
UNIT 20 INSTRUCTIONAL DESIGN IN E-LEARNING

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20.1 INTRODUCTION

In Unit 19 of this Block, you have gone through the phases of ADDIE approach for preparing interactive multi-media. The five phases i.e. analyze, design, develop, implement and evaluate, are also used in designing e-Learning courses.

Instructional design is a systematic process to planning and producing effective instructional materials. It is based on theories of learning and instructions and ensures the quality of instruction. Instructional design offers a blueprint for course designers to shape learning content and create the conditions for improved performance and effective transfer of knowledge. The e-Learning courses need to be designed to stimulate learners to integrate and coordinate required skills, knowledge, and attitudes in such a way that these can be transferred to real-life conditions without the help of a teacher.

This unit is designed to help you apply the phases of designing to the creation of e-Learning courses. The Unit begins by giving an overview of e-Learning and its features. It explains the e-Learning design process, using the ADDIE approach of instructional design (Ref. Unit 11, Block-3), which provides a systematic, step-by-step approach to designing and then improving effective and objectives-based instruction. The importance of reusable learning objects and its design process for creating e-courses are also elaborated. The unit ends with a discussion on rapid instructional design and rapid e-learning.

20.2 LEARNING OUTCOMES

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

- explain the concept and features of e-Learning;
- describe the various steps involved in designing e-Learning courses;
- discuss different phases of designing e-Learning;
- explain how the learning objects are designed and developed;
- identify the criteria for defining rapid e-learning.

20.3 WHAT IS E-LEARNING?

Many terms have been used to define e-Learning like **web-based instruction**, **computer-based learning** or **web-based learning**, and **online learning**. E-learning can be CD-ROM-based, Network-based, Intranet-based or Internet-based. It can include text, video, audio, animation and virtual environments. It provides rich learning experience to a large number of students due to the developments in Web 2 technologies (forum, wiki, blog, podcast, etc.).

Let us discuss a few definitions of e-Learning.

- **Definitions of e-learning**

Web-Based Instruction: It is a “hypermedia based instructional programme which utilizes the attributes and resources of the World Wide Web to create a meaningful learning environment where learning is fostered and supported” (Khan, 1997).

Virtual Learning: “The educational process of learning over the Internet without having face-to-face contact is known as Virtual Learning” (French, et al., 1999).

Online Learning: It is synonymous to web-based learning where learning is fostered via hypertext transfer protocol (http) in Internet or Intranet.

E-learning: It is a broad term in compassing a wide variety of electronic technologies used for educational purposes, and a wide variety of educational for and designs (Bates and Poole, 2003; OECD, 2003; and Allen and Seaman, 2008). It covers a wide set of applications and processes including computer-based learning, web-based learning, virtual classroom, and digital collaboration

E-learning incorporates all educational activities that are carried out by individuals or groups working online or offline, and synchronously or asynchronously via networked or standalone computers and other electronic devices (Som Naidu 2006).

E-learning involves the use of a computer or electronic device (e.g., a mobile phone) in some way to provide training, educational or learning material. (Derek Stockley, 2003) (See Block-2, Unit-9 of Course MDE-518).

- **Features of e-Learning**

E-learning has definite benefits over classroom instruction. The most obvious are the flexibility and the cost savings benefits that results from not having to travel or spend excess time away from work. These features are:

- Self-paced
- Self-directed
- Anytime-anywhere learning
- Faster-learning
- Less-expensive
- Collaborative learning

Let us discuss these features in detail.

- E-learning is **self-paced** and gives students a chance to speed up or slow down as necessary. This feature takes care of the individual differences which is not possible in traditional classroom.
- E-learning is **self-directed**, allowing students to choose content and tools appropriate to their differing interests, needs, learning styles and skill levels. Most of the e-Learning courses are developed keeping in mind the learning theories where the focus is on the student.
- **Anytime anywhere learning** feature of e-Learning has revolutionised the training world. In e-Learning geographical barriers are eliminated, opening up broader education options. As e-Learning is available via the Internet, one can access courses anytime, anywhere that has Internet access. The 24/7 accessibility makes scheduling easy and allows a greater number of student to attend classes.
- **Faster learning** e-Learning courses can progress faster than traditional courses because of the **individualized approach**. It allows learners to skip content they already learnt and understand and move onto the issues for need training. Moreover, the multimedia based authentic learning environment of e-Learning helps one to understand the concept much more easily than traditional approach.
- It is **less expensive** to produce an e-Learning course with the use of reusable learning objects (RLO) and the course can be **updated easily** and quickly using a RLO. Online e-Learning sessions are especially easy to keep up-to-date because the updated materials are uploaded to the web server.
- It can be **easily managed** for large groups of students. With the use of powerful Learner Management Systems (LMS) the delivery, tracking and assessment of learners are automated.
- **Collaborative learning:** Technology tools, specifically the Web2 make collaboration among learners much easier. Since many of the e-Learning projects involve collaborative learning, the online environment is suitable for collaborative learning that allows a shared understanding and knowledge construction.

Check Your Progress 1

- Notes:** a) Write your answer in the space given below.
b) Match your answer with the answer given at the end of this Unit.

Describe the features of e-Learning.

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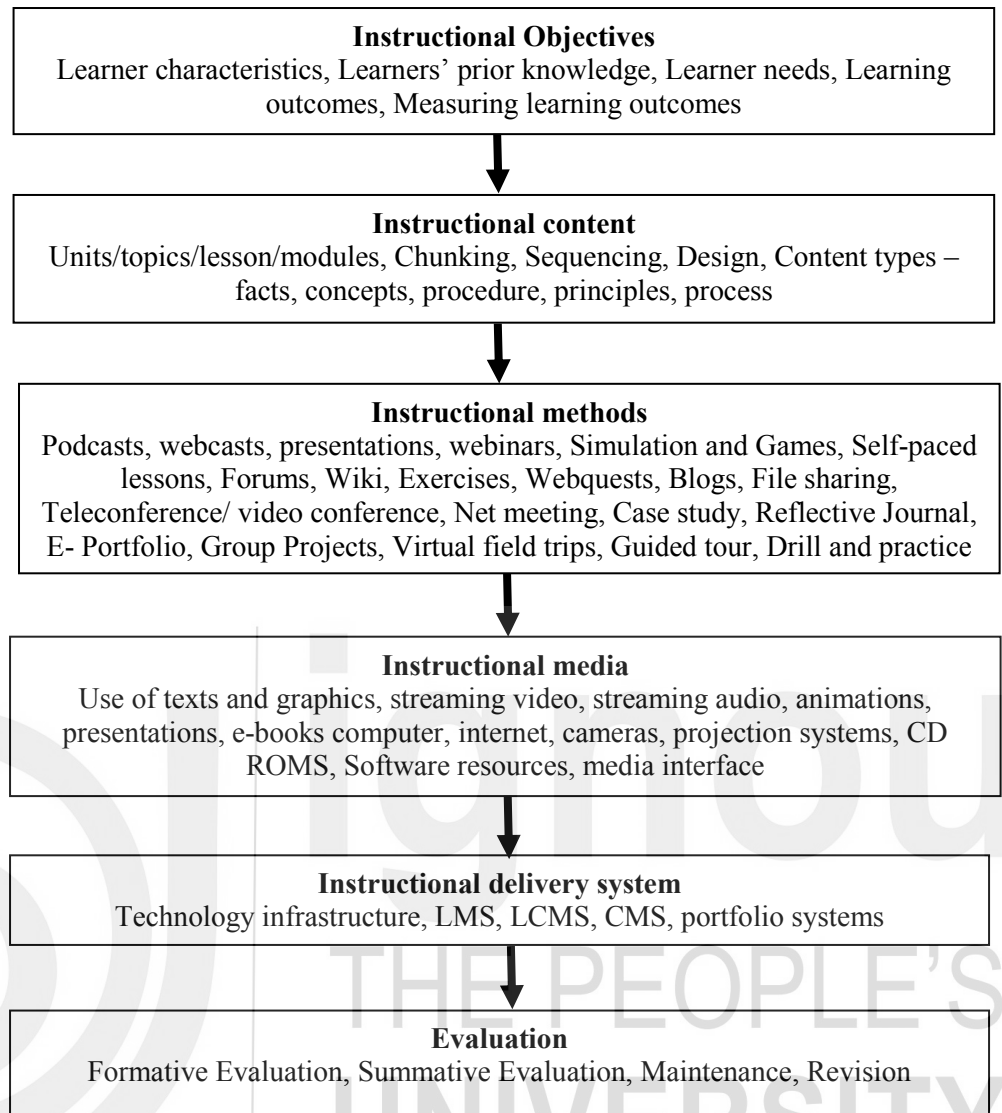
20.4 DESIGNING E-LEARNING COURSES

The integration of technology in e-Learning has taken over many of the human functions, making us think differently about the instructional design aspect of e-Learning courses. Though many aspects of traditional design will remain the same for e-Learning, one must go beyond those approaches to ensure that a proper blend of technology and instruction happens in e-Learning design. By adopting the theories and models of instructional design, we can avoid many of the problems often experienced by those who need to use new technologies in open and distance learning. According to Mishra (2002) an eclectic Model of e-learning covers behaviourism, cognitivism and constructivism, these learning theories in the context of e-learning are the basics to identify the instructional approaches to be used. (See Table 9.3: Approaches to instructional based on Vellabiba and Romiszoski (2001) of Unit-9, Block-2, Course MDE-518. The instructional design model for e-learning environment can consider the students, the subject and learning outcomes desired in the students to create the courses and programme.

However, it is learning, not technology which is to be kept at the centre of e-Learning development. Fig. 20.1 gives the essential elements to be considered while designing an e-Learning course.

There are many models for designing instruction as discussed in Block-2, Unit-5. Instructional design models may range from prescriptive, behaviourist presentations to more free-flowing constructivist forms. {Ref. Unit 5 of Block-2, Course MDE-412}

Fig. 20.1: Designing an e-Learning Course



Some of the common models used for designing e-Learning are the Dick and Carey Model and the ASSURE Model. Before going to the next section please go through Unit 5, Block-2 of this course pertaining to different types of theories and models of instructional design.

Check Your Progress 2

Note: a) Write your answer in the space given below.
b) Match your answer with the answer given at the end of this Unit.

Explain the essential elements considered while designing e-learning.

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20.5 PHASES OF DESIGNING E-LEARNING COURSES

You have learnt about the application of ADDIE approach, (Unit 11, Block-03), Dick and Carey model and ASSURE model (Unit 5 of Block-02). These theories and models have implications for designing e-Learning.

The various phases which create a structured and effective flow that guides and controls designing e-Learning, are analyze, design, develop, implement and evaluation (ADDIE approach).

Let us discuss each phase of designing steps involved in instructional design for e-Learning. These are:

20.5.1 Analysis

The analysis phase identifies the learners' needs, learners profile, tasks, context and learning needs. This is the first and most crucial phase because the findings guide the entire process of designing. Analysis involves gathering information about the need of the content, learning environment and learners.

20.5.1.1 Needs Analysis

Needs Analysis is the process of identifying and evaluating needs. The main purpose of the need assessment is to identify the necessity of the desired learning outcomes of the course or a training programme. The information obtained from needs analysis can be used for defining program goals. These goals can then be stated as specific teaching/learning objectives, which in turn will function as the foundation on which to develop unit/lesson plans, materials, tests, assignments and activities. Needs analysis can be very formal, extensive and time consuming, or it can be informal, narrowly focused and quick. Some questions like the following will help in deciding the need of the courses or programme.

- What is the necessity of the educational or training programme?
- What are the specific knowledge/skills the learner needs to acquire?
- Any other courses of this nature already exist?
- Is this course a replacement or addition to an existing one?
- How often will the course or training content change?
- Is this course suitable for online delivery?
- How soon do the learners need the skills or knowledge from this course?

20.5.1.2 Learner Analysis

Information obtained from learner analysis will help to tailor the instruction to specific needs of learners. This helps the course designer to decide the difficulty level of the content and delivery methods that suit the learning styles of learners. Questions related to background information of the learner, when and where they want to learn software and hardware resources available with the learner, their prior knowledge, the technology competencies that they possess, their possible expectations from the course,

access internet and the band width will guide the learner analysis. The key to instructional design is to work around the participants rather than the content alone. The information from the learner analysis helps to create a course that focuses on learners' actual needs.

20.5.1.3 Content Analysis

Content analysis is "the process of breaking large bodies of subject matter or tasks into smaller and instructionally useful units. Its purpose is:

- to identify and isolate a single idea or skill units for instruction,
- to act as an objective decision rule for including or excluding topics from instruction, and
- to provide guidance for sequencing topics in instruction.

The result of this analysis will "provide the basis for preparing performance objectives which in turn will guide the development of instruction and test items".

Outlining the course content will also help you decide the delivery options. Content analysis will also help in identifying the structure of the course, duration of the course, duration of each modules/lessons, fully online or blended approach.

It is also necessary to identify whether a content can be used as a whole or only a part of it i.e. with modifications. With Reusable Learning Objects (RLO) gaining popularity it is not hard to find content that could be re-used. If you find content (RLO) which is suitable and compliant with the standards specifications, of the course then re-use can save lot of time and resources. If you find content that you think can be re-used or re-purposed, see if the content's Learning Objectives align with your needs analysis. In some cases the RLO could be re-used as it is and in other you may have to modify it.

20.5.1.4 Technical Analysis

The purpose of technical analysis is to establish the baseline technical capabilities and requirements and thereby estimate the development cost, efforts and implications. It is very important to decide what the minimum technical capabilities and requirements will be to develop and participate in the course or training.

Establish the following issues before you design the instruction.

- Establish minimum standards including processors, memory, hard drive space, hardware (CD ROMs, DVD capability, speakers, microphones, etc.), software (browsers, word processors, FTP, plug ins, video viewers, etc.), and bandwidth for the learner and the instructor. This will imply restrictions in choice of media and tools.
- Decide the e-Learning tools necessary to develop the course including all software and hardware; their cost, availability and suitability.
- Hardware and software requirement of the server. The online course should be hosted on a fast, reliable server, with a high bandwidth connection.

- The learner management system that will be used to create the virtual learning environment and what are its features?
- The number of people that will be required to develop the course and their competencies?

A list of tools needed for e-Learning is given below in Box 20.1:

Table 20.1

<p>Content creation tools</p> <ul style="list-style-type: none"> • Tools for creating avatars (virtual characters) • Course and lesson authoring tools • E-book tools • Graphics and animation tools • Image galleries and sound effects libraries • Assessment tools • PDF tools • Video and simulation tools • Web page authoring tools • Survey and polling tools <p>Delivery and distribution tools</p> <ul style="list-style-type: none"> • Podcasting tools • RSS tools • Web casting and streaming tools • Presentation tools • Mobile learning tools <p>User tools</p> <ul style="list-style-type: none"> • Operating system • Browsers • Media players • Plug Ins • PDF reader • Word processor 	<p>Communication and Collaboration tools</p> <ul style="list-style-type: none"> • Discussion boards and forum tools • E-mail tools • Live support tools • Meeting and teleconferencing tools • Instant messaging and chat tools • Social networking tools • Social book marking and file sharing tools • Wiki tools <p>E-learning systems</p> <ul style="list-style-type: none"> • Content management systems • Learning management systems • Course management systems <p>Hardware tools</p> <ul style="list-style-type: none"> • PC/laptop/ net book • Smart phones/ palmtop computer • Printer / scanner/ speaker • Microphone /speaker/ web cam
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20.5.2 Design

The design phase follows the outcomes of the analysis phase and the outline of the course content is developed at this phase. The findings from the design phase are collected and maintained in the design document.

20.5.2.1 Writing Learning Objectives

A learning objective is a statement of what the learners will be expected to do once they have completed a specified course of instruction. It prescribes the conditions, behaviour (action), and standard of task performance for the course. The objective is sometimes referred to as performance or behavioural objectives. The analysis done earlier will help you to formulate the objectives that are achievable for the e-Learning course (See Block-3, Unit-13).

20.5.2.2 Entry behaviour

The learner's performance should be tested to determine if their entry behaviour (Knowledge, Skills, and Abilities) match the proposed level of instruction. It is crucial to assess entry behaviours and to set appropriate pre-

requisites. Adequately assessing entry behaviours and prior knowledge is essential for achieving the goals and objectives set for the instruction. To assist you in determining the entry behaviours refer to the information you obtained in the audience analysis stage them to consider what needs to be learned through for the course. You are designing an online course for which computer literacy will be essential. Assess the learners' capability to use of technology and determine what minimum standards should be required.

20.5.2.3 Instructional Strategy and Learning Objects

Having developed objectives, it is necessary to devise an appropriate instructional strategy to maximize learning. Among the things to consider are different instructional methodologies, techniques to reinforce and remediate, and the exploration of different motivational techniques.

The current trend in online teaching make use of **reusable learning objects**. Each learning object consists of an objective, instructional content (including appropriate media), mechanisms for assessment of the instruction, and references.

- **Structure and Component of Learning Objects**

The structure and composite nature of a learning object are: interpretation. Content models provide a framework for defining the structure, that is, the level of aggregation/granularity of learning objects. Cisco Systems (http://www.e-novilia.com/materials/RLOW_07_03.pdf proposed in 2003 suggested five aggregation levels for structuring learning content:

- Subtopic
- Topic or RIO (reusable information object)
- Lesson or RLO (reusable learning object)
- Module
- Course.

Let us discuss a learning object in detail.

A course is comprised of a collection of modules, which in turn include collections of lessons. A lesson can be re-usable in multiple courses and learning contexts. A lesson or re-usable learning object consists of a single learning objective, an overview, a summary, and a collection of topics (or RIO), as well as practice activities, assessment, and metadata. In particular, five to nine re-usable information objects can be combined to form a learning object (Barron, 2002). A topic is a self-contained re-usable information object that consists of subtopics (such as small chunks of information of various types such as definitions, examples, tables, guidelines, etc.), assessment, practice activities, and metadata. Topics are grouped into five category types, including concepts, facts, procedures, processes, and principles. Both RLO and RIO components (such as content, activities, and assessment) can be represented in various media formats such as text, audio, animation, videos, Java code, applets, and other delivery media (Cisco Systems, 2003b; 2003a). It is worth mentioning, however, that although Cisco initially treated a single lesson as a learning object, for the purpose of terminological simplicity, Version 4.5 of the strategy regards each aggregation level (from topics to courses) as a learning object (Cisco

Systems, 2003b). This revision, however, broadens the scope of a learning object and does not specify its exact position in the course hierarchy as it did previously. (Ref. Course MDE-418, Block-04 Units 19).

Instructional strategies for designing e-Learning

The following are some of the instructional strategies that can be used in e-Learning.

- **Information presentation:** The web pages display textual as well as graphical information for the learners. Audio-video based learning materials can also be provided to the learners on the web page.
- **Decision-making:** Computer and web technologies allow learners to take their own decision to follow the links provided on the pages. The learning environment can be customized for individual needs based on learner's decision to take course/module/units. The learners can also decide on the kind of interface (graphical and/or text-based).
- **Guidance and Collaboration:** E-mail and online asynchronous discussion group facilitate collaboration on the web. Using e-mail, the learners can interact with the tutor. Similarly, learners can collaborate through discussion groups to discuss and debate various aspects of the curriculum.
- **Drill and Practice:** Like computer assisted learning, e-learning also provides drill and practice opportunities. Using formative assessment techniques in the course content presented in small chunks can lead to optimized learning.
- **Feedback:** As we understand, feedback is an essential component of the overall learning process. Learners can receive automated feedback for assignments, and during interaction with formative assessment tools in the web pages. Tutors can also provide e-mail based feedback to learners with a human touch.
- **Reflection:** Using the asynchronous discussion tools, learners can reflect on ideas and steps held by other learners, as well as on real life events and express it.
- **Articulation and Creation:** When the learner is reflecting someone else's idea, he/she is also trying to articulate his/her own thought in writing. There by the learner engages in deep thinking and creates new knowledge embedded in a social and meaningful context.
- **Discovery:** The web provides an opportunity to the learner to discover new learning resources on the web. Inclusion of search facility on the learning site can facilitate this or the student can use other search tools. The emphasis here is on promoting independent learning and evaluating the quality of information that one gathers through web searches. (Wikinson et al. 1997)
- **Assessment:** With the emphasis on self-directed learning and learner autonomy, the learner tries self-assessment. So, learner assessment is of greater importance than assessment by tutors/teachers. However, the web provides opportunity for speed, and power test for objective type questions. Electronic assessment of essay type questions is also now possible to bring objectivity into the evaluation process (Swartz, 2001).

20.5.2.4 Media utilisation

To make e-Learning efficient the delivery of instructional content using appropriate instructional media is important. The appropriate selection of instructional media to support e-Learning is not intuitive and does not result from personal preference. Utilizing a systematic approach to media selection ensures that appropriate instructional media are employed to support desired learning objectives. Instructional goals should drive media selection, application, and the course development process. Characteristics of the distance learner and the impact of technology on instructional processes are also important considerations in instructional media selection and course development.

20.5.2.5 Design learner assessment and course evaluation

Design of the student assessment strategies and evaluation components of an e-Learning course is an integral part of the design process. This has a positive role in a course or training. The goal should be to evaluate the learners' level of achievement of each objective and to provide constructive feedback and remediation where ever necessary. Online tests make use of testing software useful for creating visually appealing creative test items in multiple formats. The test generated by these softwares typically consists of:

- Test questions of different formats
- Possible answer choices
- Correct answer and reinforcement/feedback
- Wrong answer and remediation/feedback.

The test generated using stand-alone software can be integrated with the LMS to generate grade sheet and record keeping for individual student. Course designers should exploit the interactivity e-Learning, to embed opportunities for self-assessment. Most LMS have a testing tool. For example, Moodle testing tools can create and grade multiple choice, fill in the blanks, matching, short answer, and even essay items. Another approach to assessment is the authentic assessment which can be done using electronic portfolio. The open source ePortfolio platform like Mahara can be integrated into LMS like Moodle to assess the learners. (Ref. Unit 22, B-5)

Course Evaluation: Evaluating the content you designed and the overall effectiveness of the course is essential to ensure the quality of e-Learning courses. This can be done by providing an opportunity for the learner to evaluate the course or training so that it can be improved. Understanding learner perceptions and obtaining their feedback is essential to the continuous improvement process. Many LMS has this feature inbuilt into it in the form of survey which the students can take for any particular aspects or whole of the course.

20.5.2.6 Design the interface

The user interface is one of the important elements of e-Learning course and it plays a crucial role for providing a meaningful and efficient experience to the learners. The learning effectiveness and interface design are substantially intertwined and it is the interface design that the learner constantly interacts with throughout the course. The success of any training program is largely dependent on the student's own motivation and attitude. As such, an interface design can have motivational or de-motivational effects. An appealing

interface can draw the learner to be engaged in the course while a poorly designed interface has them feeling lost, confused, or frustrated, which becomes a barrier to effective learning and information retention. Therefore, spending substantial time on this aspect of e-Learning design can be valuable for learners.

Usability: After developing the interface design it is better to do user testing to verify the design and layout. This user testing should be carryout with the help of those who are not acquainted with the course or were involved in the development. However, getting the users from the target group for whom the course is meant is important. Testing the designed user interface on the end users makes it more user-friendly. Any suggestions by learners can be incorporated and areas that learners find difficult to use can be corrected. No interface design should be finalized without testing it on the target audience to gauge its actual usability.

20.5.3 Development

In the previous sub sections, you have read the analysis and design phases involved in preparing e-learning courses. Planning and deciding about the software to be used and instructional strategies to be followed are the key components for development of e-learning courses.

According to Byunebal (2002), in an e-learning course development process it is important to consider the following:

- Arrange for necessary copy right permissions;
- Focus on the management of instructor-student communication;
- Arrange for usability test;
- Research the minimum hardware/software available to students;
- Identify and arrange for necessary support both for students and instructors, student;
- Develop a plan for assessment strategies and assessing course quality.

The steps involved in the development phase are: Authoring, Storyboard and Prototyping quality assurance;

Let us discuss each phase pertaining to development of an e-learning course.

20.5.3.1 Authoring

Based on the information obtained through the prior phases, you can start authoring the content. Take each learning objective and write the lesson for fulfilling it. If you are co-authoring, it might be good for you to use an authoring template. This will help authors to use as uniform format which in turn makes it easier for the content to be presented in a consistent style. E-learning development entails much more than designing appealing modules for your content with the latest authoring program. Effective development will include less popular elements such as coding, standards, and accessibility.

There are several authoring choices - Macromedia Flash, Dream Weaver, Authorware, macromedia breeze, captivate, and director; are authoring tools available. This is not an exhaustive list, as authoring tools have become extremely popular due to the increasing ease of use and the popularity of the effects they can produce in small amounts of time. In addition to these authoring tools one will have to use various media editing tools to create

appropriate audio, graphics, video, and simulations. The instructional design process ensures that your content is conceived, created, and implemented in an instructionally sound manner. Without an instructional design, you may have an attractive yet ineffective product.

20.5.3.2 Storyboarding and prototyping

Storyboards are visual organizers, typically a series of illustrations displayed in a sequence for the purpose of pre-visualizing a video, web-based training, or interactive media sequence. The objective of the storyboard is to describe in detail how the end product would be. Storyboarding is primarily the task of an Instructional Designer. The more detailed the storyboard, the more effective the end result would be. It is important for an instructional designer to be well-versed with the design principles to be able to create a good storyboard. (See Unit 11, Block-03, Course MDE-412)

The disadvantage of using a storyboard for developing online learning is that it tends to limit the final product which ends up being very linear. In addition, many features of online media cannot be easily captured in the storyboard format. It is very difficult to develop a storyboard for database driven learning applications and online learning that has social interaction. For these reasons many instructional designers have shifted to using rapid prototyping as visual representations instead of storyboards. It is wise to test a prototype before full development.

It is best to detect potential problems at this stage of development and address these, then to wait until the development is complete, or worse, until we are getting poor results.

A **Rapid Prototype** is simply a quickly assembled module that can be tested with the student audience early in the Instructional System Design (ISD) process. The evaluation typically looks at things like how well the learners responded to the outline and an actual piece of the design, how effective the learning activities are, and how well the program performs on the chosen technology platform. Based on the feedback, the design can be revised and another prototype can be developed. This iterative process continues until you finally have the complete programme or course. The reasons of Rapid Prototyping are:

- To increase effective communication;
- To decrease development time;
- To decrease costly mistakes;
- To extend product lifetime by adding necessary features and eliminating redundant features early in the design.

Rapid Prototyping decreases development time by allowing quick corrections to a product that can be made early in the development process. Its users are involved in the development process, the system produced is obliged to their needs.

20.5.3.3 Quality Assurance

Quality assurance of e-Learning courses can be based on the following aspects. These are:

- **Content quality:** Veracity, accuracy, balanced presentation of ideas, and appropriate level of detail

- **Learning goal alignment:** Alignment among learning goals, activities, assessments, and learner characteristics
- **Motivation:** Ability to motivate, and stimulate the interest or curiosity of, an identified population of learners
- **Presentation design:** Design of visual and auditory information for enhanced learning and efficient mental processing
- **Interaction usability:** Ease of navigation, predictability of the user interface, and the quality of User Interface (UI) help features
- **Standards compliance:** Adherence to international standards and specifications.

20.5.4 Implementation

Implementation is the fourth phase of instructional design of e-Learning courses.

E-learning can be delivered in three models they are:

1. Using the web as a supplement to face to face instruction;
2. Using the web in a mixed mode with face to face instruction or distance learning; and
3. Using web-based instruction as completely online with no face-to face student-student or student-teacher interaction.

According to French *et al*, (1999) the e-learning environment using web-based instruction as completely online with no face-to-face interaction is useful for both student and teachers as it can facilitate shift from *instructivist* to *constructivist* learning paradigm that represent student directed learning rather than teacher directed learning. (French et al. 1999)

The purpose of this phase is the effective and efficient delivery of instruction. This phase must promote students' understanding of instructional content, support the students' mastery of objectives, and ensure the students' transfer of knowledge from the instructional setting to the work place.

Planning for implementation is important. The implementation plan establishes the implementation timeline and procedures. Some of the implementation issues where the timelines and procedures need to be developed are as follows:

- Establish the time schedule for the course rollout;
- Launch the course, its promotion and marketing;
- Schedule the courses, enrol learners and the management plan for the learners;
- Prepare the learners with instructions, help guides and tutorials ;
- Decide upon the delivery platform and select the learner management systems;
- Decide upon the reporting procedures and allocate the responsibilities;
- Work out the maintenance schedule and plan the upgradation requirement and the frequencies;
- Develop the end user technical support system and implement the same.

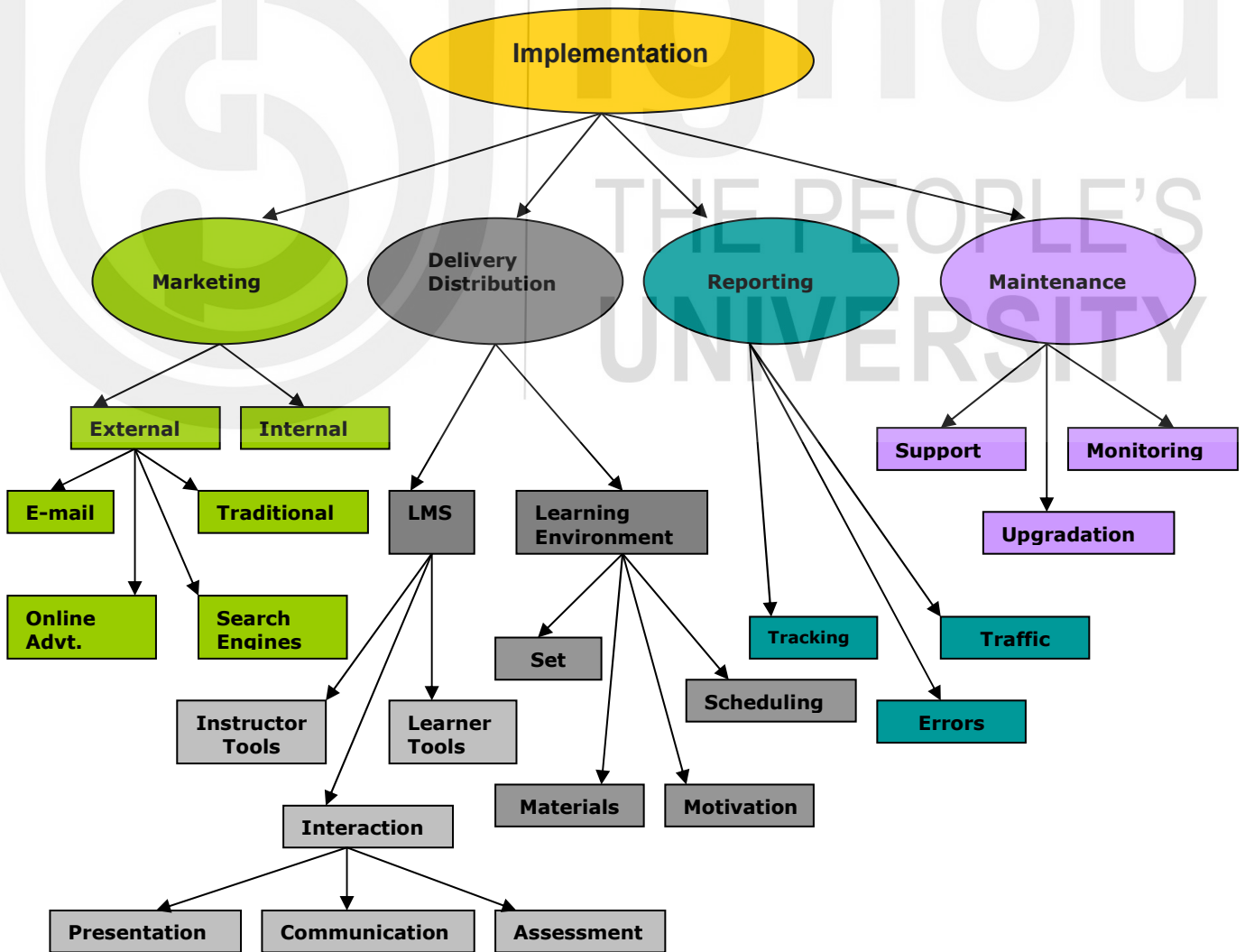
Check Your Progress 2

Note: a) Write your answer in the space given below.
 b) Match your answers with the answers given at the end of this Unit.

- Describe the steps involved in analysis phase of e-Learning.

- Explain the implementation issues that are involved in designing e-Learning.

The **concept map** below illustrates various aspects of implementation.



20.5.5 Evaluation

Evaluation is important to ensure that the course meets the objectives that we have formulated. Evaluation will also help in the revision and improvement of the course in the future. It is essential to design formative and summative evaluation methods that are congruent with the instructional activities as this will support achievement of the stated learning goals. Continuous assessments provide feedback that the instructor or the designer can use to correct design problems as the course progresses. Without appropriate evaluation it is almost impossible to bring about the improvement essential for the success of the programme. In Block 03, Unit 15, Course MDE-412 this concept has been discussed in detail.

20.6 RAPID INSTRUCTIONAL DESIGN AND RAPID E-LEARNING

The traditional e-Learning instructional design enable iterative steps for development of course/programme (analyze, design, develop, evaluate, get feedback, revise, and then implement). These courses/programme have the need for urgent development and often have a short shelf-life. Often these programs have smaller budgets, smaller teams, and require intimate involvement of subject-matter experts. The instructional design suitable for such situation is known as rapid instructional design and rapid e-Learning. De Vries and Bersin (2004) identified the following criteria for defining rapid e-Learning. They are:

- Courseware which can be developed in less than three weeks;
- Subject Matter Experts (SMEs) act as the primary resource for development;
- A well-known tool (e.g., PowerPoint) or user friendly templates form the starting point for courseware;
- Simple assessment, feedback and tracking provided;
- Media elements which enhance learning but do not create technology barriers may be included (e.g., voice);
- Synchronous (live) and asynchronous (self-paced) models may be utilized.
- Rapid e-Learning is often developed in response to urgent business needs, such as:
 - a product launch or competitive situation;
 - as part of a continuous update program;
 - when the content has a short shelf-life.

Therefore, rapid e-Learning is designed when the content of a programme requires changes or have to be updated frequently and also when there is a need for quick delivery of a programme with reusable learning objects.

Check Your Progress 4

- Notes:** a) Write your answer in the space given below.
b) Match your answer with the answer given at the end of this Unit.

Discuss the criteria for defining rapid e-learning.

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20.7 LET US SUM UP

E-learning is referred to as the use of networked information and communications technology in teaching and learning. As the letter ‘e’ in e-Learning stands for the word electronic, this incorporates all educational activities that are carried out by individuals or groups working online or offline and synchronously or asynchronously via networked or standalone computers and other electronic devices. In this Unit, we have discussed designing e-Learning and contributions of instructional design models. E-learning affords opportunities to design learning environments that are authentic, situated in the learning context, and also problem-based. These aspects are useful for providing students with ‘learning by doing’ experiences.

20.8 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress 1

The features of e-Learning are self-paced, self-directed, anytime-anywhere learning, faster learning, less-expensive and collaborative learning. (Please see Section 20.3)

Check Your Progress 2

The elements involved in designing e-Learning are defining instructional objectives, developing instructional content, method, media, instructional delivery system and evaluation. (Please see Section 20.4 and Table 20.1)

Check Your Progress 3

1. An Analysis phase of e-Learning consists of needs analysis, learner analysis, content analysis and technical analysis (Please see Sub-section 20.5.1)
2. Please see Sub-section 20.5.4.

Check Your Progress 4

The criteria for defining rapid e-Learning are: Courseware design, selection of SME, feedback, synchronous and asynchronous models (Please see section 20.6).