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# Open Education Resource: Flipping the classroom with MOODLE

Work done as part of AICTE approved FDP on Use of ICT in  
Education for Online and Blended Learning

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# Open Education Resource: Flipping the classroom with MOODLE

## About the OER

The open education resource is a collection of MOODLE Lesson activities that are useful as out-of-class activity while flipping the classroom. There are three lessons as part of this OER, and each deals with an aspect related to Concept Maps. Concept mapping is a technique that is useful across domains and can be a useful tool for: Knowledge Integration and Summary.

- ❖ OER is downloadable from: [www.et.iitb.ac.in/~jkmadathil/et4et/oer.html](http://www.et.iitb.ac.in/~jkmadathil/et4et/oer.html) (You may also provide your Wordpress page details if that is the webpage used for dissemination of the OER)
- ❖ Target Audience: First year Engineering Students (any domain)
- ❖ Tags: Flipped Classroom, MOODLE, Concept Map, Educational Technology, Engineering Students
- ❖ OER developed in MOODLE 2.3
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## Learning Objectives

After using this OER, learner will be able to:

- Identify the characterizing features of a concept map
- List down the benefits of Concept Mapping – As a learner and as a Teacher
- Explain the theory behind concept mapping
- Familiarize themselves with 2 tools for creating concept maps

## [Helpful Documentation for Tool Use](#)

[1] for design and development of Lesson Activity in MOODLE (an Open Source Tool)

[2] for use of Jing (a Freemium Tool)

# Section 2: Design Decisions

## Nature of Decisions taken

The design decisions involved in the creation of this OER were of broadly three types:

1. Content Decisions
2. Pedagogic Decisions
3. Technology Decisions

## Content Decisions

The content decisions related to:

- a. Earmarking specific segment to be covered – Decided on CMaps –What, Why and How?
- b. The research papers/publications and other materials to be provided – IHMC CMap Page, Theory Underlying CMap paper, Theory of Assimilation diagram

## Pedagogic Decisions

Typically in a flipped classroom strategy, there are two segments – Out-of-class segment and In-Class segment. The out-of-class segment requires student to refer to some given material (Video, Text etc) and form an understanding about the concepts that are relevant. In terms of concept marking the pedagogic decisions that were taken for the Out-of-class segment related to:

- a. Cognitive Levels of Questions to be asked along with the resources – Mostly Recall to Apply level question for out of class and Create Level question for In-class
- b. Assessment Strategies – Multiple choice questions for out of class, Team-Pair-Solo strategy for in-class

## Technology Decisions

While developing the Out-of-Class and In-class activities, the major technology decisions taken were:

- a. Tool to be used for creating screencast – Jing, as it had a time limit of 5 minutes and provided option for creating videos as .swf files that can be directly played from browser.
- b. MOODLE Lesson Activity for setting up Out-of-Class segment as it allowed guided self-learning.

# Section 3: OER Description

## Active OER

For checking the active OER, you may access the Guest Course – “**FDP\_OER OER 101 – Sample OER’s**” in the IDP-ET Moodle (<http://www.et.iitb.ac.in/moodle/course/view.php?id=11&section=1>).

The guest password required for exploring the activity is: `et_guest@123`

## Lesson Settings

Screenshots 1-3 shows the general settings of a Lesson. This is same for all the lessons. If there are variations, then they are duly noted under each description.

Screenshot 1: General and Appearance setting in MOODLE

The screenshot displays the Moodle Lesson Settings interface, organized into three main sections:

- General:** Contains a text input field for the lesson name, which is currently set to "Lesson 1: What are concept maps?".
- Appearance:** This section includes a "File pop-up" area with a file manager interface (upload, download, and view icons) and a note about file size limits (5MB) and attachment count (1). Below this are several toggle and dropdown settings:
  - Progress bar: No
  - Display ongoing score: No
  - Display left menu: No
  - Minimum grade to display menu: 0%
  - Slideshow: No
  - Maximum number of answers: 4
  - Use default feedback: No
  - Link to next activity: None
- Availability:** This section contains settings for lesson access:
  - Available from: 19 June 2016 06:55 (with an "Enable" checkbox)
  - Deadline: 19 June 2016 06:55 (with an "Enable" checkbox)
  - Time limit (minutes): 20 (with an "Enable" checkbox)
  - Password protected lesson: No
  - Password: (empty field) (with an "Unmask" checkbox)

Screenshot 2: Prerequisites, Flow of Control and Grading

You can create sequencing of the flow by ensuring that prerequisites for successive lessons. For e.g., “Concept Map – What?” is a prerequisite for “Concept Map – Why?” and “Concept Map – Why?” is a prerequisite for “Concept Map – How?”

**Availability**

Available from: 19 June 2016 06:55 Enable

Deadline: 19 June 2016 06:55 Enable

Time limit (minutes): 20 Enable

Password protected lesson: No

Password: Unmask

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**Prerequisite lesson**

Dependent on: None

Time spent (minutes): 0

Completed: 0

Grade better than (%): 0

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**Flow control**

Allow student review: Yes

Provide option to try a question again: No

Maximum number of attempts: 1

Action after correct answer: Normal - follow lesson path

Number of pages to show: 0

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**Grade**

Grade: 100

Grade category: Uncategorised

Practice lesson: No

Custom scoring: Yes

Re-takes allowed: Yes

Handling of re-takes: Use mean

Minimum number of questions: 0

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**Common module settings**

Visible: Show

ID number:

Screenshot 3: Access Restriction and Completion Settings

Once again access restriction settings can ensure that a proper sequence has been followed in the access of lesson (if Prerequisites are not mentioned).

**Restrict access**

Allow access from: 19 June 2016 00:00 Enable

Allow access until: 19 June 2016 00:00 Enable

Grade condition: (none) must be at least % and less than %

User field: (none) contains

Activity completion condition: (none) must be marked complete

While access is prevented: Show activity greyed-out, with restriction information

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**Activity completion**

Completion options locked: One or more students (19) has already marked this activity as completed. Changing completion options will erase their completion state and may cause confusion. Thus the options have been locked and should not be unlocked unless absolutely necessary.

Completion tracking: Students can manually mark the activity as completed

Require view: Student must view this activity to complete it

Require grade: Student must receive a grade to complete this activity

Expect completed on: 19 June 2016 Enable

Save and return to course Save and display Cancel

There are required fields in this form marked \*.

## Screenshot 4: Contents of Lesson – “Concept Map – What?”

Page title	Page type	Jumps	Actions
What is a concept map?	Content	Next page	 Add a new page...
Q1: Characteristics of a concept map	True/false	Next page Next page	 Add a new page...
Q2: Characteristics of a concept map	True/false	Next page Next page	 Add a new page...
Q3: Characteristics of a concept map	True/false	Next page Next page	 Add a new page...
Q4: Characteristics of a concept map	True/false	Next page Next page	 Add a new page...
Q5: Characteristics of a concept map	True/false	Next page Next page	 Add a new page...
What are characteristics of a concept map?	Content	Next page	 Add a new page...
Q: Organization of concepts in a concept map	Multichoice	Next page Next page Next page Next page	 Add a new page...
Q: Is this a concept map?	True/false	End of lesson End of lesson	 Add a new page...

## Screenshot 5: Setting up Content in the Lesson

Lesson 1: What are concept maps? ⓘ

▶ Expand all

▼ Add a content page

**Page title\*** What is a concept map?

**Page contents**

Paragraph

Watch the videocast above to learn what are concept maps, and what is meant by the technique of concept mapping.

Path: p > iframe

Arrange content buttons horizontally?

Display in left menu?

▼ Content 1

**Description\*** Test your understanding - characteristics of concept maps

Moodle auto-format

**Jump** Next page

▶ Content 2

▶ Content 3

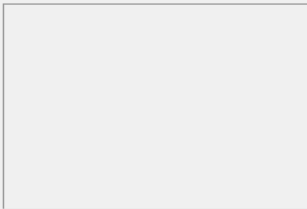
▶ Content 4

There are required fields in this form marked \*.



## Screenshot 6: Preview of the created content

What is a concept map? 🔍 ⚙️ 🔍 ✕



Watch the videocast above to learn what are concept maps, and what is meant by the technique of concept mapping.

Also available are the [slides](#) corresponding to the video.

You can view the videocast and go through the slides as many times as you want.

Here is a [concept map of concept-maps](#), from the IHMC CMap Tools home page.

You can proceed to the self-assessment question on the next page.

If you are unable to watch the video embedded in this page, copy and paste the below link in your browser:

[http://www.et.iitb.ac.in/moodle/pluginfile.php/43/mod\\_folder/content/0/2014-07-31\\_what-is-cmap.mp4](http://www.et.iitb.ac.in/moodle/pluginfile.php/43/mod_folder/content/0/2014-07-31_what-is-cmap.mp4)


Content	
Content 1:	Test your understanding - characteristics of concept maps
Jump 1:	Next page

## Screenshot 7: Creating MCQ and branching instructions inside the lesson

Lesson 1: What are concept maps? ◁ -Collapse all

-Create a question page

**Page title** Q1: Characteristics of a concept map

**Page contents**  

Based on the concept map of 'Parts of a computer' is the following one of the characteristics of a concept map?

1) Concepts such as objects or categories of objects enclosed in boxes

**Path:** p

-Correct response

**Answer:**

**Response:**

**Correct answer jump:**

**Correct answer score:**

-Wrong response

**Answer:**

**Response:**

**Wrong answer jump:**

**Wrong answer score:**

There are required fields in this form marked \*

## Screenshot 9 : Student view of MCQ

Based on the concept map of 'Parts of a computer' is the following one of the characteristics of a concept map?

1) Concepts such as objects or categories of objects enclosed in boxes

This is not one of the characteristics of a concept map.

This is one of the characteristics of a concept map.

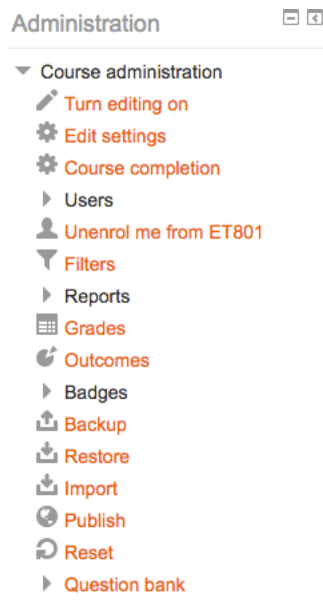
Submit

### How to use this OER

For using this OER, please **ensure that you have admin permission** in your MOODLE course (needed for importing activities). Else ask your administrator to restore this backup in your course.

Step 1: Download the set of 3 lessons (OER) from [www.et.iitb.ac.in/~jkmadathil/et4et/oer.html](http://www.et.iitb.ac.in/~jkmadathil/et4et/oer.html)


Step 2: Go to the MOODLE course where you want to import this lesson. In the Administration section click “Restore”



Step 3: Drag and drop the three files into the “Files” area and click restore

### Import a backup file

Files



You can drag and drop files here to add them.

### Course backup area

Filename	Time	Size	Download	Restore

### User private backup area

Filename	Time	Size	Download	Restore

### Automated backups

Filename	Time	Size	Download	Restore
























Step 4: Verify the contents of the restore by going back to the lesson

Step 5: After verifying, post the instructions to your students to complete the lesson activity before the next class using MOODLE forums.

Step 6: Before start of the next class please go and check the reports (see fig below) to see how students performed.

[Preview](#) | [Edit](#) | [Reports](#) | [Grade message](#)

**Overview** Deleted statistics

Name	Attempts	High score
	Not completed Thursday, 30 July 2015, 12:48 AM	0%
	100% Monday, 27 July 2015, 2:40 PM, (06 mins 4 secs)	100%
	Not completed Sunday, 23 August 2015, 8:43 PM	0%
	85.71% Thursday, 30 July 2015, 11:58 AM, (21 mins 12 secs)	85.71%
	85.71% Monday, 19 August 2015, 8:10 PM, (none)	85.71%
	Not completed Monday, 24 August 2015, 12:36 PM	0%
	71.42% Tuesday, 29 July 2015, 11:44 PM, (1 sec)	71.42%
	14.29% Friday, 7 August 2015, 12:19 PM, (1 min)	14.29%
	85.71% Sunday, 9 August 2015, 11:19 PM, (4 mins 58 secs)	85.71%
	Not completed Monday, 24 August 2015, 12:29 AM	0%
	85.71% Tuesday, 29 July 2015, 9:42 PM, (51 mins 30 secs)	85.71%
	Not completed Sunday, 2 August 2015, 11:55 AM	0%
	85.71% Saturday, 14 August 2015, 2:59 PM, (none)	85.71%
	100% Monday, 27 July 2015, 2:19 PM, (1 hour 3 mins)	100%
	100% Monday, 27 July 2015, 2:08 PM, (2 mins 8 secs)	100%
	Not completed Monday, 27 July 2015, 3:13 PM	0%
	85.71% Monday, 27 July 2015, 12:40 PM, (none)	85.71%
	57.14% Monday, 27 July 2015, 2:54 PM, (none)	57.14%
	71.42% Thursday, 13 August 2015, 7:57 PM, (4 mins 3 secs)	71.42%
	57.14% Monday, 27 July 2015, 2:30 PM, (50 mins 19 secs)	57.14%
	85.71% Monday, 24 August 2015, 11:31 AM, (4 mins 4 secs)	85.71%
	85.71% Monday, 27 July 2015, 2:36 PM, (48 mins 23 secs)	85.71%
	Not completed Monday, 3 August 2015, 2:10 PM	0%

Select all / Deselect all / Choose...

Additionally, if there are some common errors made by students, you may start the face-to-face session with a Peer Instruction question to elicit the misconception and resolve it.

### Best Practices with Lesson Activity

Here are some of the best practices from our experience on using this Lesson Activity in classroom:

1. Provide this activity at least 1 week in advance.
2. Provide minor incentive (marks) for completion of the activity.
3. Ensure that there is a tangible output at the end of out-of-class activity to ensure learners are interested (E.g. For the lesson “Concept Map – How?” students had to create concept maps for two videos.)
4. It would be good if the screencasts and resources were separately available in a “Resources” folder in the MOODLE course itself. This will take care of common cribs related to “website not available”, “resources not accessible” etc.

## Section 4: Evaluating Effectiveness of OER

The OER effectiveness can be assessed at two levels:

1. At the student level
2. At the consumer level

### Effectiveness at the student level

Effectiveness at the student level involves metrics related to student access of the resource and student learning.

The Moodle lesson report can be used to evaluate this effectiveness, with the report showing the total number of students who accessed the reports (along with time) and their marks (based on their answers to MCQs). Additionally there is an option for teacher to grade essays and these marks also will be calculated if needed.

### Effectiveness at consumer level

OER consumers are typically teachers who want their students to learn concept mapping. Linking a survey on three main constructs – Ease of Use, Concept Coverage and Concept Complexity, can help in identifying the effectiveness of this OER at consumer level. This has to be done as a follow-up activity.

### Implementing Survey

Thus every user who downloads this resource will be asked their email address and as a follow up the survey will be send to their email address.

### Survey Questions

Construct	Question	Scale
Ease of Use	I found it easy to download the Lesson Activity	Strongly Disagree to Strongly Agree (5-point Likert Scale)
	I found the instructions to setup the Lesson Activity useful in setting the activity in my Course	
	I was able to successfully create Lesson in my own course	
Concept Coverage	The Lesson covers the required concepts related to concept maps that I need for	

	my course	
Concept Complexity	The content inside the Lesson is too complex for my students to understand	

## Section 5: Consolidated Log of Team Work

The consolidated log of team work is as shown below:

Activity	Team Member	Amount of Time	Additional Logs if any
Discussion	Team Leader		
	Team Member 1		
	Team Member 2		
	Team Member 3		
Tool Exploration	Team Leader		Plan uploaded in Wiki
	Team Member 1		
	Team Member 2		
	Team Member 3		
OER Creation	Team Leader		Plan uploaded in Wiki
	Team Member 1		
	Team Member 2		
	Team Member 3		
OER Documentation	Team Leader		
	Team Member 1		
	Team Member 2		
	Team Member 3		
Individual Reflection (Diary Logging)	Team Leader		Review Comments in Wiki
	Team Member 1		
	Team Member 2		
	Team Member 3		
OER Evaluation	Team Leader		Edits made in Wiki
	Team Member 1		
	Team Member 2		
	Team Member 3		

# Section 6: Building a Community of MOODLE and Flipped Classroom Adopters

## Possible Sources for Community Building

Some of the viable sources for building a community are:

- Teachers who are using MOODLE
- Teachers who plan to use Flipped Classroom Strategies

## Plans for Community Building

The resource is already available in the [webpage](#) and its access requires the users to provide their email id. Thus there will be a list of interested users whom we can follow up using email. All the interested users can then be connected using a local Wordpress or Moodle website.



# Works Cited

[1] MOODLE. (2015, October) Moodle Docs. [Online].

[https://docs.moodle.org/29/en/Lesson\\_activity](https://docs.moodle.org/29/en/Lesson_activity)

[2] Techsmith. (2016) Jing. [Online]. <https://www.techsmith.com/tutorial-jing.html>