2. TYPES OF E-LEARNING

2.0 OBJECTIVES:

At the end of this chapter, you will be able to comprehend the types of e-learning

2.1 Differentiate Synchronous and asynchronous learning

2.2 Explain the three tiers of e-learning

2.3 Know the varieties of e-learning

2.4 Discuss the degree of Interactivity

2.5 List the different delivery methods

2.6 Define Learning Portal

2.7 State the characteristics of LMS and LCMS

2.1 Synchronous and asynchronous learning

Synchronous e-learning requires the learner to be online with the instructor at the time they are learning. Other learners may be online at the same time.

Asynchronous e-learning still enables the learner to interact with other learners and the trainer, but does not necessarily require the learner to be in contact with any other learner or instructor at the time they are learning. It should be noted that restraints can be put on asynchronous learning: for example, learners may be required to complete a course within a given time.

Some e-learning combines both synchronous and asynchronous forms.

Some characteristics and examples of each of these are provided in the following Table

Synchronous learning	**Mixed mode**	**Asynchronous learning**
The learner is online at same time as an instructor or other learners.	For at least some of the time, the learner is online at same time as an instructor or other learners.	The learner is not online at same time as an instructor or other learners.
An instructor usually is required.	An instructor is required for at least some of the time.	An instructor is not necessarily required.
The study is not self-paced, but when delivered in a blended mode can be self-directed.	Only some of the study is self-paced.	This is truly self-paced study, although time restraints may be set for completion.
The learner gains immediate feedback from the instructor and other learners.	The learner can gain both immediate and delayed feedback.	The learner gains feedback from the instructor either not at all, or after a delay.
Examples: chat groups, virtual classrooms, videoconferences, teleconferences.	Examples: uses any of the examples from both synchronous and asynchronous modes.	Examples: email communications, online forums, discussion lists.

2.2 TIERS OF E-LEARNING

Good e-learning involves and engages the learner by allowing them to experience a range of media during the learning process: sound, video, photographs, and text. In addition, it provides feedback to the learner about their progress, and generally allows them a degree of independence in when and where they study, and interaction with other learners and the instructor.

Broadly speaking, e-learning can be thought of as having three tiers, depending of the degree of interactivity involved.

- **Tier 1** e-learning is the most basic, and may amount to little more than electronic delivery of content to the learner. There may be some online assessment and use of media to support the learning, but overall there is a low degree of online interaction. Examples include placing Microsoft PowerPoint presentations online, e-books, and online manuals.

- **Tier 2** e-learning allows the learner to have a degree of interaction with the content being delivered on screen, and makes use of a range of media to reinforce the learning. However, it does not build in interactions between learners, or between learners and their instructor. Examples include online quizzes and tests, computer games, demonstrations and simulations.

- **Tier 3** is the top tier of e-learning. It encourages self-directed learning, may be rich with media, and as with traditional classroom training it engages the learner in a learning community. Examples are virtual classroom or MOOC courses.

In Tier 3 many businesses today are including quite a bit of synchronous learning involving online interaction of learners and trainers. This is equivalent to an electronic form of classroom training (the virtual classroom) and has the constraint of requiring all participants to be available at a particular session time. However, the benefits of asynchronous interaction, where both organisations and individuals are free to participate at times that suite them, ensure that asynchronous learning communities are still very prevalent. Often businesses use a combination of both synchronous interactions supported by asynchronous discussion environments and learning activities.

Another Tier 3 characteristic that is beginning to emerge are businesses using the Internet to explore, publish and connect with others with like interests, using social software like blogs and wikis.

2.3 VARIETIES OF E-LEARNING

e-Learning comes in many variations and often is a combination of the following:

- Purely online - no face-to-face meetings
- Blended Learning - combination of online and face-to-face
- Synchronous

- Asynchronous
- Instructor-led group
- Self-study
- Self-study with subject matter expert
- Web-based
- Computer-based (CD-ROM)
- Video/audio tape

Standalone courses

Stand-alone Courses are taken by a sole learner. The learning is self-paced without interaction with an instructor or classmates

Virtual classroom courses

Teaching in a virtual classroom is conducted live. The virtual classroom provides a live, interactive, Web-based event for communicating with geographically dispersed learners. The presenters can poll the audience, receive questions, and leverage other network contents. Among the audience members can chat or break into workgroups. On the other hand the instructors too can pull elements form other e-learning technologies into the virtual classroom by simply using a browser.

Virtual classrooms can leverage existing infrastructure to create an online learning environment. Attendees receive a 'virtual space' in a classroom to access live, interactive desktop training. The environment features full-duplex multicast audio, group polling, and HTML content viewing. Virtual classrooms provide the benefit of anyone attending or presenting course material from anywhere as long as they have a network connection and browser. A central server can handle all interactions, so that an expert in Singapore can make a presentation to audience in India. It is two-way full-duplex and multicast audio for clarity, so users can communicate verbally within the same group or classroom.

- **Content on demand:**

Through this technology the Internet delivers multimedia based learning situation to a global audience reliably, cost effectively and faster as compared to CD-ROMs, multicasts or satellite broadcasting. On-demand delivery is a flexible alternative, providing e-learners with any time, anywhere access to training. It is a cost-effective solution and is viewable via dial-in lines at 14.4, 28.8, and 56 kbps.

This method of learning is useful in keeping everyone in a global organization informed about latest products, announcements, or product training. The greatest convenience is that it lets people decide which information they want and when they want

Computer-based Training (CBT)

Computer-based courses are presented most often on CD-ROM, accessible any time for use at the desired pace of the user.

Benefits of computer-based training:

- Users can approach the material in a way that best suits them, skipping familiar sections or spending additional time on the difficult ones.
- Courses are portable and accessible without need for a network.
- Generally high quality of graphics and presentation

Web-based Training (WBT)

Web-based courses permit the learners to access at any time to the training they require. Learners log into an online training system with a user name and password to begin an interactive course. Costs are similar to computer-based training, but many web-based programs go further, permitting interaction with an instructor and an online community of fellow students.

Benefits of web-based training:

- Just-in-time training
- Suits all learning styles
- Higher retention of information/skills
- Continuous updating of materials and access to further resources

Embedded e-learning

E- learning included in another system, such as computer program, a diagnostic procedure or online help

Mobile learning

Learning from the world while moving about in the world. aided by mobile devices such as PDAs and smart phones

Knowledge management

Broad uses of e-learning, online documents, and conventional media to educate the entire population and organizations rather than just individuals.

Blended Learning

Blended or hybrid courses mix online and face-to-face (f2f) components. In fact, courses in which there is even a minor online component (e.g. a supporting website, **email** access to the instructor, an online reading list) are sometimes referred to as e-learning courses. Furthermore, all courses blend a range of learning media or learning opportunities; at the most basic level, they involve thinking, reading and blending new information with existing knowledge.

The term-blended learning was originally used to describe courses, which tried to combine the best of face-to-face and online learning. As the term became popular, more and more combinations were referred to as blended learning: for example, combining a range of technologies, a range of teaching methods, a range of learn tug experiences, or a range of locations of the learning event

One example where the term leads to useful research results is a study which examines the relationship of a sense of community across three modes of learning: the traditional classroom, blended, and fully online higher education learning environments. The research provides evidence, which suggests that blended courses produce a stronger sense of community among students than either traditional or fully online courses (Rovai and Jordan, 2004). In a study of the workplace over two years, Barbian (2002) concludes that blended learning boost employee productivity over single-delivery options.

The blended solutions commonly used are: 50/50 models of face-to-face and online learning which combine the best of both worlds; even 75 per cent online with one face-to-face or residential meeting is successful in overcoming the limitations of online learning while benefiting from its overall cost-effectiveness and flexibility,

2.4 DEGREE OF INTERACTIVITY

E-learning can be presented and delivered to the learner in many different ways and for a range of purposes.

Important in any e-learning is the degree of interactivity for the learner, and whether the learner is able to study at any time, or whether there is a need for the learner to be online or in a classroom with other learners at the same time (synchronous learning). Other things to consider are whether an instructor is required, whether the learning is blended or not, how the course is delivered, whether the course is accessed through a learning portal, and whether a management system is required to look after the administrative aspects of the course, or updates to the course content.

Ideally, e-learning should engage the learner, allowing them to interact with the course materials, obtaining feedback on their progress and assistance whenever it is required. However, the degree of interactivity in e-learning depends on how the course has been developed, and generally is dependent on the software used for its development, and the way the material is delivered to the learner. For example, a learner who accesses their material from the Internet usually has a lower level of interactivity than one who is accessing material from a CD-ROM.

The following table summarises different types of e-learning based on the degree of interactivity required of each. The learning could be delivered on a computer or a mobile learning device, such as a personal digital assistant (PDA).

Tier 1 learning (low interactivity–mainly text, multimedia or graphic one-way communication)	**Tier 2 learning (moderate to high interactivity–has some degree of learner to computer interaction)**	**Tier 3 learning (high interactivity–includes learner to learner and learner to trainer interaction)**
PowerPoint presentation, learning on a personal digital assistant, e-books, podcasting, videotape, audiotape.	Interactive resources, quizzes, tests, reflective learning, games, simulations, demonstrations.	Virtual classrooms, streaming media, group games, videoconferences, audio conferences, chat groups, emails, discussion lists, blogging, wikis, moblogging, MOOCs

Each tier of e-learning has implications for the method of delivery of the learning.

2.5 DELIVERY METHOD

The delivery of e-learning can range from an HTML-based online tutorial, which relies on web pages accessed through a browser, to text and graphics on a mobile device like a personal digital assistant, to screens rich in interactive video, text, images and audio delivered from a CD-ROM.

At the high end, enterprise level systems can provide for the establishment of entire corporate learning programs, based on detailed competency specifications that allow individuals to follow customised learning pathways for a multitude of learning outcomes. These enterprise systems exploit the capacity for online delivery to present multi-media content (text, sound, video) and complex interactivity (such as real-time feedback and assessment). They provide also for authoring of learning content and delivery of content authored to interoperable standards.
Smaller scale technologies include the following:

- HTML pages
- Slide presentations
- webcasts
- podcasts delivered on an iPod or similar technologies
- blogging
- Internet telephony (Voice over IP)
- e-books on PDAs or mobile devices
- wikis.

Larger scale technologies include the following:

- streaming audio -used to deliver the instructors comments over any network
- streaming video - can deliver video over any network
- web pages - very common form of delivering content
- interactive content - often delivered on a CD-ROM, but also deliverable through the Internet and local area networks
- online tests
- interactive tools - these could include web forums (asynchronous), discussion lists (synchronous), chat rooms, teleconferencing and videoconferencing
- MUDs (Multi-User Domain, or Multi-User Dimension) – these are computer programs, usually running over the Internet, that allow multiple learners to participate in virtual-reality role-playing games
- learning management systems (LMS) and learning content management systems (LCMS) – these are high-end e-learning applications that allow for online content development, learning management and learning delivery, and provide additional technological benefits that can take the concept of organisational learning into the area of knowledge management.

2.6 LEARNING PORTAL

A learning portal is a website that contains links not only to learning material, but also to a range of resources and useful information, making that site a gateway (portal) to this information. Usually such a portal is a part of the intranet of the organisation. It generally is successful only if it is kept up to date, and the content is changed regularly to encourage learners to make repeat visits to the portal.

The following items could appear on a learning portal:

- news about any issues related to the education and training program of the organisation
- a listing of available courses (including those not classified as e-learning, with links to and information about each
- an overview of the support that is available to learners
- links to resources available to learners
- information about the team of instructors
- contact details for anyone involved with the support of the courses, including support with the technology
- access to learning communities (such as chat rooms and discussion lists), and a log-in area to allow learners to access information about the courses they have completed and their course results. This may depend on a learning management system tracking this information.

2.7 MANAGEMENT SYSTEMS

There are two types of management systems commonly used in e-learning.

LMS. A learning management system (LMS) is a computer program for tracking learners doing an e-learning course. An administrator can track the progress of individual learners, their scores on assessments, and have an overview of the progress of any cohort of learners. Learning management systems can assist with scheduling, distribution of materials to learners, and provide a great deal of understanding of how well learners are coping with the course.

LCMS. A learning content management system (LCMS) is software that allows an administrator to update content on an e-learning website without needing specialist web page editing skills. An LCMS ensures that the styles of the site are retained, and that the course content remains current for learners.

Some software incorporates the features of both an LMS and an LCMS.

Learning Management System (LMS)

When considering a learning management system, take these things into account:

- will it be hosted on your organisation's computers, or do you need to outsource this?
- what information do you want the LMS to track?
- will you be able to customise it to your needs?
- will you easily be able to add or delete learners and courses, and use the other features of the software?
- does it need to connect to other information in your organisation, such as human resources records?
- what will it cost, and how are the charges applied?
- should it also have a content management capability?

There are three ways to obtain a learning management system:

- use one of the existing free learning management systems. This has the advantage that it is free, but it also means that it may have significant limitations for you. Examples include Moodle (http://moodle.org), ATutor (www.atutor.ca), and The Manhattan Virtual Classroom (http://manhattan.sourceforge.net), although many others are available

- pay for one of the systems available online (often the charge is based on the number of learners and the amount of customisation required). These usually can be tailored more for your specific requirements, but still may not do everything you require. Examples include Ecampus (www.ecampus.com.au), Blackboard (www.blackboard.com) and Janison LMS (http://www.janison.com.au/janison/default.asp), but many more are available. Further information about choosing an LMS can be found on the Australian Flexible Learning Network website at the page on How to choose a learning management system (http://community.flexiblelearning.net.au/ManagingFlexibleDelivery/content/article_6944.htm)

- pay for the development of an LMS that is tailored to your specific needs. While more costly initially, this option often proves cost effective in the longer term, and will provide everything you would require of your LMS.

Learning Content Management System (LCMS)

A learning content management system has a number of characteristics:

- it allows the creation of content, including incorporation of text, graphic and movie files into the content
- it allows content to be checked for consistency, and old content to be archived
- it allows for creation of online assessments, and for their marking
- it permits content to be searched for by the content producer
- it may allow collaboration between several content producers

- it allows links to be forged between e-learning and other learning strategies that have been adopted by the organisation.

The decisions about obtaining an LCMS are similar to those for obtaining an LMS: use freely available software, purchase software, or pay to have the LCMS developed for your specific needs. The consequences for each decision are as described above for the LMS software choices.

Examples of free LCMS software include OLAT (http://www.olat.org/public/index.html), eXe (http://exelearning.org/), Dokeos (http://www.dokeos.com), Dokebo (http://www.docebo.org/doceboCms) and Interact (http://www.interactlms.org/spaces/space.php?space_key=1), and Moodle (http://moodle.org) that has limited content creation.

Examples of LCMS software you can purchase are ATutor (http://www.atutor.ca/atutor/links.php) and LearnSwitch Enterprise (http://www.catalystinteractive.com.au).

2.8 TRENDS IN E-LEARNING

Until recently, many discussions of elearning were about the technology aspects. For example, a very common opening gambit to explain e-learning would focus on learning anything, anyplace, at anytime. The discussion would highlight the flexibility of e-learning and move into the technologies which support learners accessing a course outside the classroom context. While e-learning is undoubtedly more flexible than face-to-face *(f2f*), campus-based Learning, there have always been pedagogical and social limits to totally flexible learning. There arc three technologies which are just beginning to see a major uptake and hence might have a major impact on e-learning

Broadband

Cheap, unlimited **bandwidth** is not yet a reality, however, if and. when it does arrive, it should give an extremely big boost to e-learning. Real-time events for students at a distance would add a new dimension to e-learning. For example, tutorials and small group meetings could be held over software such as **Netmeeting** or **Skype, which** provide video, audio and shared **desktop** facilities. Group messaging offers near-instant communication as well as confidentiality and shared tiles, and other software provides buddy systems that allow students to be in close contact with their peers. Activities could be based around these facilities whereby students engage in peer commenting, team projects and self-help groups. **Web casting** using guest lectures, offers immediacy and the opportunity to engage in discussion with experts and special advisers. The fact that the lecture can be stored and accessed after the event provides flexibility as well as immediacy.

Most of these real-rime activities are difficult, costly or actually impossible over dial-up lines, **Broadband** offers course designers the opportunity to design courses using the optimal mix of synchronous and asynchronous modalities, without concern about disadvantaging remote users.

Mobile technologies

The 'anyplace' aspect used to promote e-learning is becoming somewhat more realistic with the advent of **wireless,** mobile learning (m-learning] e.g. from a mobile telephone, wireless laptop, PDA or tablet PC. Personal Digital Assistants (PDAs), also known as palmtops and handheld PCs, fit into the hand and are generally very portable, capable of being carried in a jacket pocket, for example. They were first developed as electronic Organisers, or personal information managers. These contain information Such as diaries, address books and task lists. They eventually evolved into mini PCs. able to carry out limited PC tasks such as word and spreadsheet processing, and nowadays most are capable of web browsing and email functions via cables connected to **networks.** PDAs also offer infrared commutation, allowing data to he transferred across short distances between units without the need for networks. Many PDAs come with docking stations in order for them, to be connected to desktop computers, allowing data to be synchronized between the two devices. The tablet PC is an adaptation of the laptop. It is available in two styles: cither with a keyboard (known as a 'convertible' tablet) or without a keyboard (known as a 'slate' tablet, and generally slimmer and more lightweight than the convertible). Convertible tablets normally have detachable or foldable keyboards, and all tablet PCs have touch-sensitive screens, usually A4 in size, which require stylus pens for input. They are generally much quicker to boot up yhann desktop PCs. The tablet can be used either in portrait or landscape mode, and uses wireless technology for connection to the internet or other networks

For the moment, these technologies arc used not for accessing the content of courses, but for communication, administration and other peripheral aspects of studying e.g. ordering books from the library. One area of potential use is for taking photos or notes when on field trips. Another advantage is the stylus pen used with tablet PCs which is more convenient for web browsing than a mouse. However, these devices currently have limited storage capacity and their batteries require regular charging or data can be lost.

Wireless and WiFi networking need to become more popular before learning will boost the feasibility of learning anyplace and anytime. The trend, however, is for these devices to converge, so that mobile phones will adopt PDA functions and tablets will adopt more of the functionality of desktop PCs.

Podcasting

Podcasting is a form of broadcasting over the internet. With podcasting, learners can **download,** lectures and pictures to their PC or portable digital device to access at their convenience. This is a very different learning scenario from reading text on a computer screen, or from sitting in a lecture hall using an iPod or similar device, the learner listens to the content, which could talk them through diagrams, **graphics,** photos or paintings, or could be a discussion between two experts with opposing views. Language learning, music studies and other subjects with a strong oral component have obvious applications. This approach to learning will appeal to learners who prefer to take in information aurally rather titan through text and circumvents the problems of a mini screen, which limits the use of mobile phones for learning. Pod casts can provide students with a means of reviewing material, Especially non-native speakers. Pod casts can be used more informally by teachers to provide feedback on group assignments or presentations, or to provide supplementary material for a blended course.

The supporting technologies of podcasting ire relatively inexpensive and easy to use. Like blogging, students can be producers of content, rather than passive receivers, The portable and on-demand nature of podcasting makes it a technology with potential for e-learning

SUMMARY

E-Learning uses computer and network technologies to create learning experiences. Varieties of e-learning include standalone courses, virtual –classroom courses, mobile learning, embedded e-learning, blended e-learning, simulations and learning games.

E-learning *is* not the answer to all educational problems or suitable in all contexts. It is rather limited for teaching some practical or physical skills; it requires more up-front preparation time than lecturing; it does not provide the range of interaction, support and socialization that face-to-face teaching can offer. Despite these shortcomings, e-learning whether as an adjunct to campus-based learning or as a totally online offering, is gaining in acceptance and growing in use.

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