

## Topic: Advanced Learning Management Techniques and Tools



Presentation

By

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# Opening Statements

- **Money** is a reward for solving problem(s).
- **Knowledge** and **skills** are needed to solve problem(s) and build nations.
- **Educators/Instructors** are training/impacting skills to people.
  
- Educators **can teach either**;
  - (a) On-site
  - (b) Online (synchronous or asynchronous).
- **Software tools** are needed to teach any of **On-site** , **Online** or **Blended** class and that's why we have several LMS.
- Utilizing most of the functionalities of the available LMS and the recent teaching pedagogies is what this seminar is all about.

**LINK to video with interactive content:** <https://www.youtube.com/watch?v=M6ww7mZLY-s>

# Advanced Learning Management Techniques and Tools

Advanced Learning Management Techniques and Tools simply means:

- > making use of recent software and hardware technologies,
- > making use of most/many of the available features of the software tools,
- > making use of recent and advanced pedagogy teaching styles, (flipped classrooms, video-based presentation, etc)

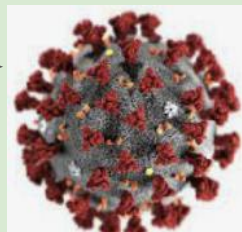
To maximize learning and teaching experience.

- ◆ UVA-Wise and The University of Virginia, Charlottesville
- ◆ Opening Statements
- ◆ Definition of LMS
- ◆ Benefits of Learning Management Software
- ◆ Examples of Learning Management Software
- ◆ Screenshots of some LMSs
- ◆ Common Features Found in a Successful LMS
- ◆ The 13 Must-Have Features of a Learning Management System
- ◆ Types of Learning Management Systems
- ◆ Basic Communication and Media Tools in the LMS
- ◆ Basic Skills and Tools - Twelve Action and Skills to know
- ◆ Basic Set of Technology Tools and Their Specific Pedagogical Uses
- ◆ Quality of e-learning
- ◆ Software for Designing a Network Topology
- ◆ Essential Remote Teaching Tools
- ◆ Software Tools To Teach Computer Science Classes
- ◆ Practical Demonstration of LMS and Online coding.



# Some reasons for e-classrooms

- Epidemic
- Personal
- Weather
- Geography



# Advanced Learning Management Techniques and Tools

What is a LMS ?

- An acronym for Learning Management System (**LMS**).
- A software application or web-based technology used in planning, implementing, and assessing a specific learning process.
- A **LMS** is a software application for organizations and institutions to manage, host, and track learning programs.

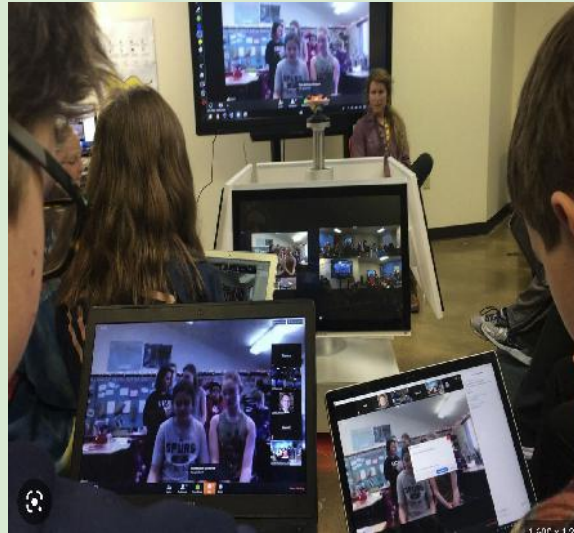
Most and or all LMS consists of two elements:

- A **server** that performs the base functionality and
- A **user interface** that is operated by instructors, students and administrators.

- Software technology and recent education pedagogies are making differences between all different classes (online (synchronous and asynchronous), in-class, blended) to be negligible.



A life classroom session



A life classroom session



Asynchronous classroom



# The Actual Meaning Learning Management Systems

**L**

EARNING — because you use it to deliver education courses.

**M**

ANAGEMENT — because it helps you organize these courses.

**S**

YSTEM — because an LMS is a computer system.

LMS is a platform that is open for **individuals** and **professionals** to learn and display their skills.

## LMS is used by:

- Almost all Corporate and organizations.
- All Educational institutions (Schools, Colleges, and Universities).
- Many government companies.
- Private tuition and institutions.



## Benefits of Learning Management Software

- LMS provides an all-in-one platform for learning and upgrading the skill set.
- It provides tons of online courses, which gives the user an option to choose as per their choice.
- It helps in tracking individual development progress.
- It reduces the learning cost and time of travel and space arrangements.

**NOTE:** Generally, **LMSes** allow teachers and administrators to constantly update and adapt materials while implementing various delivery methods and evaluation techniques (i.e. videos, handouts, quizzes, discussions, flash cards, etc.)

# Learning Management Systems

[Several links on LMS](#)

[Talent LMS](#)



[LearnUpon LMS](#)



[Absorb LMS](#)



[360Learning](#)



[Tovuti LMS](#)



[Cornerstone L](#)



[Vedubox](#)



[eFront](#)



[The Brainier LMS](#)



[Schoox](#)



[iSpring Learn](#)



[Eduflow](#)



[SAP Litmos](#)



[Flowsparks](#)



[Skillcast LMS](#)



[Moodle LMS](#)



[Docebo](#)



[Canvas](#)



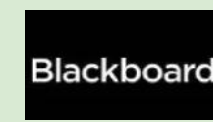
[Open edX](#)



[D2L Brightspace](#)



[Blackboard L](#)



## Blackboard®

 Sign Out


[Privacy](#)  
[Terms](#)

 Course Catalog

Current Courses ▼

Upcoming Courses →



 Search your courses

Filter

All Courses ▾

25

items per page

## 2023 Spring 1

BUSI.612401.2022-50

ADV ORGANIZATIONAL BEHAVIOR (2023 Spring 1) Original Course View

Kenneth LeVan | [More info](#) 

☆

## 2023\_Spring\_Full

BU51.69840.2022-50

MAOL EXIT ASSESSMENT (2023 Spring) Original Course View

John Rollins | [More info](#) ▼

☆

## Assorted Dates

CSU.Chapel.2021-30

Chapel Fall 2021 Original Course View

Private | Multiple Instructors | More info ▾

☆

Graduate.Programs.School.of.Business





## Example 2a: Moodle Screenshot

MCS
English (United States) (en\_us)
Oluleye Babatunde

# CSC 4150 - Artificial Intelligence and Robotics

Home / My courses / CSC 4150 - AI and Robotics

Turn editing on

### Navigation

- Home
- Dashboard
- Site pages
- My courses
  - CSC 3180 - Algorithms
  - CSC 4150 - AI and Robotics**
    - Participants
    - Competencies
    - Grades
    - General
    - wk1: Introduction and Intelligent Agents (Jan 17 to ...)
    - wk2: Solving Problems By Searching (Jan 24 to 30)
    - wk3: Adversarial Search And Games (Jan 31 to Feb 6)
    - wk4: Constraint Satisfaction Problems and Logical ...
    - wk5: First-order logic;

### Announcements

### Instructor's Name and Contact

- Dr. Hezekiah, O.B
- Email: [hob8k@uvawise.edu](mailto:hob8k@uvawise.edu)
- Phone: 276-328-0285

### Link to Arduino MATLAB Robotics

Projects in this link are:

- A self-balancing motorcyle** that maneuvers itself on varying terrain and remains upright using a flywheel for balance
- A mobile rover** that navigates between reference points and moves objects with its forklift
- A drawing robot** that takes a reference drawing and duplicates it on a whiteboard.

### Course Syllabus

135.6KB PDF document

### About Dr Hezekiah OB

75.2KB PDF document

MCS
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Oluleye Babatunde

## MCS Moodle

Home


Main menu

- Site news

Navigation


- Home
  - Dashboard
  - Site pages
  - My courses
    - CSC 3180 - Algorithms
    - CSC 4150 - AI and Robotics
    - CSTest
    - CSTEST21
    - Computer Literacy
    - CSC\_1180\_Fall\_2020
    - CSC 1180 (C++)
    - CSC1180\_01\_Fall2021
    - CSC1180\_02\_Fall2021
    - CSC\_2180\_Fall\_2020
  - More...

### My courses


**CSC 3180 - Algorithms**

Teacher: **Oluleye Babatunde**

This course covers basic theories and techniques for algorithmic development. Topics include: Sorting and searching; recursion; analysis of complexity; algorithm paradigms; NP complete problems; complexity metrics. The main objectives in the class are understanding the mathematical underpinnings of algorithmic development and using the computer (appropriate programming language) to solve problems within the specified problems.



**CSC 4150 - Artificial Intelligence and Robotics**

Teacher: **Oluleye Babatunde**

This course is designed to introduce the student to the basics of Artificial Intelligence. Topics include problem solving, searching, adversarial play, constraint satisfaction problems, knowledge representation, logic, and learning. Additional advanced topics will be introduced including probabilistic reasoning (Bayesian networks), neural networks, expert systems, natural language processing and robotics. Implementation platform will be Python/MATLAB.

### My courses

- CSC 3180 - Algorithms
- CSC 4150 - Artificial Intelligence and Robotics
- Computer Science Assessment Test 2020
- Computer Science Assessment Test 2021
- CSC 1100 -- Computer Literacy
- CSC 1180 - Foundatn Programming in C++
- CSC 1180 (C++) Summer II 2021
- CSC 1180 01 [C++ Programming] Fall2021
- CSC 1180 02 [C++ Programming] Fall2021
- CSC 2180 - Data Structures in C++
- CSC 3600 - Operations Research
- CSC 3600 - Operations Research



Account
Dashboard
Courses
Calendar
Inbox
History
My Media
Studio
Commons
Help

WS - hob8k

Student View
Immersive Reader

Workspace Term
Home
Announcements
Syllabus
Modules
Assignments
Discussions
Grades
Files
SensusAccess
Collaborations
Pages
Quizzes
Rubrics
Outcomes
People
Ally Course
Accessibility Report
Course Evaluations
Photo Roster
Post Grades to SIS

Workspace For hob8k
Edit

## Welcome to your workspace!

**What is a workspace?** This is an open workspace for you to test course setup, practice with functionality and create content that can be imported into your official course sites.

**Why do I have a workspace?** Due to your status as a faculty member or graduate student, you have been provisioned with this workspace to test course setup and learn about UVACanvas.

**How is this different from a course site?** Your workspace is designed for your private, personal use. A course site will be automatically populated with enrollments from SIS. Unlike your course sites, your workspace cannot be published and access is limited to you alone.

## Explore your workspace

Check out the [Getting Started for Instructors module](#) to discover how you can use Canvas to enhance your course design. To learn more about the tools and features in Canvas, access the resources below.

- [How do I add or remove tools in the Course Navigation?](#)
- [How do I organize content, assignments, and quizzes using Modules?](#)
- [How do I create an assignment?](#)
- [How do I create a quiz?](#)
- [How do I grade student work using SpeedGrader?](#)
- [How do I upload and embed an image in the Rich Content Editor as an instructor?](#)
- [How do I record a video in my browser to embed in the Rich Content Editor?](#)
- Select the ? **Help** button in the menu on the left to access Canvas guides, the Canvas Community and the Training Services Portal. The Portal contains a large number of self-paced and live courses designed to help you learn about Canvas and leverage its features and functionality.

**Tip:** You can edit the content on this page by selecting the Edit button above.


Import Existing Content
Import from Commons
Choose Home Page
View Course Stream
Course Setup Checklist
New Announcement
New Analytics
View Course Notifications

### Coming Up

View Calendar






Nothing for the next week

## Example 4: D2L BrightSpace Screenshot




WILLIAM WOODS  
UNIVERSITY

WWU Instructor Training Tips and ...

Oluleye Babatunde




[Course Home](#)
[Content](#)
[Assignments](#)
[Discussions](#)
[Quizzes](#)
[Classlist](#)
[Grades](#)
[Attendance](#)
[Class Progress](#)
[More ▾](#)

Getting Started

▼

Course Information



Brightspace Training resources


▶

Resources

▶

Videos

Professional Development









# Course Information


This is a place for us to post resources designed to help you succeed as an online instructor for WWU.

We'll have short videos, professional development opportunities, questions and answers, and more.

## Example 5: [Schoology Screenshot](#)


COURSES
GROUPS
RESOURCES
GRADES






Rachel Smith



### Rachel Smith


My Schools: Fair Lakes Academy Upper School, Fair Lakes Academy


Parents


Luke Smith


Advisors


Mrs. Phern

 Info

 Blog





 Portfolios





 Badges

 Edit


#### Your Badges


See All














#### Courses

 English 1120: Section 1


 French III: Section 5

 Physics: Section 2

 Trigonometry: Section 2

 US History Honors: Section 4

#### Your Groups

 Fair Lakes Choir Department



According to: [FinancesOnline](#)

## Top 20 Most Affordable LMS Software for 2023



### What are the top 20 most affordable LMS software?

- |                     |                |
|---------------------|----------------|
| 1 Absorb LMS        | 11 Docebo      |
| 2 TalentLMS         | 12 CoreAchieve |
| 3 iSpring Learn LMS | 13 Coassemble  |
| 4 SkyPrep           | 14 SAP Litmos  |
| 5 LearnWorlds       | 15 Canvas LMS  |
| 6 360Learning       | 16 Mindflash   |
| 7 iSpring Suite     | 17 Graphy      |
| 8 BrainCert         | 18 Bridge LMS  |
| 9 eFront            | 19 GoSkills    |
| 10 TalentCards      | 20 Skillcast   |

### Best Learning Management System of the Year!

#### LMS Comparison Chart

- #1) Absorb LMS
- #2) iSpring Learn
- #3) Mindflash
- #4) LearnWorlds
- #5) Thinkific
- #6) Rippling
- #7) TalentLMS
- #8) SkyPrep
- #9) MasterStudy WordPress LMS
- #10) ProProfs LMS
- #11) Groundwork1
- #12) Docebo
- #13) Moodle
- #14) Litmos
- #15) Canvas
- #16) Edmodo
- #17) Blackboard
- #18) Joomla LMS
- #19) D2L Brightspace
- #20) Schoology
- #21) eFront
- #22) Adobe Captivate Prime LMS
- #23) Knowmax

## Get Registered

for Blackboard Learn, Canvas, Brightspace by D2L, or Moodle



Handout (PDF)



Video



Handout (PDF)



Video



Handout (PDF)



Video



Handout (PDF)



Video



Handout (PDF)



Video

## Common Features Found in a Successful LMS

**Responsive design:** Users used be able access the LMS on the any device they choose whether it is a *desktop*, *laptop*, *tablet* or *smartphone*.

**User-friendly Interface:** The user interface (UI) should allow easy navigation by the users.

**Reports and Analytics:** Instructors and administrators must be able to view and track their online training initiatives and activities to determine if they are effective or need adjusting.

**Course and catalog management:** The LMS usually holds all the elearning courses and the related course content and both administrators and instructors should be able to create and manage these catalogs and courses in order to deliver a more targeted learning experience.

**Content interoperability and integration:** Content created and stored in an LMS must be packaged in accordance with interoperable standards including [SCORM](#) and [xAPI](#).

**Support services:** Different LMS vendors offer varying levels of support such as discussion boards and dedicated toll-free service number.

## Common Features Found in a Successful LMS (contd...)

**Certification and compliance support:** Instructors and administrators should be able to assess an individual skills set and identify both strengths and weaknesses in their performances.

**Social learning capabilities:** The MLS should have social media tools within it and this allows users to interact with their peers, collaborate, and share their learning experiences.

**Gamification:** Some LMSes include game mechanics or built-in gamification features that allow instructors and administrators to create courses with extra motivation and engagement.

**Automation:** An ideal LMS should enable administrators to automate repeated and tedious tasks such as user grouping, new user population, user deactivation and group enrolments.

**Localization:** Here, LMSes include multilingual support features so the learning and training content can remain unaffected by language barriers.

**Artificial Intelligence (AI):** With AI included in a LMS, personalized learning experiences for users can be created by providing course formats suited to their needs and by suggesting topics the user may find interesting based on the courses they have already completed.

## The 13 Must-Have Features of a Learning Management System

1. **Integration:** An LMS must offer seamless integration with other applications.
2. **Personalized Learning:** An LMS should be able to personalize learning experiences based on job roles and data available in the system.
3. **Assessment Tools:** Your LMS should support assessment tools such as online exams, quizzes, and situational simulations with questions to help understand learner comprehension and retention.
4. **Tracking and Analytics:** Tracking and analytics help in tracking a learners' journey, their progress, and performance.
5. **Automation:** Automation features help in automating enrollments, sending notifications and alerts, and even awarding certificates. Automation saves time and also helps create organized and structured training programs.
6. **Alerts and Notifications:** Automated alerts and notifications are necessary and critical features of LMS.
7. **Customization and Configuration:** An LMS should help to manage user rights based on their role in the organization.
8. **Security:** It is essential to have advanced security features in LMS and ensure that they meet data privacy and cloud security industry standards.
9. **Remote or Mobile-Workforce Ready:** An LMS should have a responsive design so that content renders well and is consistent across a range of devices such as mobile phones, laptops, desktops, and tablets that support both iOS and Android. The goal is to deliver a seamless learning experience to learners.



10. **Compliance** : SCORM and xAPI methods are used for standardizing learning content. Your LMS should have the ability to upload content that is compliant with these industry standards. Your LMS can work to help you ensure compliance in the required training of employees, so the platform itself also needs to meet company policies, and government regulations specific to your business type.
11. **Gamification**: Gamification of skill development helps to set goals that motivate employees and create a competitive spirit among them. LMS gamification features use game elements such as points, badges, and leaderboards to engage learners and help them advance in their learning journey in a time-sensitive manner.
12. **Social learning**: LMS with social learning capabilities is favored by companies as it helps them increase employee engagement by facilitating online communities and chat forums. The social features or tools embedded within LMS help learners share their credentials with others and participate in group learning. An example of a forum can be frequently asked questions (FAQ) pages to help learners get quick answers to their questions which speeds up their learning process.
13. **Smart scheduling**: Smart scheduling tools enable trainers to offer flexibility to learners by providing multiple dates and time options to attend the training sessions. The flexibility helps learners to attend the sessions without undermining their work commitments. The scheduling tool provides valuable insights to trainers that they can use for creating better scheduling options.

## Types of Learning Management Systems

- **Cloud-based:** doesn't require you to install specific hardware or software in order to access and use it.
- **Self-hosted:** This option involves installing LMS software on your own server, so you can build a customizable, secure platform.
- **Desktop application:** These are LMSs installed on the user's desktop.
- **Mobile application:** These LMSs support mobile learning and are accessible wherever and whenever through mobile devices.

## Basic Communication and Media Tools in the LMS

- Announcements
- Course Menu and Navigation
- Content Area
- Discussion Forum
- Gradebook
- Test and Quizzes
- Email Communications
- Collaboration Tools
- Audio and Video Tools

## Common Parts of a LMS (Taken from [Learning Technologies](#))

- ◆ **Rosters:** A digital roll call sheet for tracking attendance and for sending invitations to class participants.
- ◆ **Registration Control:** The ability to monitor and customize the registration processes of elearning curriculum.
- ◆ **Document Management:** Upload and management of documents containing curricular content.
- ◆ **Multiple device access:** Delivery of course content over web-based interfaces such as desktops, phones or tablets.
- ◆ **Distributed instructor and student base:** Remote participation by the instructor or pupil allows courseware to feature multiple teachers or experts from across the globe.
- ◆ **Course calendars:** Creation and publication of course schedules, deadlines and tests.
- ◆ **Student Engagement:** Interaction between and among students, such as instant messaging, email, and discussion forums.
- ◆ **Assessment and testing:** Creation of varied knowledge retention exercises such as short quizzes and comprehensive exams
- ◆ **Grading and Scoring:** Advanced tracking and charting of student performance over time.

## Basic Skills and Tools - Twelve Action and Skills to know

As instructors, the following action list are what we should know:

- Request or arrange for a course site.
- Access the course site.
- Know whom to contact for help for using the LMS.
- Create, edit, arrange and delete folders.
- Upload images.
- Update and revise documents.
- Use the announcement tool.
- Set up and create discussion forums.
- Set up assignments and major milestones.
- Know how to access and manage course resources.
- Set up teams and groups. (Boettcher & Conrad, 2021)



## Basic Set of Technology Tools and Their Specific Pedagogical Uses

Pedagogical Uses and Purposes	Tools and Applications
1. Communicate with individual learners and groups of learners	Announcement tool, email, text messaging, discussion forums, voice apps for synchronous exchange such as Skype
2. Create a media-rich learning environment to provide variety, choices, and depth of processing opportunities	Audio and video lectures and resources such as TED Talks
3. Create audio or video announcements, short mini-lectures	Audio and video apps on smartphones, tablets, laptops, collaboration tools.
4. Capture and record students' reflections, thinking, brainstorming, and peer-to-peer commenting.	Blogs, online journals, discussion forums, presentations, wikis.
5. Support student collaboration and teamwork on projects	Wikis, or other collaborative project tools, and apps on smartphones and tablets.

<b>Pedagogical Uses and Purposes</b>	<b>Tools and Applications</b>
<b>6.</b> Introduce core concepts, demonstrating processes, showing visual examples.	YouTube, Flickr, Tumblr, and other apps for posting, sharing photos, videos.
<b>7.</b> Create space where learners can ask general questions from the instructors or other students.	Discussion forums, blogs, wikis, cyber cafes within LMSs, such as Blackboard, Desire2Learn, Canvas
<b>8.</b> Remind students about assignments, emergencies, changes, give quick responses to critical questions or simple inquiries or arrange meetings.	Announcement tool, text messages, Twitter, Facebook.
<b>9.</b> Describe expectations for a forum posting, learning assignment, project or team collaboration	Rubrics - scoring tools
<b>10.</b> Help students to develop community and support each others.	Social networking sites: Facebook, LinkedIn, Twitter, Google Plus, Tumblr, Flickr, SlideShare

## Quality of e-learning

**Learner-Centered Content:** E-learning should be relevant and specific to learners' needs.

**Granularity:** E-learning content should be segmented to facilitate the assimilation of new knowledge and allow flexible scheduling of time for learning.

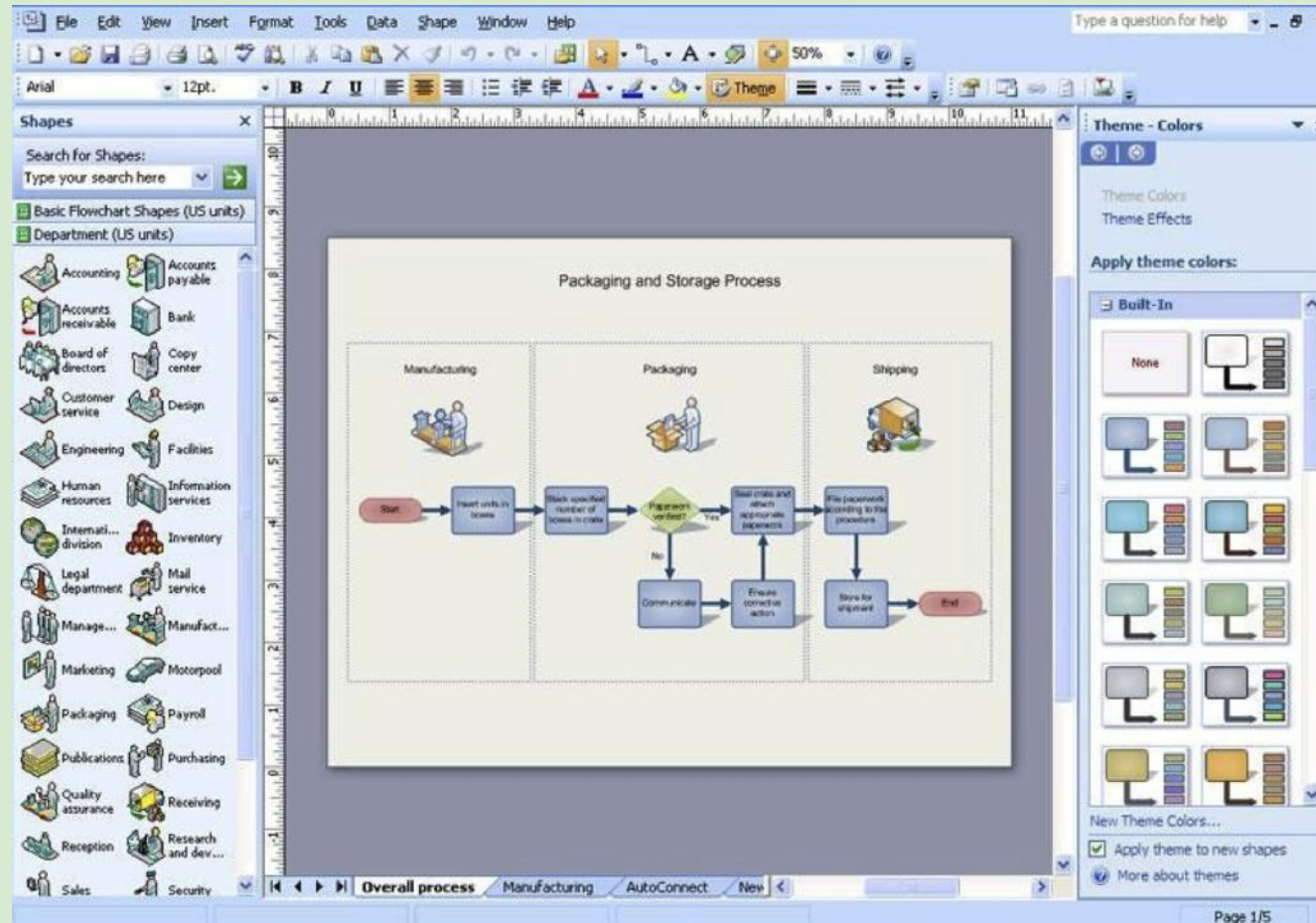
**Engaging Content:** Instructional methods and techniques should be used creatively to develop an engaging and motivating learning experience.

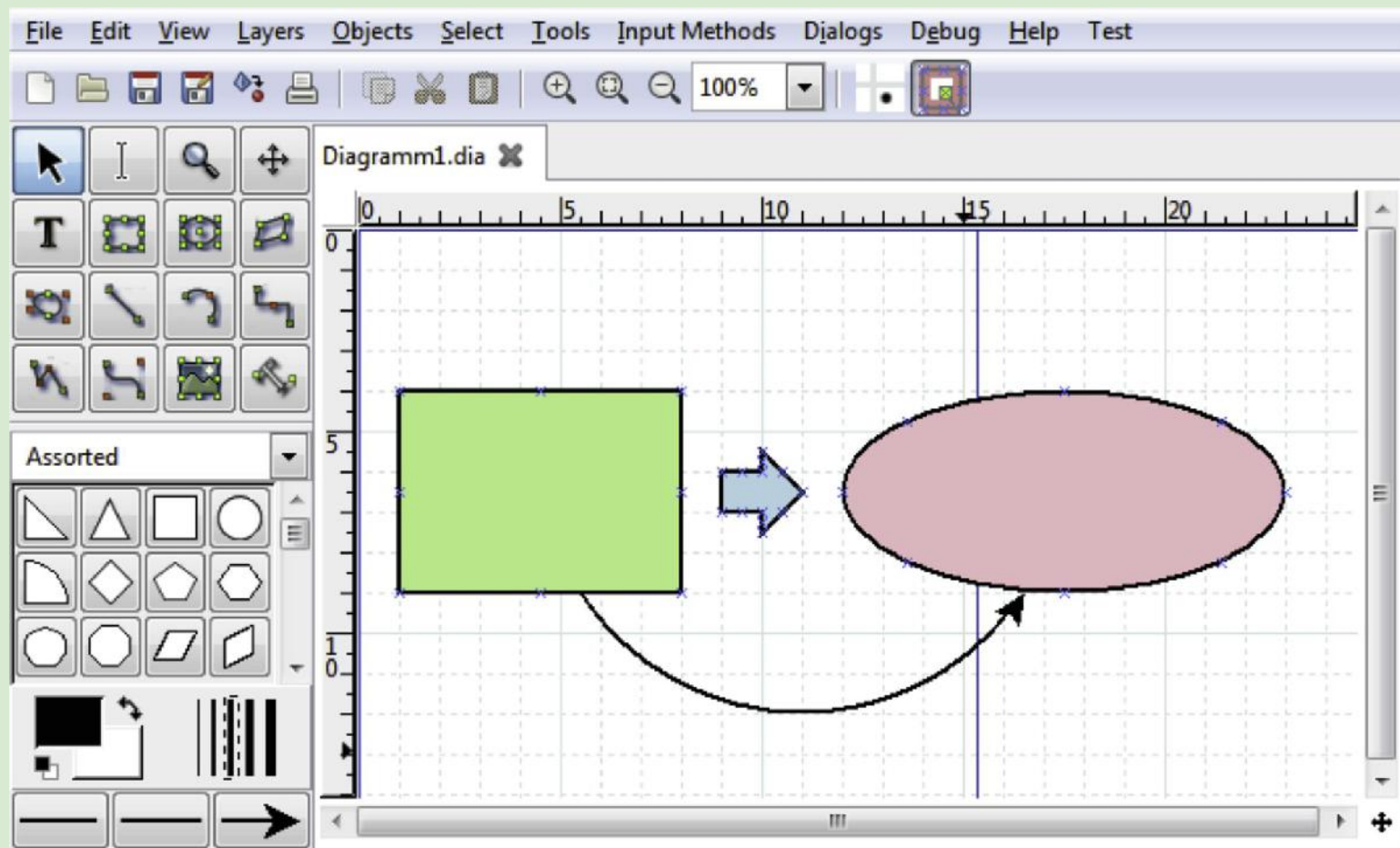
**Interactivity:** Frequent learner interaction is needed to sustain attention and promote learning.

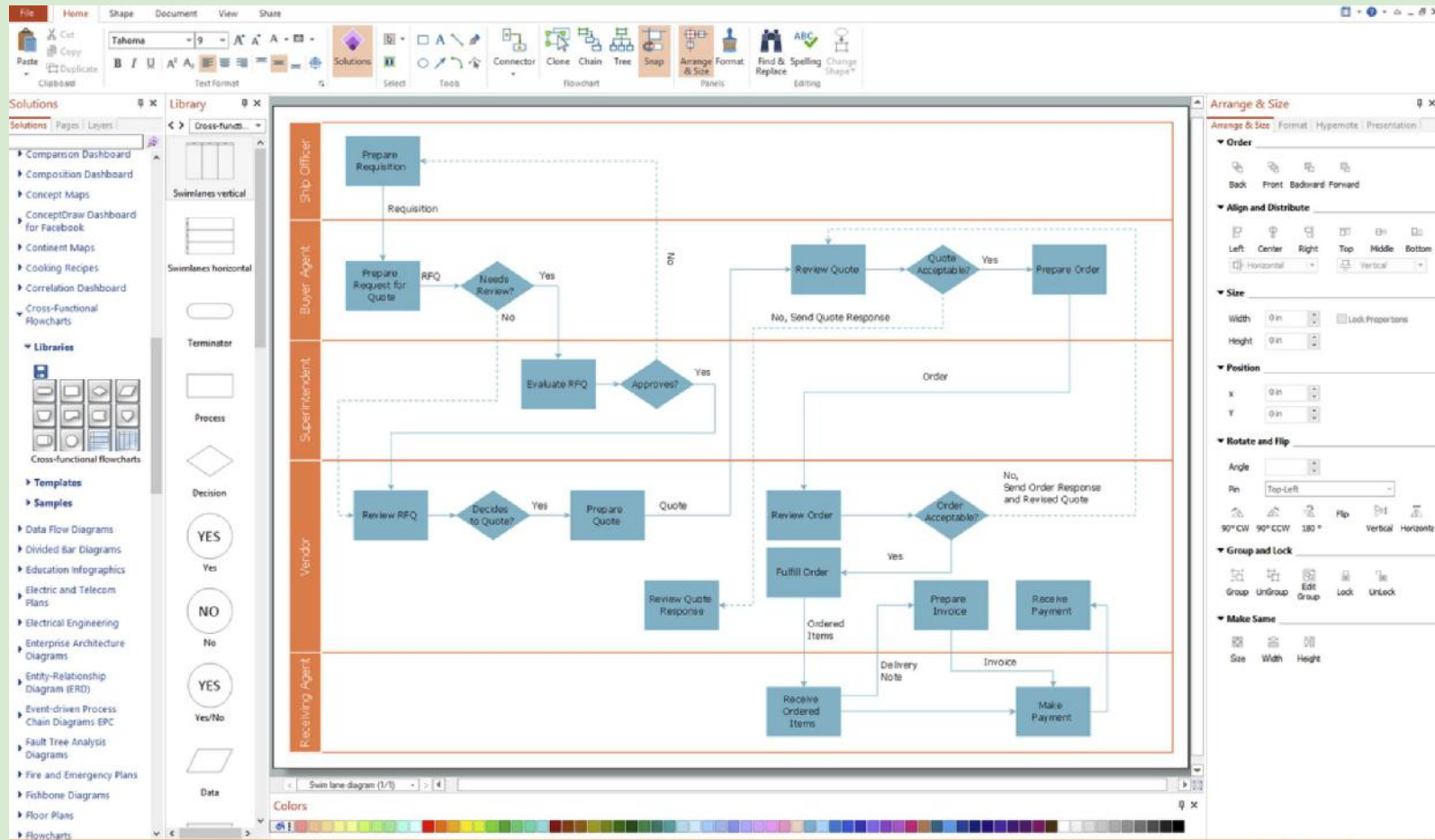
**Personalization:** Self-paced courses should be customizable to reflect learner's interests and needs: in instructor-led courses, tutors and facilitators should be able to follow learners' progress and performance individually.

## Software for Designing a Network Topology

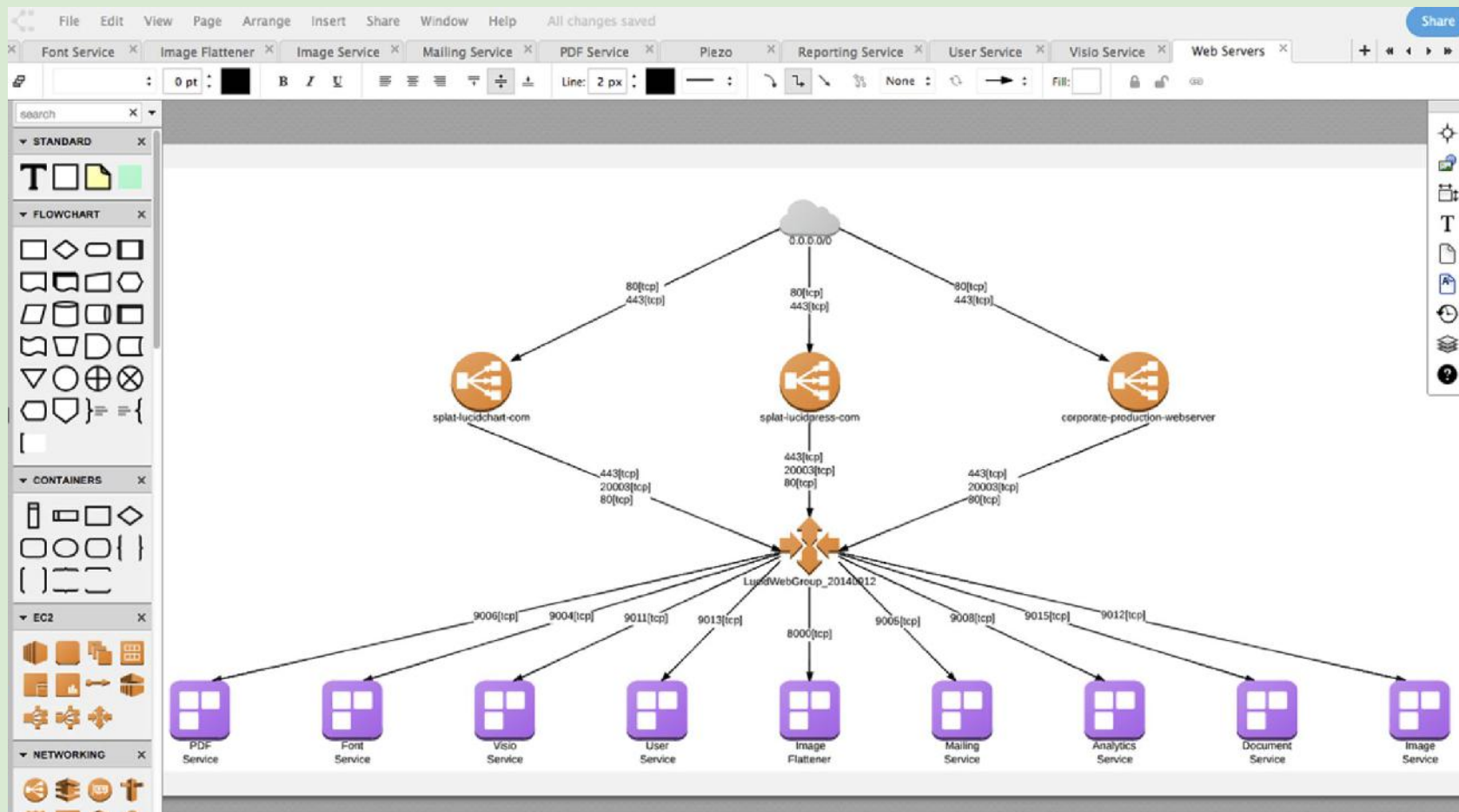
- (1) Microsoft Visio
- (2) Dia
- (3) ConceptDraw Pro
- (4) Lucidchart
- (5) LanFlow



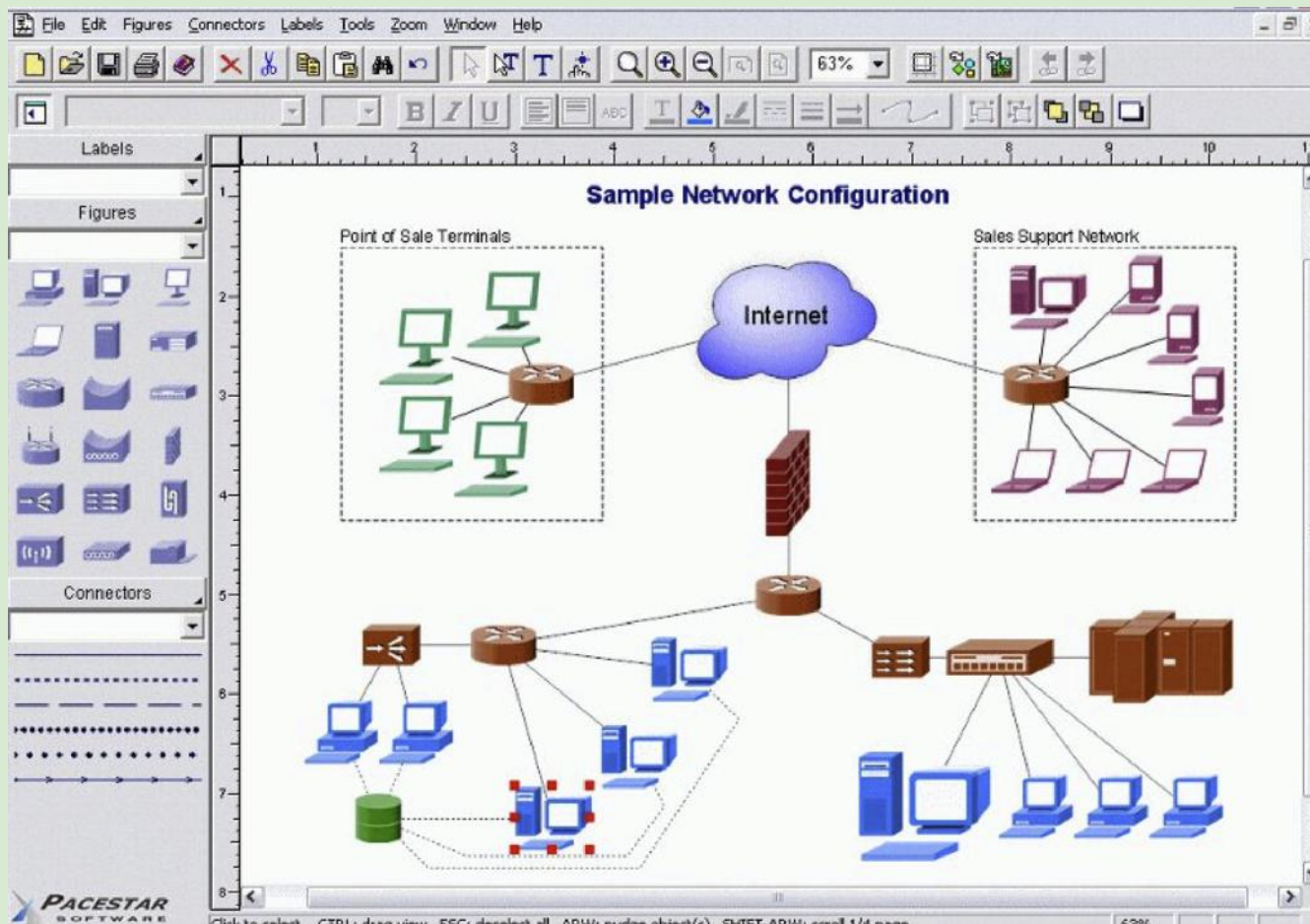








# LanFlow Screenshot



## Essential Remote Teaching Tools

**Remote Teaching Tools:** [Visme](#) => online design tool that anyone can use to create presentations, infographics, concept maps, schedules, reports and more

**Online Communication Tools:** [Zoom](#), [MS Teams](#), [Skype](#), [Google Meet](#)

**Online Whiteboards:** [Miro](#), [Lucidspark](#), [Mural](#), [ClickUp](#), [WebEx App](#), [Klaxoon](#), etc, (check [more here](#))

**Work Planning Tools:** [Google Calendar](#) and [Calendly](#)

**Social Media Channels:** [Facebook](#), [LinkedIn](#), [WhatsApp](#)

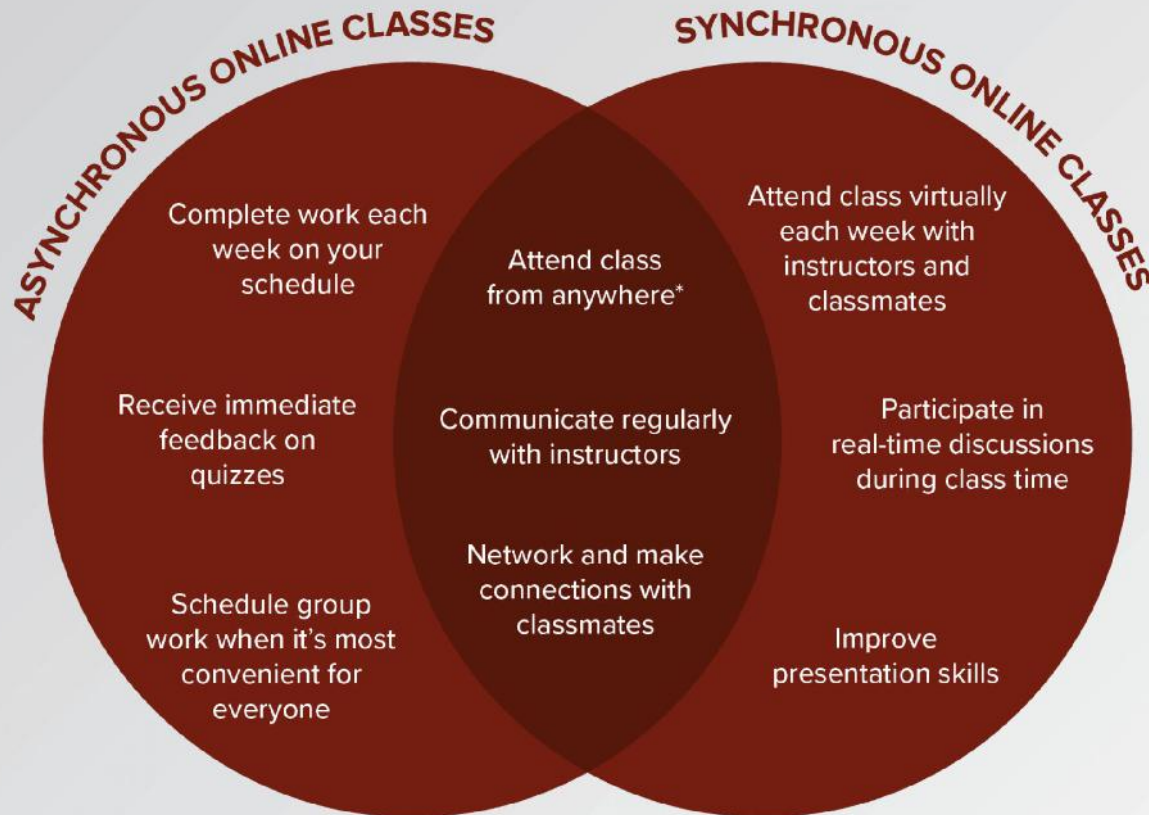
**Document Management Tools:** [GSuite](#), [MS office](#), [OneDrive](#), [Dropbox](#), and [Evernote](#)

**Online Video Tools:** [YouTube](#) and [Loom](#)

**Online Quiz Makers:** [Google Forms](#), [iSpring QuizMaker](#), [iSpring Free](#), [ProProfs Quiz Maker](#), [Testportal](#), etc.

**Online Homework Platforms:** [Google Docs](#), [Zoom](#), [Skype](#), [Loom](#), [YouTube](#), [Prezi](#), [Google Slides](#), [Google Classroom](#)

## Differences Between Synchronous and Asynchronous Online Classes



**Network Simulation Tools & Softwares:** [GNS3](#), [Cisco Packet Tracer](#), [Putty](#), [Secure CRT](#), [Microsoft Visio](#), [PRTG Network Monitor](#), [WIRESHARK](#), [EVE-NG](#), [Network Simulator -NS3](#), [SNMP Agent Simulator](#). [[Link here](#)]

**Database Management Software & Tools:** [MySQL](#), [SQL Server Management Studio](#), [Oracle RDBMS](#), [Salesforce](#), [DevOps](#), [Visual Studio Code](#), [ESM Tools](#), [PhpMyAdmin](#). [[Link here](#)]

**Popular Online Compilers:** [OnlineGDB](#), [Tutorialspoint](#), [Geekflare](#), [Replit](#), [Rextester](#), [myCompiler](#), [OneCompiler](#), [CodeChef](#), [Code on Mobile](#), [Techiedelight](#), [ideone.com](#), [J Doodle](#).

**Cyber Security Tools:** [Kali Linux](#), [Cain and Abel](#), [Metasploit](#), [John the Ripper](#), [Wireshark](#), [Nikto](#), [Tcpdump](#), [KisMAC](#), [NetStumbler](#), [Splunk](#), [Forcepoint](#), [Aircrack-ng](#), [Nexpose](#), [Nagios](#), [KeePass](#), [Burp Suite](#), [POF](#), [Paros Proxy](#), [Nmap](#), [Nessus Professional](#), [Master a Cyber Security Tool](#). [[Link here](#)]

**Digital Logic Softwares:** [Circuit Diagram](#), [CircuitLab](#), [Circuitverse](#)

**Collaborative Coding Tools:** [Microsoft Visual Studio Live Share](#), [CodePen](#), [Codeanywhere](#), [CodeTogether](#), [Cloud9 by AWS](#), [Codeshare](#), [GitLive](#), [CodeSandbox Live](#), [Teletype for Atom](#), [Remote Collab for SublimeText](#), [Github Gist](#), [Code Snippets Manager](#) , [GoogleColab](#)., etc. [[Link here](#)]

**Apps & Websites For Teaching Maths Online:** [ByteLearn.com](#), [Khan Academy](#), [IXL](#), [Desmos](#), [Quizlet](#), [Wolfram MathWorld](#), [Art of Problem Solving](#), [Math is Fun](#), [Prodigy Math Game](#), [Math Playground](#), [edX](#), [ABC Mouse](#), [Adventure Academy](#), [Mathplanet](#), [Illustrative Mathematics](#), [Adapted Mind](#) [[Link here](#)]

How to Develop Interactive Content (Video with Quizzes)

## Hardware & Software Necessary for E-Learning

**Hardware:** Recent Computer, Monitor, Mobile Device (Smartphone, iTouch, iPad, MP3 player), Microphone/Speakers/Headset, Printer/Scanner

**Softwares:** Up-to-date Operating Systems, Email address, Microsoft Office (Word, Excel, PowerPoint, Publisher, Access), Adobe Acrobat (Professional), Plug-ins (Flash, QuickTime, Windows Media Player, Real Player, etc.)

**Specialty Software for Online Learning:** Audio Recording Software (Garageband, Audacity),  
Movie Editing Software (iMovie, Windows Movie Maker),  
Math/Engineering Software (Wolfram, etc.),  
Graphics Editing Software (Corel Draw, Picasa, etc.)

**Free electronic books:** [PDF Drive](#),

**Electricity and Internet Service:** Unavoidably important, noise free space, etc.



```
// program to draw square grids by Dr Hezekiah, O.B
#include <iostream>
#include <iomanip>
using namespace std;

void drawSQUARE (int);

int main()
{
    int howMANY;
    cout << endl;
    cout << " How many square grid do you want ? ";
    cin >> howMANY;
    cout << endl;
    drawSQUARE(howMANY);
    return 0;
}

void drawSQUARE (int sqDim)
{
    for (int x = 0; x < sqDim; x++)
    {
        cout << setw(4) << "  r" << x;
        //cout << endl;
        for (int y = 0; y < sqDim; y++)
        {
            cout << setw(4) << x + y ;
        }
        cout << endl;
    }
}
```



## References

- [1] Boettcher, J. V., & Conrad, R. M. (2021). *The online teaching survival guide: Simple and practical pedagogical tips*. John Wiley & Sons.