nature, we shall not discuss these specifications. Apart from SCORM, there are however other standards but in this unit we shall discuss only SCORM.

Why follow SCORM standards? Just like the DVD standards that make sure that all DVD players can play a DVD, SCORM conformant LMS/other systems can play any content that is SCORM conformant, and any SCORM conformant content can play in any SCORM conformant LMS (SCORM Explained 101: An introduction to SCORM, n.d. ). SCORM thus standardizes the means of communication from the RLO to the LMS and make these compatible across systems (LMSs) that host and deliver these (Berking, 2016). Therefore, while selecting LMS for delivering courseware we need to opt for those that confirm to these standards, and while selecting authoring tools for developing e-content we need to select those that generate content which is compliant with these standards. Berking therefore suggests that

while selecting the authoring tool we need to ask questions like-does the tool include compliance checkers? Does the tool warn if you try to do something that will make the course non-compliant? A number of tools that help to develop SCORM compliant e-learning courses are available but Berkins says that an authoring tool can support SCORM requirements to widely varying degrees, and the user has to evaluate how fully the tools support each of these, and in what way.

Since RLOs are used for training and education, many companies, and organizations require SCORM compliance. While selecting authoring tool for developing RLOs and systems for delivering these we need to be careful about these standards. However, SCORM, like any specification, are not fixed but grows and changes over time (Barritt& Alderman, 2004) and there are also different editions of SCORM.

According to Berking (2016) ADL has identified certain attributes for all distributed learning environments, i.e. when teachers and learners are at different places and teaching and learning are at different times [asynchronous] using resources that may be web-based. These attributes are:

- **Interoperability:** allows use of instructional content across systems;
- **Accessibility:** the ability to locate and access instructional components from multiple locations and deliver them to other locations.
- **Reusability:** the ability to use instructional components in multiple applications, courses and contexts.
- **Durability:** the ability to withstand technology changes over time without costly redesign, reconfiguration, or recoding.

According to Berking ADL promotes the use of the SCORM, in order to achieve these attributes in distributed learning environments. Further SCORM compliance makes the content more adaptable as it can be repurposed and updated using a wide range of authorware.

### 6.7.5 Organising instructions using four quadrant approach

Resources for online courses offered through the SWAYAM (see course1) platform of India are organized as per the four quadrant approach. You will find this approach in MOOCs offered by many institutions. This approach organizes the content along four distinct dimensions. RLOs are not necessarily courses but these can be developed as short courses for teaching a concept, and the content can be developed along these dimensions. The first quadrant of SWAYAM includes videos for e-tutorials; the second includes e-Content with about 3500 words (PDF, Text, e-Books, open content Illustrations, links to content and so on. The third quadrant involves Assessment (Problem/ Solutions, multiple choice questions, Short answers type, Quizzes, Assignments etc.). The fourth quadrant involves a discussion forum that allows learners to interact with instructors and with peers(Source: <https://swayam.gov.in/>)

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## 6.8 EVALUATION

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You have read in the earlier units that courseware developed has to be evaluated. You have also read about the types of evaluation in Unit 2. Therefore you know that formative evaluation is a step towards quality assurance. Assessment of RLOs before publishing help to ascertain whether the content developed meets the instructional objectives. Formative evaluation of e -content requires thorough testing

procedures that include checking the e-content's functionality. Khan (2008) suggests that there is a need to make sure that all the links operate as designed and navigation is smooth, and it passes the performance testing using different hardware and operating system configurations. Khan also says that trialing, i.e. field testing helps in formative evaluation. Testing, trying out and revision being cyclical in nature, the revised prototype is tested and tried out again. After the course/training programme has been implemented user's views on the content generates data for summative assessment. Authorwares include provisions for collecting such feedback. Further for RLOs their interoperability also needs to be checked.

### CHECK YOUR PROGRESS 2

#### Mark the correct response:

1. Instructional design is essential for RLOs - true/false
2. In multimedia content a video is ideal for detailed explanations - true/false
3. The four quadrant approach using a discussion forum makes learning a social process - true/false
4. A story board captures and visually projects the plan for multimedia content - true/false
5. All Authoring tools have a steep learning curve - true/false
6. Authoring tools can create objects but are mostly useful for assembling objects- true/false
7. Content authored and systems delivering these need to confirm to standards ensuring interoperability- true/false

## 6.9 SUMMARY

LO is granular and includes the smallest independent structural experience that includes an objective, a learning activity and activities for assessment. A learning object which is developed for reuse and repurposing is an RLO. Since RLOs are meant for reuse and repurposing, hence these need to be short and simple with preferably few instructional objectives. These should also have metadata for easy access. Further RLOs usually are with a digital format because of which these are easy to access, reuse, repurpose and update.

RLOs benefit learners and instructors and are means for sharing knowledge. RLOs also save time and money as content already available can be reused or repurposed without recreating these. However before using RLOS, it is necessary to check their suitability for instructional purpose. Suitability of an RLO is determined by the content RLOs offer and their pedagogic soundness. Their capacity to fulfill instructional objectives is however the main criterion for deciding to reuse &/repurpose RLOs. Interoperability of RLOs is also important so that these can be used across systems and devices.

RLOs are often developed as multimedia, and to develop it a story board is helpful. An authoring tool is used for creating the content and/ for assembling LOs that have been developed/procured. The content generated is then evaluated. It is also essential to use authoring tools that develop content which is compatible with various systems and devices and SCORM is one such specification of standards.

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## 6.10 UNIT END ACTIVITIES

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1. Develop an instructional design for developing an RLO for a topic you would like to teach.
2. Develop/procure the resources required for the RLO.
3. Explore authoring tools, especially those that are not proprietary and compare their features.
4. Select an authoring tool and develop an RLO.

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online learning.

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## 6.12 ANSWERS TO CHECK YOUR PROGRESS

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### CHECK YOUR PROGRESS 1

1-true 2-false 3-false 4-true 5-false 6-true

### CHECK YOUR PROGRESS 2

1-true

2- false

3-true

4-true

5-false

6-true

7-true





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