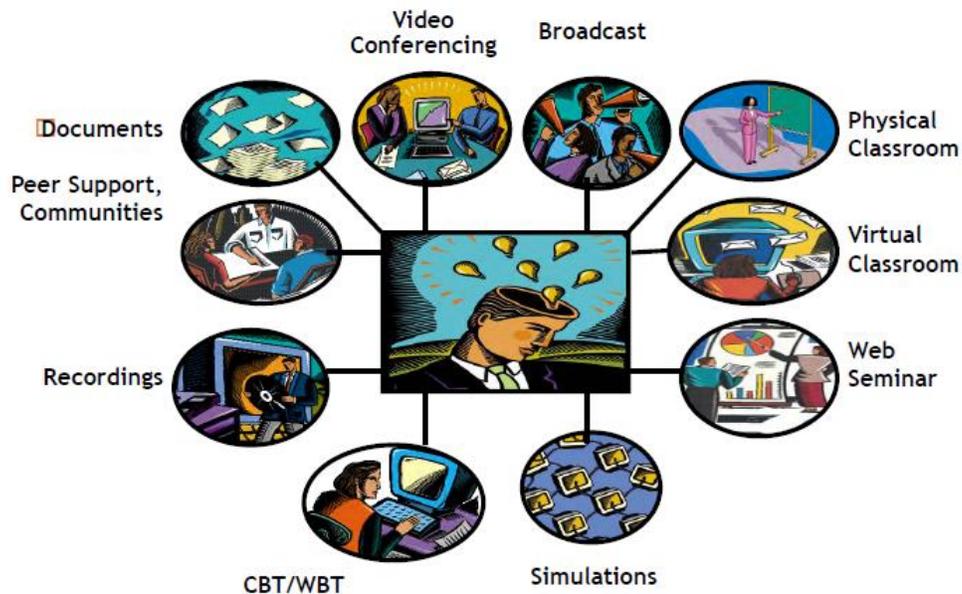# e-Learning Process and ICT enabled Learning Environment

## What is e-Learning ?

- e-learning refers to the use of networked information and communications technology to leverage the core processes of learning and teaching. (Naidu, 2003)
- e-Learning is the use of Information & Communication Technology (ICT) to improve the quality of learning through effective and efficient interaction, irrespective of time, location and pace



e-Learning attributes:

- Electronic access to hypermedia and multimedia-based resources
- Flexible access to information and resources
- Distribution of subject matter content in a variety of media formats.

## Types of e-Learning

e-Learning comes in many variations and often a combination of the following:
- Online learning
- Blended learning
- Synchronous learning
- Asynchronous learning
- Self – learning
- Assisted learning
- Web – based learning
- Standalone learning … etc.

**Online education** Is a learning experience delivered via a computer and the Internet.
   E.g. Course work is conducted through electronic forums, discussion groups, external resources, quizzes, social rooms, and online submitted assignments.

**Blended learning** Is the integration of classroom learning with e-learning.

E.g. an instructor might use the classroom to present critical concepts, and then use an online discussion forum to encourage student dialogue around the concept.

**Asynchronous e-learning**, commonly facilitated by media such as e-mail and discussion boards, supports work relations among learners and with teachers, even when participants cannot be online at the same time.

**Synchronous e-learning**, commonly supported by media such as video conferencing and chat, has the potential to support e-learners in the development of learning communities. Learners and teachers experience synchronous e-learning as more social & avoid frustration by asking & answering questions in real time. (By Stefan Harstinski)

**Self- learning** is administered by giving the learner the materials he/she needs to complete the training/instruction. The learner is responsible for staying on task and on schedule.

**Assisted learning** system is an interaction with an authority figure that checks your progress.
Instructor-led training affords the learner a guide to implement the instruction.

**Self-study** with an expert is a combination of self-paced and instructor-led.

**Web-based learning** is associated with learning materials delivered in a Web browser, including when the materials are packaged on CD-ROM or other media. (By Susanna Tsai and Paulo Machado)
**Standalone e-learning** leads learners individually through structured sequences of learning experiences chosen to accomplish specific learning objectives. In this form of learning, people interact with e-learning through a computer or mobile device. This is a proven,
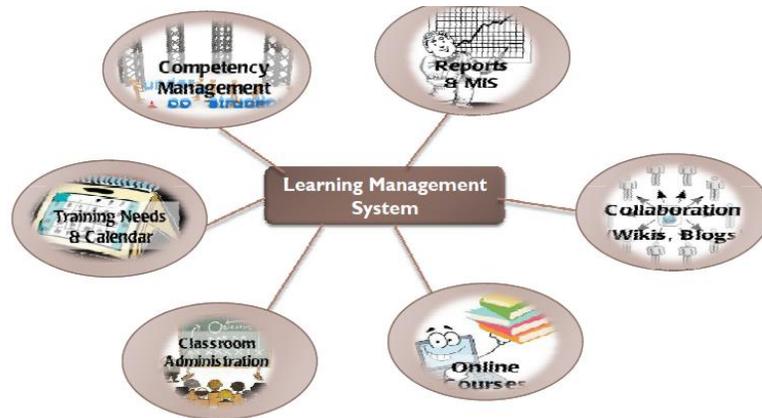flexible approach. (E-Learning by Design By William Horton)

# Online learning

- Denotes learning "on the Internet".
- An approach for teaching and learning that utilizes Internet technologies to communicate and collaborate in an educational context.
- Development of personal computing, the use of internet and the emergence of web 2.0 changed the way we learn.
- Internet technologies brought benefits for the delivery of learning.
- The way learning resources are available to the students in more flexible, accessible and engaging ways.

## Online learning and LMS

- An LMS is the means and structure by which online learning can be facilitated.
- Online learning through LMS allows effective and wide-reaching instructional offerings.
- LMS brings learners interested in online learning.
- Most LMS are web based to facilitate "anytime, anywhere" access to the learning process.

## LMS at a glance



## Basic features of LMS

- Use authentication
- User roles
- Course enrollment and tracking
- Security
- Content management
- Testing and Evaluation
- Resource management
- Instructional design tools
- Social learning tools

## Advantages of using LMS in online learning
- Cost effective
- Highly flexible and customizable
- Easily create courses
- Anytime access
- Robust reporting and tracking capabilities
- Immediate capabilities evaluation
- Centralized learning environment to ensure consistency

## Types of LMS

Commercial:
- Commercially available for an annual license fee.
- Technical support
- Provide a comprehensive set of tools for delivery and management of online learning.
- Include:
  - Learning presentation tools
  - Communication tools
  - Assessment tools
  - Learner management tools
- Eg:
  - Blackboard Learning System
  - JoomlaLMS
  - eCollege
  - Informetica

Open source:
- Freely available with no license fee.
- Generally, the same levels of functionality of commercial systems, but do not have the technical support. (Availability of an active online user community to provide advice and guidance)
- Eg:
  - Moodle
  - OLAT
  - Sakai

| Features | Learning Management Systems (LMS) | | | | | | | | | Video Conferencing | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Chamilo | Moodle | Totara | Canvas | Google Classroom | Edmodo | TalentLMS | Blackboard Learn | Adobe Captivate Prime | M/S Teams | Zoom | Google Hangout/Meeting | BigBlueButton |
| Manage courses with a dedicated page for each subject | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | X | X | X | X |
| Upload and store lecture notes | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | X | X | X |
| Post scheduled assignments with deadlines | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | X | X | X | X |
| Have timed-quizzes with auto-marking | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | X | X | X | X |
| Maintain forums (for notice boards, discussions, etc.) | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | X | X | X | X |
| Interactive video/audio conferencing | X | X | X | ✔ | X | X | ✔ | X | X | ✔ | ✔ | ✔ | ✔ |
| Group chatting for live discussions | ✔ | ✔ | ✔ | ✔ | X | X | ✔ | ✔ | X | ✔ | ✔ | ✔ | ✔ |
| Screen Sharing | X | X | X | ✔ | X | X | X | X | X | ✔ | ✔ | ✔ | ✔ |
| Free and Opensource | ✔ | ✔ | ✔ | ✔ | X | X | X | X | X | X | X | X | ✔ |
| Freemium | X | X | X | X | ✔ | ✔ | X | X | X | ✔ | ✔ | ✔ | X |
| Commercial Software | X | X | ✔ | ✔ | X | X | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | X |
| In-house (on-premise) installation | ✔ | ✔ | ✔ | ✔ | X | X | X | X | X | X | ✔ | X | ✔ |
| Initial setup time/effort | High | High | High | High | Low | Low | Low | Low | Low | Low | Low | Low | High |

## Moodle

- A free open source learning management system.
- Acronym for:
    Modular Object Oriented Dynamic Learning Environment
- A secure and controlled web space used for learning and teaching.
- Can use the space to hold materials, communicate and collaborate to support learning.

Features of Moodle:

- Promotes a social constructionist pedagogy.
- Suitable for 100% online classes as well as supplementing face-to-face learning.
- Simple, light weight, efficient, compatible, low tech browser interface.
- Site management

- User management
    - User authentication, user enrolment, Roles management
- Course management
    - Course reports, Assignment, Chat, Choice, Glossary, Lesson, Quiz, Resource, Survey, Wiki, Workshop

Benefits of Moodle:

- Flexibility:
    - Study at suitable times leading towards a better work, life and study balance.
- Peer support and communication reduce isolation:
    - Especially valuable for distance learning students
- Learning style:
    - Can accommodate many learning styles
- Learning reinforcement:
    - Can revisit materials multiple times for the exams or simple for interest
- Team and group work:
    - Peer collaboration on project work
- Building a community of practice:
    - Produce a sense of identity related to course
- Security:
    - Learning in safe and secure environment
- Assessment:
    - Tools and space for formative and summative assignment

# Learning System and Environment

## Components of a VLE

A VLE will usually include some or all of the following elements:
- The course syllabus
- Administrative information about the course
    - Prerequisites
    - Credits
    - Registration
    - Contact information for the instructor
- A notice board
- The basic content of some or all of the course
    - lecture materials
    - audio/video presentations
    - supporting visual presentations
- Additional resources
    - outside resources
    - supplementary reading
- Self-assessment quizzes
- Formal assessment functions
    - examinations
    - essay submission
    - presentation of projects
- Support for communications
    - e-mail
    - threaded discussions
    - chat rooms
    - twitter and other media
    - wikis
    - blogs
    - RSS
    - 3D virtual learning spaces.
- Management of access rights
- Documentation and statistics
- Authoring tools

## Roles in VLE

A role in VLE is a collection of permissions defined for the whole system. System administrator can assign specific users in specific contexts. A user can be assigned more than one role.

Roles define a specific user's ability to do something on any page.
E.g.
- Site administrator
- Manager
- Course creator

- Teacher
- Non-editing Teacher
- Students
- Guest
- Authenticated User

## Site Administrator Role:

Site Administrator (LMS Admin) can "**do everything**" on the site. Site Administrator is responsible for overall LMS implementation and maintenance such as troubleshooting site-wise problems, backup and restore etc.

Any users may be assigned the role of site administrator by another site administrator.
The role itself cannot be edited (or deleted).

## Manager Role:

The default manager role enables to create courses and modify them. A lesser administrator role than site administrator. Manager role can be assigned as system wise or for a particular category (eg : faculty wise).

The Manager role allows a site Administrator to give very powerful roles to others who are assigned a Manager role, but without having to give them a full Administrator role.

## Course Creator Role:

Course creator can create courses, be assigned the role of teacher for these courses and view hidden courses. Course creator role is typically be assigned to a master teacher, department head or program coordinator.

## Teacher Role:

Teachers can do anything only within a course they are assigned to, including changing the activities and grading students.

## Non-editing teacher Role:

A non-editing teacher is able within a course to view and grade students' work but may not alter or delete any of the activities or resources. This role might typically be given to a classroom assistant.

## Student Role:

Student can participate in course activities and view resources but not alter them

- They cannot see the class gradebook but they can see their own grades if the teacher has allowed this.
- When a student first joins Moodle they see all available courses.
- Once they have enrolled or been enrolled into at least one course they then only see their own courses under the My Courses section of the navigation block or via the My Home link.
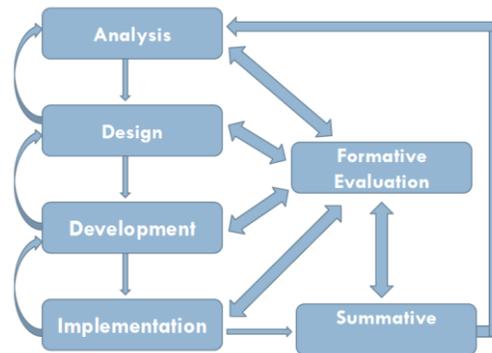
## Guest Role:

Visitors can log in as guests using the "Login as a guest" button on the login screen and enter any courses which allow guest access. In addition, logged-in users can enter any courses which allow guest access without being required to enroll. Guests ALWAYS have "read-only" access -meaning they can't leave any posts

### Authenticated User:

When a user logs in, they are automatically assigned the role of authenticated user. A user will have additional roles (see above) as well as the authenticated user role according to where they are in Moodle, such as student in a course.

# Process of e-Learning Content Development

When developing e-learning contents instructional designers most commonly use **ADDIE** instructional design model. ADDIE model is an iterative instructional design process. There instructional designer analyze training needs, design and develop training materials, implement training, and evaluate its effectiveness.



### Analysis:

In the Analysis Phase, the instructional problem is clarified, the instructional goals and objectives are established and the learning environment and learner's existing knowledge and skills are identified.
E.g.
      Who are the audience and what are their characteristics?
      Is an instructional solution required?

### Design:

The Design Phase deals with learning objectives, assessment instruments, exercises, content, subject matter analysis, lesson planning and media selection. The design phase should be systematic and specific.
E.g.
      Create storyboards
      Design the user interface

### Development:

The Development Phase is where the developers create and assemble the content assets that were planned and designed in the design phase.
- Programmers work to develop and/or integrate technologies.
- Testers perform debugging procedures.
- The project is reviewed and revised according to any feedback given.

### Implementation:

During the Implementation Phase, a procedure is developed for training the facilitators and the learner. The facilitators' training should cover the course curriculum, learning outcomes, method of delivery, and testing procedures.

**Evaluation:**

This phase measures the effectiveness and efficiency of the instruction. Evaluation occur throughout the entire instructional design process

There are two types of evaluations
- Formative Evaluation – Improves the instruction before the final version is implemented.
- Summative Evaluation – Assess the overall effectiveness the overall effectiveness of the instruction.

## Tools for e-content development

**Instructional Tools** - Creating, delivering, managing learning contents.
E.g -  Adobe Flash, Articulate

**Social and Collaboration Spaces** - Create private collaborative spaces for groups and public social networks
E.g. – Twitter, Google+

**Document, Presentation and Spreadsheet Tools** - Create, host and share documents, PDFs, e-Books, presentations and spreadsheets
E.g. - Google Docs, Articulate Presenter

**Blogging, Web and Wiki Tools** - Create blogs, web pages/sites and wikis as well as provide interactivity on those sites
E.g. – Blogger, Weebly

**Image, Audio & Video Tools** - Create, edit and/or host images, avatars, audio files, podcasts, screen casts and videos
E.g. – Picasa, Audacity

**Communication Tools** - Tools for a range of synchronous and asynchronous communication activities
E.g. – Gmail, Skype

**Other Collaboration & Sharing Tools** - Tools for collaboration and sharing with others.
E.g. – Diigo, Wikipedia