Part2: - Distance education via electronic platforms

2 .1 Distance Education

Distance Education (E-learning) is defined as instruction between a teacher and students when they are separated by physical distance and communication is accomplished by one or more technological media.

2.1.1 Advantages of e-Learning

Teachers who have adopted online materials and applications for teaching purposes would have enjoyed enormous benefits as learners, such as watching at own pace and convenience, greater personalisation, better engagement, higher productivity and satisfaction.

Furthermore, e-learning reaches a wider target audience by engaging learners who have difficulty attending conventional classroom training because they are:

- Not attending classes due to pandemic, diseases and natural disasters.
- Geographically dispersed with limited time and/or resources to travel;
- Busy with work or family commitments during class time;
- Located in conflict and post-conflict areas with restricted mobility due to security reasons;
- Limited from participating in classroom sessions because of cultural or religious beliefs;
- Facing difficulties with real-time communication (e.g. foreign language learners or very shy learners).

2.1.2 Modes of e-Learning

E-learning activities can be synchronous or asynchronous.

2.1.2.1 Asynchronous

Occurs when the teacher and the students interact in different places and during different times. Students enrolled in an asynchronous course are able to go online at any time of the day or night, seven days per week, and work toward the completion of course requirements.

2.1.2.2 Synchronous

Occurs when the instructor and students interact in different places but during the same time. Students enrolled in synchronous courses are generally required to log on to their computer during a set time.

2.2 Modern technologies in the educational and learning process

IT (information technology) encompasses all the technology we use to collect, process, protect and store information. It refers to hardware, software (computer programs), and computer networks. ICT (Information and Communication Technologies) This concept involves the transfer and use of all kinds of information.

2.2.1 Role of information and communication technologies ICT

ICT encompasses all hardware and software resources enabling:

- Information processing, with the use of various processing techniques and materials
- The transmission of information through networks and means of computer exchange.

- Storing information on backup media.

2.2.2 Information and Communication Technologies Services

Information and communication technologies offer users several services such as:

- visual and vocal transmission;
- the transmission of data;
- the exchange of information via the internet;
- the diffusion of multimedia documents.

2.2.3 ICTE (Information and Communication Technologies for Education)

ICTE are an extension of ICT, it is a set of computer and multimedia tools and software (Texts, Images, Sound, Videos, etc.) which can be integrated into a course or training for online teaching (distance learning), face-to-face teaching or blended teaching (online and face-to-face).

ICT adapted to **E**ducation, includes all tools dedicated to online training and learning.

A. Online learning

The best online e learning platforms give learners access to desired material. These platforms function as a marketplace where students can search for and enroll in courses. An ideal e-learning platform should be easily accessible. Learners should be able to search, enroll, and participate in courses. These platforms typically include videos, questions, and simple tasks or assignments. The main goal is to transfer content to learners to improve their skills and knowledge.

B. CMS

A content management system (CMS) is an application used to manage content, allowing multiple contributors to create, edit and publish content. The content of a CMS is usually stored in a database and displayed in a presentation layer based on a set of templates like a website.

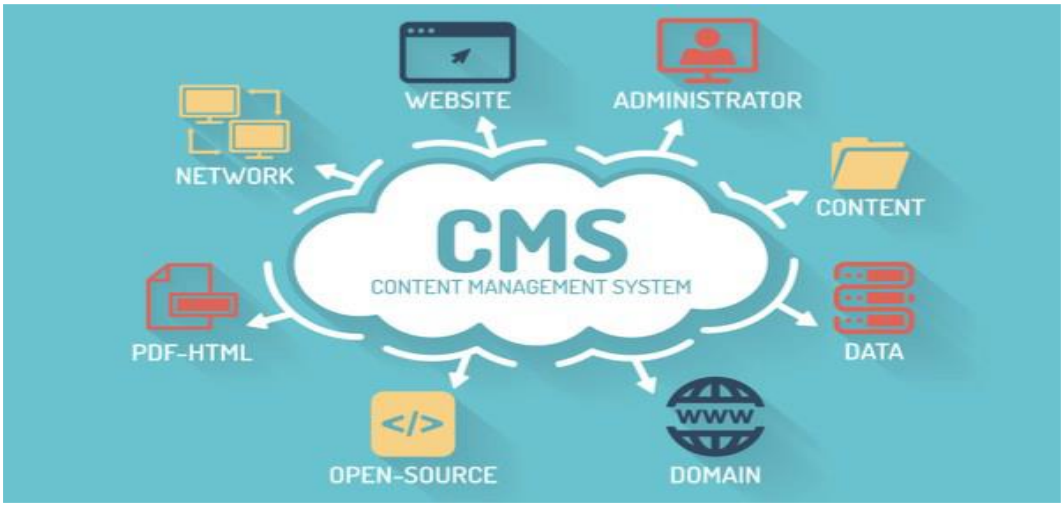

Figure 2: The different components of a CMS

LMS (Learning Management System), E-learning platform

Learning management system, is a software tool that allows you to create, deliver, and report on training courses and programs. Is a Software environment installed on a remote server allowing you to manage all functions related to the organization of a distance learning course.

Nowadays, information and communication technologies (ICTs) play a vital role in education, with a particular focus on the instructional component, which is supported by Learning Management Systems (LMS) such as **Moodle**.

3. E-learning platforms (Moodle, MOOCs,... etc.)

3.1 Moodle “Modular Object-Oriented Dynamic Learning Environment.

Moodle is a Learning Management System (LMS) designed to provide educators, administrators and learners with a single robust, secure and integrated system to create personalized learning environments.

Moodle is a free and open-source learning management system written in PHP and distributed under the GNU General Public License. Moodle is used for blended learning, distance education, and other online learning

The great success of this platform due to the fact that a open source. They also provide several chances to experiment with new teaching and learning approaches. Many universities, like Badji Mokhtar ANNABA University, have chosen the Moodle platform in particular. Several modules are integrated within the platform, allowing for tasks such as creation, organization, delivery, communication, cooperation, and assessment.

To access the Moodle platform, simply type the keywords ‘ANNABA E-LEARNING’ on the Google search engine, then click on the first link which redirects you to the platform. Another easier option is to directly access the platform via the address: https://elearning.univ-annaba.dz/.

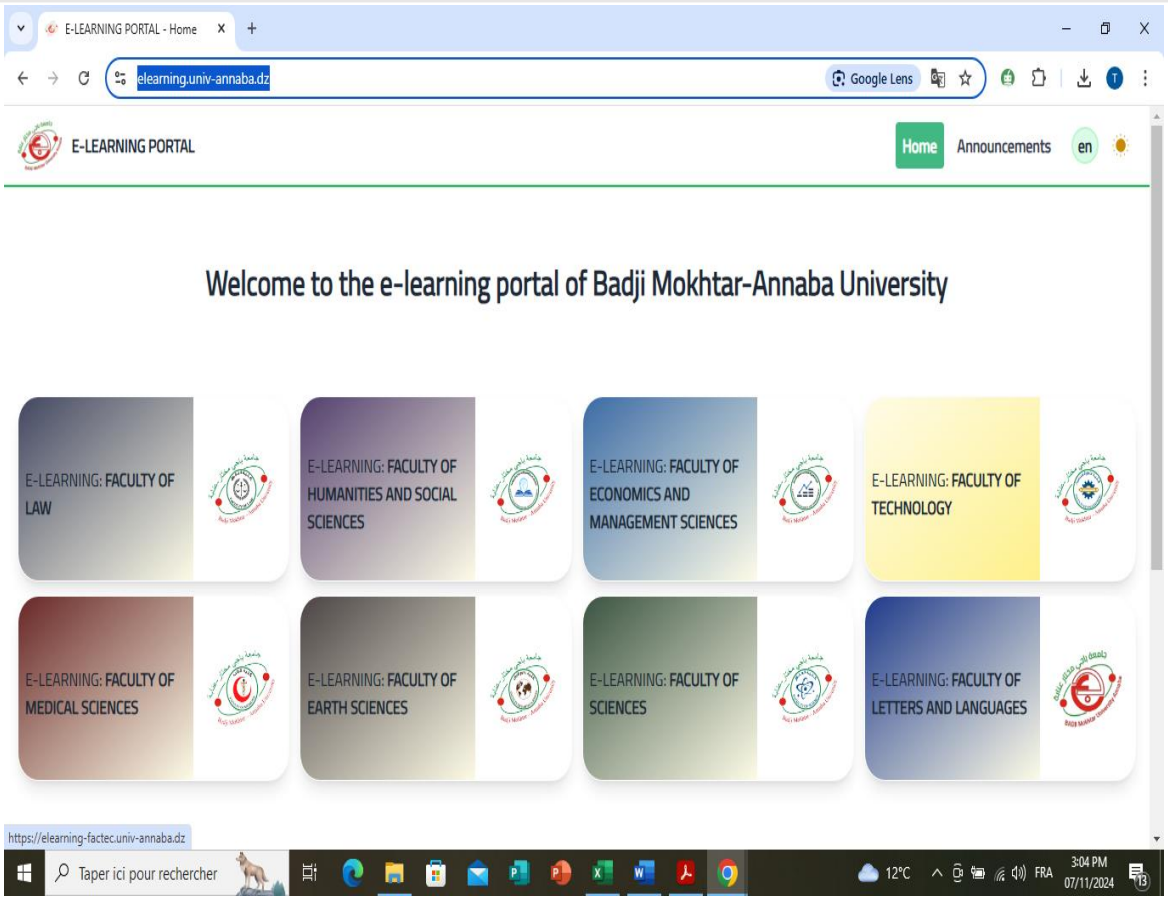

Figure3: The home page of the Moodle platform of the University of Bdji Mokhtar University.

a welcome page is displayed to choose your faculty, Then, you click on the “Login” or “connect” button. you enter your username and your password

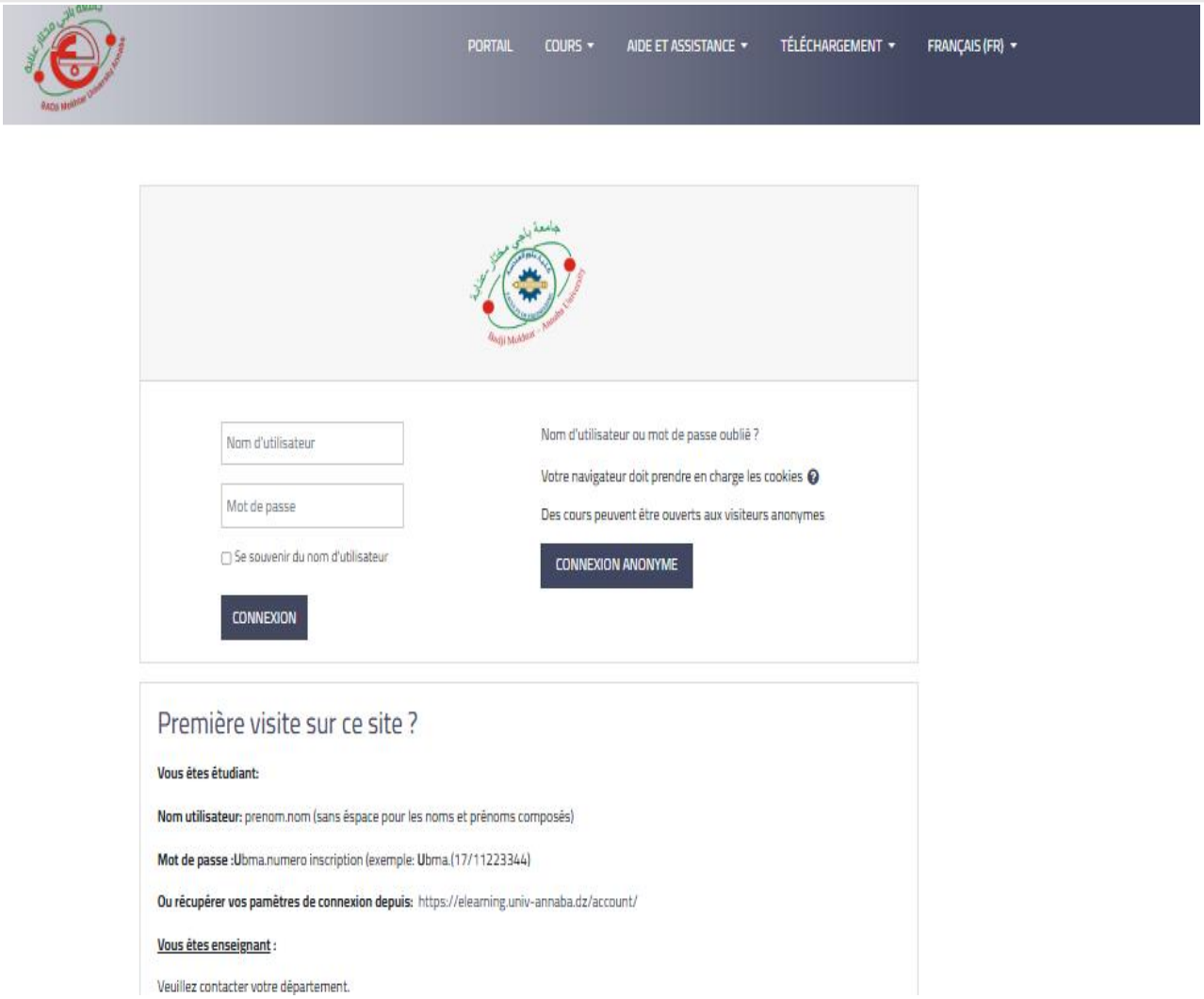

Figure 3: login page.

3.1.1 Roles and functions in Moodle Platform

The Moodle platform has three levels of use, with features of differential use and access. So is the concept of **administrator** (the manager of the platform), **teacher** (who may also have other designations, for example, trainer, facilitator, promoter) and the **student** (learner, participant, among others). These roles and their features are represented in the following table.

Role	Function
Administrator	Manages the whole environment
Teacher	Generate events, courses or subjects Generate training or events which are designated
Student	Accesses and interacts and participates in the subjects they are subscribed

3.1.2 Benefits of Moodle for Educators

- **Sharing learning materials:** The large resource toolkit of the Moodle platform makes it simple to share files and the web hyperlinks with students. It is also possible to easily build learning content pages in a course that combine text, graphics, and embedded video.
- **Managing access to learning materials:** Group students into year or class groups to automatically provide access to the appropriate learning materials.
- **Updating course content:** Edit 24/7 via a browser to update and add to course content for learners to access immediately.
- **Automated assessment:** Use a variety of question types in a Quiz to assess the learning. Moodle can mark these and give immediate detailed feedback to the learners.
- **Managing work submissions:** Learners can submit work and receive feedback and grades from the teacher. Teachers can also construct a comment bank to help supplement personalized feedback with pre-defined statements.
- **Communicating with learners:** Moodle's messaging system allows learners and teachers to communicate easily.

- **Monitoring progress / Reports:** Moodle's stores each learner's scores from any graded activities. Snapshot reports can be viewed at any time to see how each learner is progressing through the course materials.

3.1.3 Benefits of Moodle for learners

- **Ease of use:** it's an excellent location for your students, whatever their age, to gain confidence in using online resources in an environment that is supervised by the educational institution.
- **Engaging content:** Moodle learning can be enjoyable with a wide range of resources and activity kinds! Moodle supports a range of media to present or link to learning materials, support the learners and to assess their learning.
- **Communicating and collaborating with peers:** Create a dynamic virtual learning environment (VLE) using the course forums so that learners can discuss topics, share ideas and even feedback on each other's work.
- **Dashboard:** Learners can customize their own homepage within the site to tailor information and links to their individual needs.
- **Testing themselves:** the Quiz activity can give immediate feedback to the learners related to their answers so learners can regularly test themselves building their knowledge and confidence throughout their learning journey.

3.1.4 Moodle course space:

To join a course on the E-learning platform, simply navigate to the path of the course space. For example, if you wish to consult the ' **University work1'** course space that intended for 1st year Licence's students in the **computer science department**, you click on **'Faculty of technology**',

then **'Department of computer science** ', then you choose the specializes **MIAG**, then choose the '**semester 01'**, the **'Licence 01'** level, and finally you search for and click on the ' University work 1' course.
Teachers can set their course as open, closed with auto-registration, and closed with manual registration:

- if the course is **open**, students can join the course directly without **any registration**;
- if the course is closed with **self-registration**, students can join the course by registering with the **registration code** or **password given** to them by their teacher;
- If the course is closed with **manual registration**, students must wait for their **teacher to register them**.

When the learner joins a Moodle course space, they can see several elements constituting the course. Courses can be divided into sections to organize resources and activities for students. Each section can have a description and can contain many activities and resources as the teacher desires.
Generally, and not necessarily, a course section is the equivalent of a course chapter.

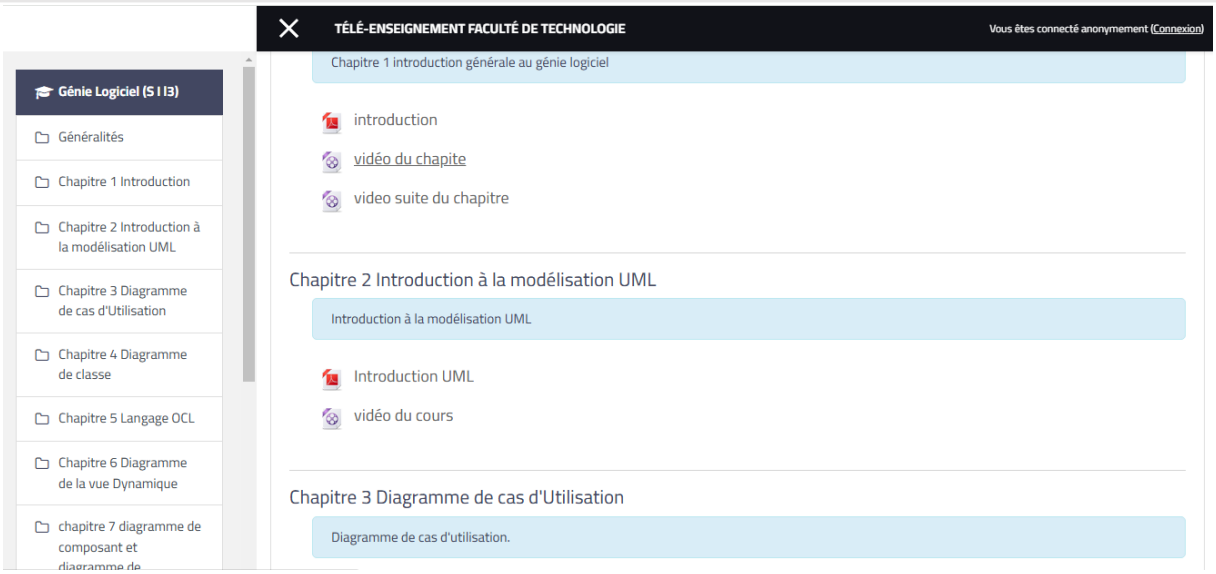

Figure4: course section.

3.1.4.1 Activities

An activity is a general name for a group of features in a Moodle course. Usually, an activity is something that a student will do that interacts with other students and or the teacher.

In Moodle terminology, an Activity, such as Forums or Quizzes, properly means something students can contribute to directly, and is often contrasted to a Resource such as a File or Page, which is presented by the teacher to them. However, the term activity is sometimes for convenience also used to refer to both Activities and Resources as a group.

There are 15 different types of activities in the standard Moodle that can be found when the editing is turned on and the link 'Add an activity or resource' is clicked.

Assignments: Enable teachers to grade and give comments on uploaded files and assignments created on and off line.

Quiz: Allows the teacher to design and set quiz tests, which may be automatically marked and feedback and/or to correct answers shown.

BigBlueButton: Run live video conferencing sessions within Moodle.

Chat: Allows participants to have a real-time synchronous discussion.

Choice: A teacher asks a question and specifies a choice of multiple responses.

Database: Enables participants to create, maintain and search a bank of record entries.

Feedback: For creating and conducting surveys to collect feedback.

Forum: Allows participants to have asynchronous discussions.

Glossary: Enables participants to create and maintain a list of definitions, like a dictionary.

Lesson: For delivering content in flexible ways.

SCORM: Enables SCORM packages to be included as course content.

Survey : For gathering data from students to help teachers learn about their class and reflect on their own teaching

Wiki : A collection of web pages that anyone can add to or edit

Workshop : Enables peer assessment

Additional activities from the Moodle plugins directory may also be installed and used in the Moodle site.

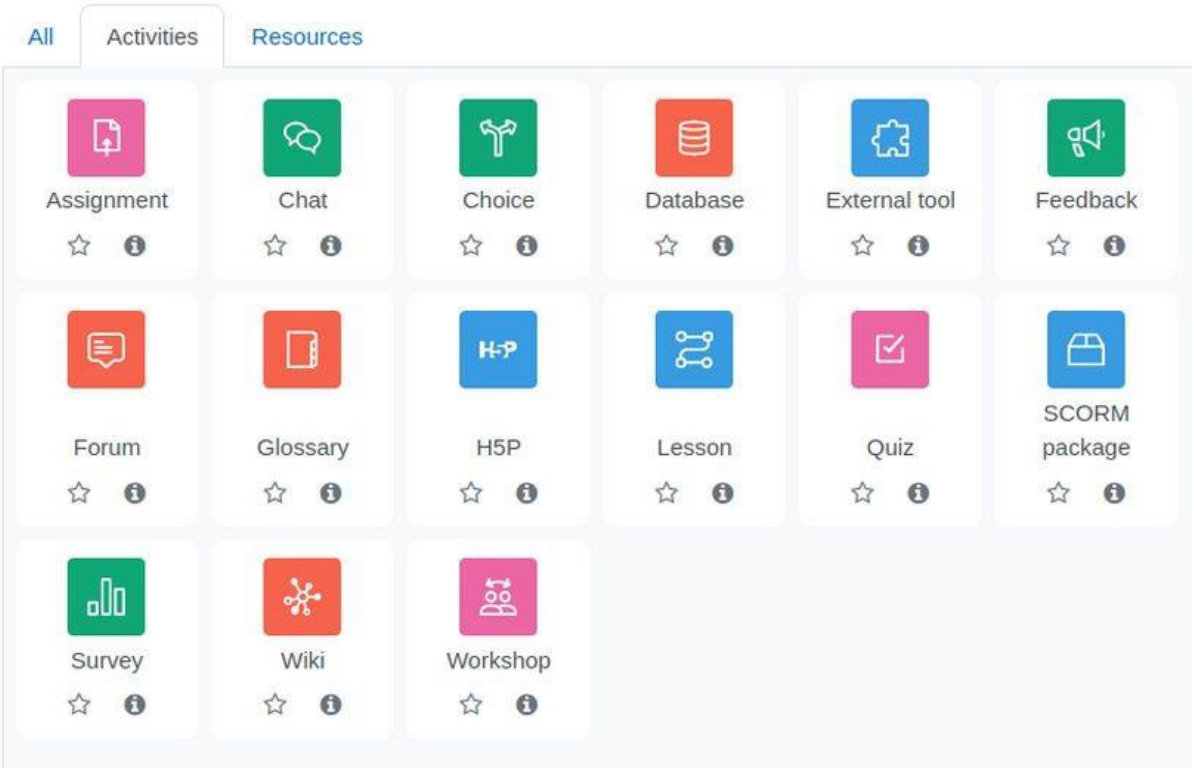

Figure: Moodle activities.

3.1.4.2 Ressources

A resource is an item that a teacher can use to support learning, such as a file or link. Moodle supports a range of resource types which teachers can add to their courses. In edit mode, a teacher can add resources via the **'Add an activity or resource'** link. Resources appear as a single link with an icon in front of it that represents the type of resource.

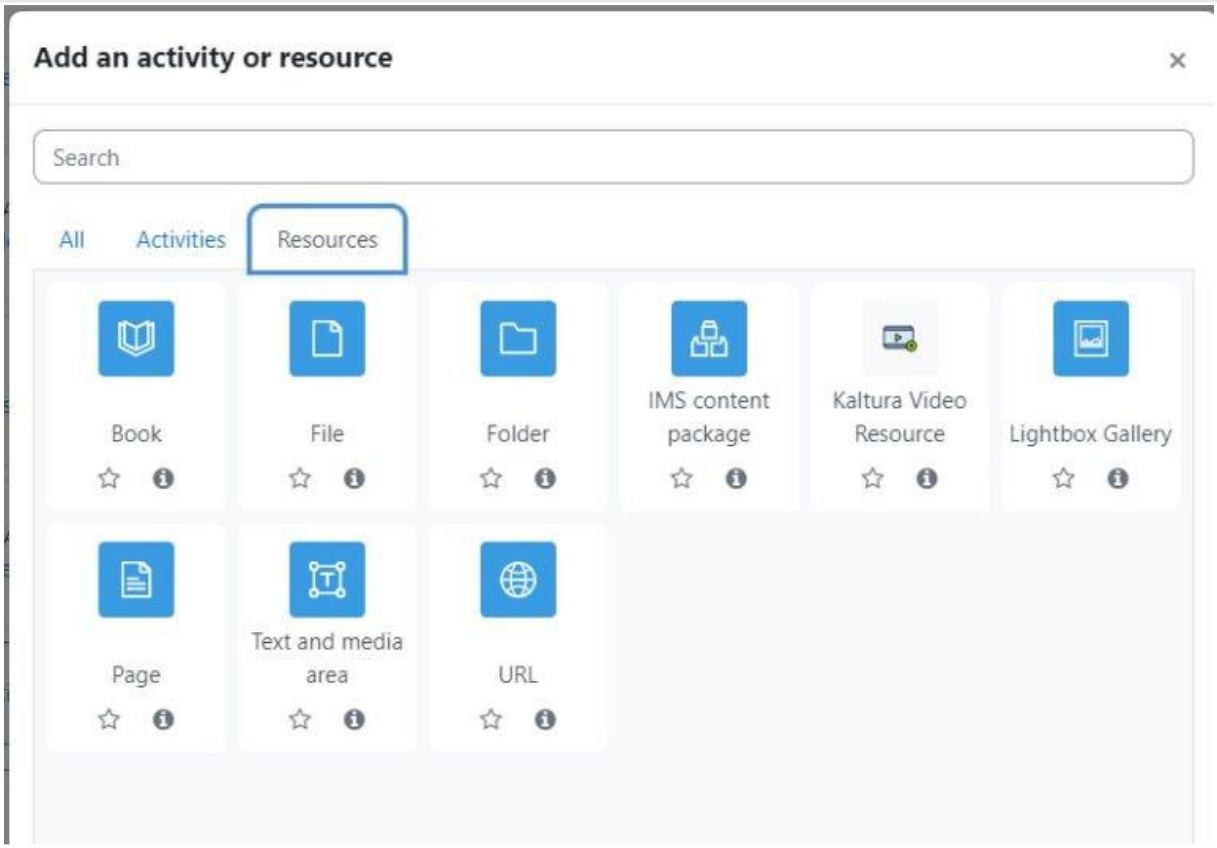

Figure 5: Moodle ressources.

- **Book:** Multi-page resources with a book-like format.
- **File**: A picture, a pdf document, a spreadsheet, a sound file, a video file
- **Folder**: For helping organize files and one folder may contain other folders
- **Page:** The student sees a single, scrollable screen that a teacher creates with the robust HTML editor
- **Text and media area**: Can be a few displayed words or an image used to separate resources and activities in a topic section, or can be a lengthy description or instructions
- **URL:** You can send the student to any place they can reach on their web browser, for example Wikipedia.

3.2 A massive open online course (MOOC)

A massive open online course (MOOC) or an open online course is an online course aimed at unlimited participation and open access via the Web. In addition to traditional course materials, such as filmed lectures, readings, and problem sets, many MOOCs provide interactive courses with user forums or social media discussions to support community interactions among students, professors, and teaching assistants, as well as immediate feedback to quick quizzes and assignments.

Udemy, Edx, Coursera, Linkedin Learning, Moodle academy, Udacity, Fun MOOC and OpenClassrooms are all examples of platforms or websites that offer MOOC-type training.

3.3 Differences between Moodle and MOOC

Both Moodle and MOOCs offer online learning but have distinct differences. Let's explore some of them in more detail:

- **Accessibility**: **Moodle** is open-source software, which means anyone can access and use it freely. It is also available on various platforms, including desktop and mobile devices. **MOOCs** are generally available online and are often free of charge. They are usually hosted by a variety of institutions, including universities, and are typically open to anyone interested in taking them.
- **Content**: **Moodle** is a powerful course management system that allows instructors to create and manage their courses. It includes features like forums, quizzes, and assignments. **MOOCs** are typically made up of videos, tutorials, and activities and are often organized into modules or weeks. They are often peer-reviewed and include assessments and feedback.

- **Delivery:** **Moodle** is a web-based platform and can be accessed through a web browser. **MOOCs** are usually delivered through various online platforms, including YouTube, Udemy, and Coursera.
- **Interactivity:** **Moodle** is a platform that offers an interactive learning environment, allowing students to collaborate and communicate with their peers, teachers, and other experts. **MOOCs**, on the other hand, are typically offered as asynchronous courses and rarely include the same level of interactivity and networking.
- **Assessment:** **Moodle** offers assessments such as quizzes, tests, and other activities that can be used to grade student performance. **MOOCs** typically offer open-ended or peer reviewed assessments, such as written or video-based assignments.
- **Certification**: Depending on how you set it up, **Moodle** provides certification for the successful completion of courses. **MOOCs** offer certificates for online university programs but are typically not counted towards degree credits.

4. USE OF VARIOUS TECHNOLOGY:

Various technologies are used to facilitate e-learning. Most e-learning uses combinations of these techniques, including blogs collaborative software, portfolios and virtual classroom, video conferencing by internet mode, Tele conferencing by internet mode, virtual library, virtual laboratory etc. Technology used for the methods of e-learning is as below. Most of the methods are a combination of two or more techniques together.

4.1 USE OF AUDIO MATERIAL:

Any learning done via listening to any material is an audio method of learning. Recent technologies have allowed classroom teachers to stream

audio over the internet. There are also webcasts and podcasts available over the internet for students and teachers to download. For example, iTunes has various podcasts available on a variety of subjects that can be downloaded for free.

4.2 USE OF VIDEO MATERIAL:

Videos allow teachers to reach students who are visual learners and tend to learn best by seeing the material rather than hearing or reading about it. Teachers can access video clips through the internet instead of relying on DVDs. Websites like YouTube are used by many teachers.

University work 1 **Dr Gherib.T**

Tools	Costing	Mode	Key Features	Capacity
Microsoft Teams Source: teams.microsoft.com	Free	Synchronous	Teleconference, video lecture, recording function, screen sharing, assignment submission and chat room	Max no. of participants: 250 (for meeting) Duration: Unlimited
Zoom Source: zoom.us	Free: for 100 participants for 40 mins	Synchronous	Allows for simple, easy setup teleconferencing. Can manage text, screenshots, images, files, and chat reactions.	Max no. of participants: 100
Skype Source: skype.com	Free	Synchronous	Can send, receive or view any type of files with screen, sharing, chat.	Max no. of participants: 50
Google Hangout Meet Source: gsuite.google.com	Free: Google Apps for Education;	Synchronous and asynchronous	A set of cloud-based applications: Google Classroom, Google Meet, Google Drive, Google Site video calling, screen sharing, scheduled meetings, video conference, video lecture, recording function and chat room Can support JPG, PNG, GIF, BMP, WEBP, TIFF and HEIF image files for uploading.	Max no. of participants: (Education): 250 Duration: Unlimited.
Facebook Live Source: facebook.com	Free	Synchronous	A good way to interact with viewers in real time. Field their burning questions, hear what's on their mind and take a look at their live reactions to gauge how your broadcast is going.	Duration: 8 hours (Live Broadcast)
YouTube Source: youtube.com	Free	Synchronous and asynchronous	A platform for demonstrating a product with live Q&A, hosting an educational session to teach students while screen sharing or using a whiteboard, or hosting a live conversation with students.	Max no. of participants: Unlimited

4.3 Computers, tablets and mobile devices

Computers and mobile devices allow students and teachers access to websites and other programs, such as Microsoft Word, M.S. PowerPoint, M.S. Excel, PDF files, and images. These tools help learners to express their ideas.

A. BLOGGING:

The blogs can be single user or multiple users. A majority is interactive. Blogs allow students and teachers to post their thoughts, ideas, and comments on a website. Blogging allows students and instructors to share their thoughts and comments on the thoughts of others which could create an interactive learning environment.

B.WEBCAMS

The development of webcams and webcasting has facilitated the creation of virtual classroom and virtual learning environments. Virtual classrooms supported by such technology are becoming more and more popular, especially since they are contributing as a main solution to solving problems with travel expenses.

Virtual classrooms with such technology also provide the benefits of being easy to set up.

C.WHITEBOARDS:

Interactive whiteboards, similar in use to smart boards, allow teachers and students to write on the touch screen, so learning becomes interactive and engaging.

D. SCREENCASTING:

A screencast is a digital recording of computer screen output, also known as a video screen capture, often containing audio narration. The term screencast compares with the related term screenshot; whereas screenshot generates a single picture of a computer screen, a screencast is essentially a movie of the changes over time that a user sees on a computer screen, enhanced with audio narration. Screencasts can help demonstrate and teach. Educators may also use screencasts as another means of integrating technology into the curriculum.

5. Evolution Of E-Learning

During the last decades the concept of e-learning has changed and evolved. What distinguishes the different phases is:

a) the presence of interactivity or not;
b) the existence or not of multimedia contents;
c) the existence of synchronous and asynchronous online support,
d) The existence of elements of augmented reality and virtual reality,
e) the existence of elements of augmented artificial intelligence and learning assistance.

The evolution of technology, pedagogic methodology and teacher skills allow us today to use all the above-mentioned approaches.

- First distance learning stage (1970): course contents were totally delivered by regular mail
- Second stage (1970 -1980): Open Universities
- Third stage (1980 - 1990): Video cassettes and TV
- Forth stage (1990 - 2000): Computers, multimedia, interactivity, e-Learning

The next generation of e-learning is Web 2.0 and e-learning 2.0. “In Web 2.0 the network is more interactive and dynamic, and users, more than technology, add value to the services offered by the network.

Among contemporary trends and direction of development of e-learning the following can be distinguished: Augmented and virtual reality, Artificial intelligence and learning assistance.

- ✓ Augmented Reality (AR): Overlay of content (video, photo, sound, GPS data, etc.) onto the real world. Real world and overlaid content cannot interact with each other.
- ✓ Virtual Reality (VR): Simulates a world (real or imagined) and allows the user to interact in that world.
- ✓ Artificial intelligence and learning assistance.

5.1 Advantages of the technology

Major advantages of the technology are:

- Technology has made learning easier, affordable and convenient
- Most convenient way to perceive degree in higher education.
- It is the flexible, self-paced method of education to attain degree.
- Saves time and can be done along with daily works.
- Can log on and complete their studies any time the student wants.
- Acquisition of technological skills through practice with tools and computers.

5.2. Disadvantages of the technology

- Technologies in shorter period of time become obsolete. Hence the learner has to upgrade the equipments.
- Equipments used are expensive.

- Some of the technologies are not very user friendly, hence the learner faces difficulty in its use.
- User has to spend time in learning and using the technology.

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