

Designing learner-centric e-learning in STEM disciplines
Prof. Sahana Murthy
Dr. Veenita Shah
Interdisciplinary Programme in Educational Technology
Indian Institute of Technology, Bombay

Lecture - 03
Learner - Centric MOOC

(Refer Slide Time: 00:15)

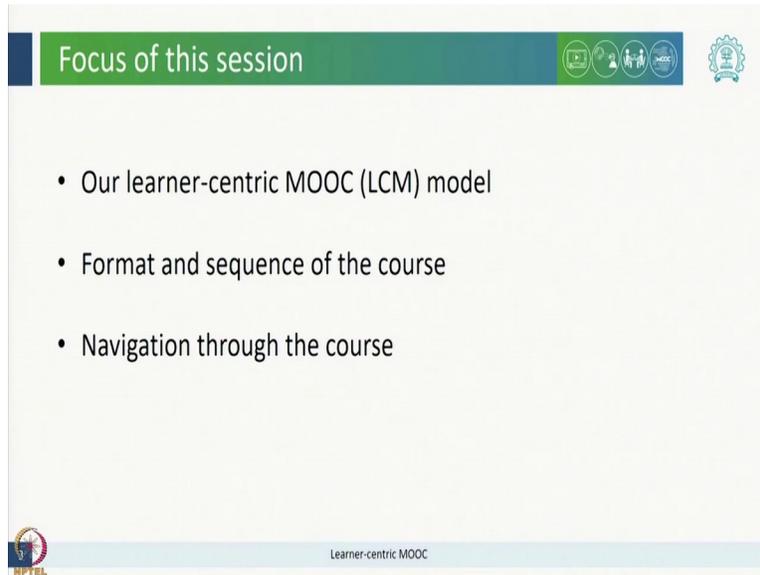
Massive Open Online Courses

<p>Available online at www.sciencedirect.com ScienceDirect <small>ELSEVIER</small> Procedia - Social and Behavioral Sciences 174 (2015) 40</p> <p style="text-align: center;">INTE 2015 An overview of the world of MOOCs Meltem Hüni Bülent <small>Turkish Gazi Mustafa Kemal Atatürk Education Faculty</small></p> <p>Abstract Massive open online courses (MOOCs) are one of the most prominent forms of open access, global, free, video-based instruction through an online platform to high volume participants aiming to take a MOOC. While studies and literature-based studies have shown successful implementations, there is a lack of research studies and critical papers. This paper aims, beginning with the definition and a brief history of MOOCs, to review and synthesize the literature on MOOCs and to review characteristics, trends of its development and a brief of practical uses are presented.</p> <p>© 2015 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4.0/). Peer review under responsibility of the Ministry of National Education.</p> <p>Keywords: MOOCs, massive open online course, free, video-based</p>	<p><i>British Journal of Educational Technology</i> doi:10.1111/bjet.12235</p> <p style="text-align: right;">Vol 47 No 2 2016 120-144</p> <p>Promoting engagement in online courses: What strategies can we learn from three highly rated MOOCs</p> <p>Khe Foon Hew <small>Khe Foon Hew is an associate professor of Information and Technology Studies at the Faculty of Education, The University of Hong Kong. His research primarily focuses on learning technology, e-learning, motivation, online communities and knowledge sharing. Address for correspondence: Dr. Khe Foon Hew, Faculty of Education, The University of Hong Kong, Pokfulam Road, Hong Kong, China. Email: kfhe@hku.hk</small></p> <p>Abstract Although past research has sought to identify the factors of student engagement in traditional online courses, two questions remained largely unanswered with regard to Massive Open Online Courses (MOOCs): do the factors that could influence student engagement in traditional online courses also apply to online courses that are massive and open? What factors do students consider important in terms of their perceived ability to promote a satisfying or engaging online learning experience? This paper reports a case study of three top-rated MOOCs in the disciplines of programming languages, literature, and arts & design in order to address these very questions. Using a mixed methods approach that combines participant observation with analysis of reflective data from 965 course participants, this paper seeks to understand the factors behind the popularity of these MOOCs. Five factors were found. These include the following, ranked in terms of importance: (1) problem-centric learning with clear expositions, (2) instructor accessibility and passion, (3) active learning, (4) peer interaction, and (5) using helpful course resources. The specific design strategies pertaining to each factor are further discussed in this paper. These strategies can provide useful guidance for instructors and are a worthwhile subject for further experimental validation.</p>	<p>Journal of Pedagogical Research Vol. 10, No. 1, March 2014</p> <p>Good Practice from Existing MOOCs</p> <p>Maha Ball Associate Professor of Practice Learning and Teaching American University in Cairo Cairo EGYPT maha@aucegypt.edu</p> <p>Abstract Massive open online courses (MOOCs) has been met with a mix of success and failure. A focus on the quality of learning offered, rather than a focus on course completion rates, is a critical assessment of MOOCs using Chickering and Gamble's (1997) 'Seven Principles for Good Practice in Undergraduate Education' and Bloom's (1996) 'Two Significant Characteristics of Effective Instruction in the Literature', to glean some good pedagogical practices from existing MOOCs.</p>
--	---	---

Learner-centric MOOC

Dear learners as we all know Massive Open Online Courses also known as MOOCs have revolutionized the world of online learning catering to an enormous scale and diversity of learners, including school and college level students, teachers, working professionals and other eager learners.

(Refer Slide Time: 00:37)



The slide features a green header bar with the text "Focus of this session" and several icons representing different aspects of the course. The main content area is white and contains a bulleted list of three items. At the bottom, there is a light blue footer bar with the NPTEL logo on the left and the text "Learner-centric MOOC" on the right.

- Our learner-centric MOOC (LCM) model
- Format and sequence of the course
- Navigation through the course

Some of these MOOCs utilize learner-centric pedagogies which have been shown to provide a better learning experience for learners. Here in this session, we will walk you through our learner-centric MOOC model also called as LCM model utilized in this course. We will also take you through the format and sequence of this course which will make it easy for you to navigate through the course.

(Refer Slide Time: 01:08)

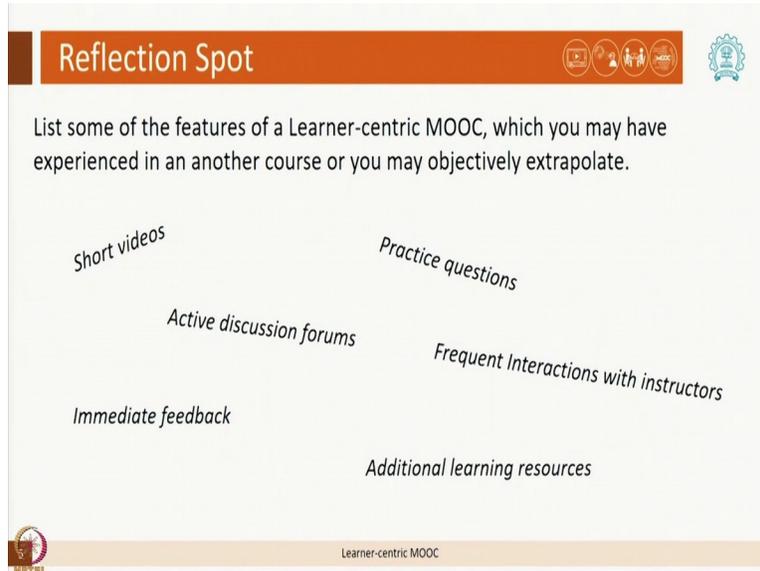


The slide has an orange header bar with the text "Reflection Spot" and several icons. The main content area is white and contains a text prompt. At the bottom, there is a light orange footer bar with the NPTEL logo on the left and the text "Learner-centric MOOC" on the right.

List some of the features of a Learner-centric MOOC, which you may have experienced in an another course or you may be able to objectively extrapolate.

Before we discuss more on it, let us start with the reflection spot. List some of the features of a learner-centric MOOC which you may have experienced in another course or you may be able to objectively extrapolate. You may pause the video here to answer this reflection spot.

(Refer Slide Time: 01:31)



The slide features a title bar with the text "Reflection Spot" and several icons. Below the title bar, the text reads: "List some of the features of a Learner-centric MOOC, which you may have experienced in an another course or you may objectively extrapolate." The slide lists six features: "Short videos", "Practice questions", "Active discussion forums", "Frequent Interactions with instructors", "Immediate feedback", and "Additional learning resources". The slide also includes the NPTEL logo and the text "Learner-centric MOOC" at the bottom.

Reflection Spot

List some of the features of a Learner-centric MOOC, which you may have experienced in an another course or you may objectively extrapolate.

Short videos

Practice questions

Active discussion forums

Frequent Interactions with instructors

Immediate feedback

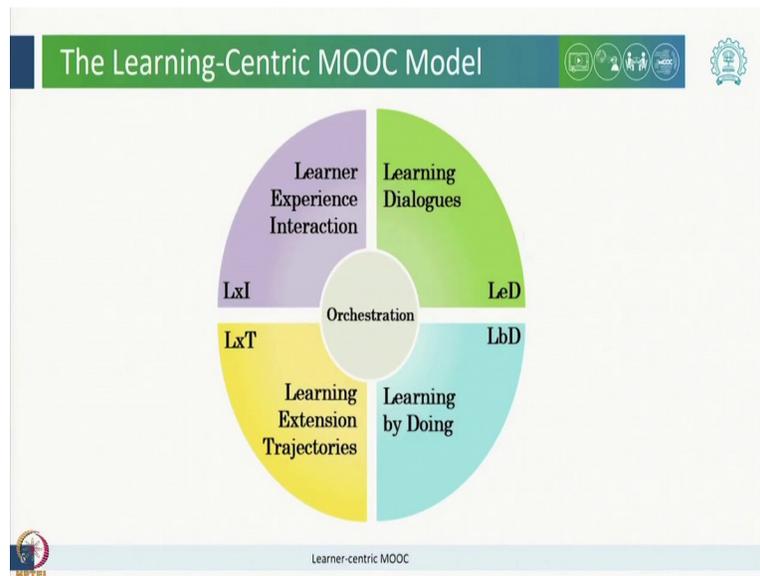
Additional learning resources

NPTEL

Learner-centric MOOC

You may have come up with various approaches such as short videos and practice questions, active discussion forums, frequent interactions with instructors, immediate feedback and additional learning resources. All of these are relevant learner centric strategies and we have packaged all of these strategies and more into our learner-centric MOOC model.

(Refer Slide Time: 01:50)



The learning activities in the learner-centric MOOC model are designed from the perspective of the learner and to address their learning needs, goals and interests of diverse learners. The model consists of four learner-centric structural elements including Learning Dialogues also known as LeDs, Learning by Doing activities also known as LbDs, Learning Extension Trajectories also known as LxTs and Learner Experience Interactions also known as LxIs. We will now discuss each of these structural elements in detail.

(Refer Slide Time: 02:40)

Learning Dialogue (LeD)

- Learning Dialog
 - Promotes concept acquisition through interactive dialogs.
 - Short video providing conceptual knowledge, with explicit reflection spots.
- Reflection Spot
 - Express prior conceptions, perform micro-practice or reflect.
 - Express thinking and articulate reasoning.

NPTEL Learner-centric MOOC

Learning Dialogue or LeD promotes concept acquisition through learner interaction. Each LeD consists of a short video providing conceptual knowledge, with explicit reflection spots for you to express prior conceptions, perform micro practice or reflect. Thus, you express your thinking and articulate your reasoning while interacting with these LeDs.

(Refer Slide Time: 03:10)

Navigating the LeDs

NPTEL

Courses » Announcements Course Ask a Question Progress Course Staff

Unit 1 - How to access the portal

Register for Certification exam

Course outline

- How to access the portal
- How to access the home page?
- How to access the course page?
- How to access the MCQ, MSQ and Programming assignments?
- How to access the subjective assignments?

Warm Up

How to access the home page?

Webpage

Toppers List for completed courses

NPTEL Learner-centric MOOC

Now, where will you find these LeDs on the course portal? On the homepage of the course, the left hand side panel shows the course outline when you scroll down this course outline, you will find the week wise content.

(Refer Slide Time: 03:27)

The screenshot displays a MOOC interface with a green header titled "Navigating the LbDs". On the left, a sidebar lists activities for "Week 1:", including "LeD 1.1", "Quiz: Practice Questions (LbD) on LeD 1.1", "LeD 1.2", "Quiz: Practice Questions (LbD) on LeD 1.2", "LeD 1.3", "Quiz: Practice Questions (LbD) on LeD 1.3", "Learner Experience Interaction 1 (LxI - Week 1)", "Quiz: RQ based on LxI", "Quiz: KQ based on Week 1", "Weekly Feedback", and "Download Videos". The main content area shows a detailed view of "Practice Questions (LbD) on LeD 1.1". It includes instructions: "The learning by doing (LbD) activities are aimed at providing practice questions, and will not be considered in final grading. There are three LbD activities (LbD 1.1, 1.2 and 1.3) here, based on LeD 1.1, with corresponding practice questions provided with a set of instructions." The first question is: "1) What are the goals of Learning by Doing activity? (Tick all that apply)" with a "1 point" value. It has three checkboxes: "To introduce learners to new concepts", "To allow students to immediately apply concepts learnt in LeD", and "For students to integrate knowledge from various parts of the course". Below the question is a "Submit Answers" button. The second question is: "2) In the previous week, you have done a few LbD activities. Which of the following captures the characteristic feature of feedback given for each LbD activity?" with a "1 point" value. It has three radio button options: "The feedback simply says which answer is correct, without providing any explanation.", "The feedback provides explanation of why a particular answer is correct while giving no explanation about the wrong answers.", and "The feedback provides explanation of why a particular answer is correct as well as explains the reason for each of the wrong answers." Below this question is another "Submit Answers" button. The footer of the interface includes the NPTEL logo and the text "Learner-centric MOOC".

Once you click on the desired week, you will find all the learning dialogues for that week numbered sequentially. For example, for week 1 here, the LeDs have been numbered as LeD 1.1, LeD 1.2 and so on.

(Refer Slide Time: 03:49)

The screenshot shows the NPTEL course interface for 'Navigating the LeDs'. The 'LeD 1.1' tab is selected and highlighted with a red box. The main content area displays a video player with a play button and the text 'Inter-Disciplinary Program in Educational Technology'. The left sidebar contains a course outline with a list of LeDs and associated activities:

- Register for Certification exam
- Course outline
- How to access the portal
- Warm Up
- General Instructions
- Week 1:
 - Week 1: Model
 - LeD 1.1:
 - Quiz: Practice Questions (30) on LeD 1.1
 - LeD 1.2:
 - Quiz: Practice Questions (30) on LeD 1.2
 - LeD 1.3:
 - Quiz: Practice Questions (30) on LeD 1.3
 - Learner Experience Interaction 1 (LXI- Week 1)
 - Quiz: IQ based on LeD
 - Quiz: KQ based on Week 1
 - Weekly Feedback

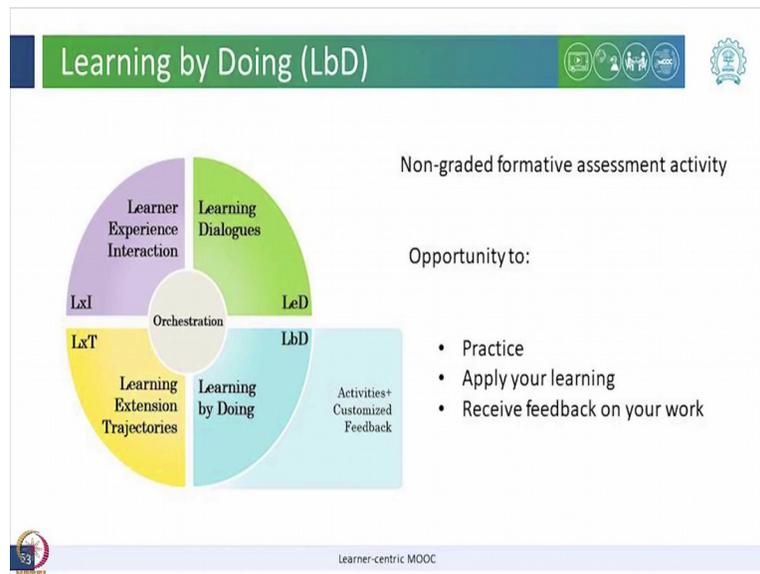
(Refer Slide Time: 03:52)

The screenshot shows the NPTEL course interface for 'Navigating the LeDs'. The 'LeD 1.1' tab is selected. The main content area displays a yellow background with the text 'Reflection Spot - Think and Write' and 'What is one advantage of a Learning Dialog over a Content Delivery video?'. A play button is visible in the center. The left sidebar contains the same course outline as the previous screenshot:

- Register for Certification exam
- Course outline
- How to access the portal
- Warm Up
- General Instructions
- Week 1:
 - Week 1: Introduction to LCM Model
 - LeD 1.1:
 - Quiz: Practice Questions (30) on LeD 1.1
 - LeD 1.2:
 - Quiz: Practice Questions (30) on LeD 1.2
 - LeD 1.3:
 - Quiz: Practice Questions (30) on LeD 1.3
 - Learner Experience Interaction 1 (LXI- Week 1)
 - Quiz: IQ based on LeD
 - Quiz: KQ based on Week 1
 - Weekly Feedback

When you click on any one of these LeDs, the respective led will open up. As mentioned earlier each LeD will contain a reflection spot in between to promote your engagement and articulation, you should pause here and respond to the question or activity before you continue where the instructor addresses common expected responses and summarizes the concept and the rest of the LeD.

(Refer Slide Time: 04:16)



Every LeD is followed by a Learning by Doing also called as LbD activity. These LbDs are non-graded formative assessment activities which provide you with frequent and multiple opportunities to practice, apply your learning and receive feedback on your work. Now, where will you find these LbDs. Once again, on the left hand side panel in the week wise content, you will find the respective LbDs immediately after each corresponding LeD.

As you see here, there are practice questions for LeD 1.1 immediately after LeD 1.1 and so on for all the others. When you click on any one of these LbDs here, the respective LbD activity will open here which provides an opportunity for immediate application or integration of knowledge.

(Refer Slide Time: 05:18)

The screenshot shows a quiz interface for 'Navigating the LbDs'. The main question is: '1) What are the goals of Learning by Doing activity? Check all that apply.' The correct answers are: 'To introduce learners to new concepts', 'To allow students to immediately apply concepts learnt in LeD', 'For students to get feedback on their understanding', and 'For students to integrate knowledge from various parts of the course'. The user's answer was marked as incorrect, and the score is 0. The interface includes a sidebar with navigation options like 'LeD 1.1', 'Quiz: Practice Questions (LbD) on LeD 1.1', 'LeD 1.2', 'Quiz: Practice Questions (LbD) on LeD 1.2', 'LeD 1.3', 'Quiz: Practice Questions (LbD) on LeD 1.3', 'Learner Experience Interaction 1 (LxI) - Week 1', 'Quiz: RQ based on LxI', 'Quiz: KQ based on Week 1', 'Weekly Feedback', and 'Download Videos'. There are buttons for 'Check Answers' and 'Submit Answers'. The score is 0/1. The footer says 'Learner-centric MOOC'.

As you attempt and submit your answers, you will receive an immediate constructive and customized feedback for each LbD to help you understand the rationale and improve on your learning.

(Refer Slide Time: 05:29)

The slide is titled 'Learning Extension Trajectories (LxTs)'. It lists three features: 'Addresses diversity of learners in MOOCs.', 'Multiple types of learning resources with identified goals.', and 'Assimilation quiz to ensure the assimilation of key concepts.' The diagram shows a circular structure with 'Orchestration' at the center. Surrounding it are four segments: 'Learner Experience Interaction' (LxI) in purple, 'Learning Dialogues' (LeD) in green, 'Learning by Doing' (LbD) in blue, and 'Learning Extension Trajectories' (LxT) in yellow. A yellow segment labeled 'Resources+ Assimilation Quiz' is also shown. The footer says 'Learner-centric MOOC'.

Learning Extension Trajectories or LxTs are mechanisms to address the diversity of learners in a MOOC and their learning needs. LxTs will consist of multiple types of resources such as

readings, videos or links, but specific identified goals such as ensuring prerequisites or advancing the depth or breadth of your existing knowledge etcetera.

These LxTs are followed by graded assimilation quiz also called as AQ to ensure that you have assimilated the key concepts.

(Refer Slide Time: 06:05)

The screenshot shows a web interface for a course titled "Navigating LxTs". The page has a green header with the course title and several icons. Below the header, there is a navigation menu on the left with items like "Register for Certification exam", "Course outline", "How to access the portal", "Warm Up", "General Instructions", and "Week 1:". The "Week 1:" section is expanded, showing a list of resources: "Instructions for LxTs and AQs", "LxT 1.1", "Quiz - AQ based on LxT 1.1", "LxT 1.2", "Quiz - AQ based on LxT 1.2", "LxT 1.3", and "Quiz - AQ based on LxT 1.3". The "LxT 1.1" resource is selected, and its content is displayed in the main area. A red box highlights the text "Detailed information on what all this LxT entails." and a list of links: "Review of 2012", "Review of 2013", "Review of 2014", "Review of 2015", "Review of 2016", "Review of 2017", and "Review of 2018". At the bottom of the page, there are "Previous Page" and "Next Page" buttons, and the text "Learner-centric MOOC" is visible.

Where will you find these LxTs. Once again, in the course outline panel you will find a separate unit for the week which will contain all the LxTs for the week. Every week will have two to three LxTs resources, you are most welcome to go through all of these resources provided each week. However, for grading purposes you will need to go through only one LxT and do the corresponding assimilation quiz. Each week, you will also find instructions and information for the respective LxTs and AQs in the beginning of the same unit.

When you click on one of these LxTs, you will find detailed information on what that particular LxT entails so that you can make a decision if you would like to learn more on the same or not. As observed here, this LxT 1.1 contains a list of links to early reviews on a topic. After you are done going through LxT of your own choice, you proceed to take the assimilation quiz. The corresponding assimilation quizzes or AQs are placed immediately after the respective LxTs.

(Refer Slide Time: 07:25)

Navigating LxTs

Register for Certification exam

AQ based on LxT 1.1

Instructions:
In Week 1, you are provided with 3 LxT resources (LxT 1.1, 1.2 and 1.3) and three AQs corresponding to each of these resources. You are most welcome to go through all these resources provided in Week 1; however, you need to do **ONLY ONE OUT OF THE THREE QUIZZES (AQs)** for grading purposes.
This AQ is based on **LxT 1.1**. Hence, please take this AQ in case you have accessed **LxT 1.1**. You will need to answer all questions to be able to submit the quiz.
You may attempt the quiz multiple times; however, the last quiz score, attempted before the deadline, will be considered for final grading.

Week 1:

- Instructions for LxTs and AQs
- LxT 1.1
- Quiz - AQ based on LxT 1.1
- LxT 1.2
- Quiz - AQ based on LxT 1.2
- LxT 1.3
- Quiz - AQ based on LxT 1.3

1) What is the name of the course offered by George Siemens and Stephen Downes that is widely referred as one of the initial MOOCs? **1 point**

- Introduction to Artificial Intelligence
- CCK08: Connectivism and Connective Knowledge
- Introduction to Programming in C
- 6.002x: Circuits and Electronics

2) Among the given options, which was the first company to emerge in the online learning space? **1 point**

- edX
- Udacity
- Coursera
- Lynda

NPTEL Learner-centric MOOC

As you click on one of these Aqs, the quiz will open up which will contain questions based on that particular LxT, you may attempt the AQ multiple times. However, the last quiz score attempted before the deadline will be considered for final grading.

(Refer Slide Time: 07:43)

Learning Experience Interaction (LxI)

- LxI cultivates peer learning
- Focus question
 - ✓ Prevents scattered discussion
 - ✓ Elicits diverse views/experiences
 - ✓ Peer interaction
- Reflection quiz: Ensures learner participation

Focus question for discussion+
Peer interaction+
Reflection Quiz

Learner Experience Interaction
Learning Dialogues
Orchestration
LxT
Learning Extension Trajectories
Learning by Doing

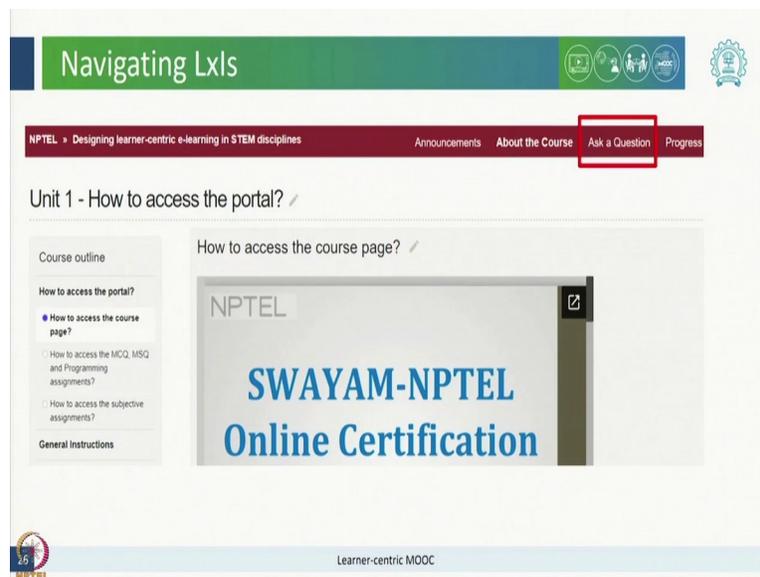
NPTEL Learner-centric MOOC

Learner Experience Interaction or LxI has been designed to cultivate peer learning through focused discussion. An LxI will consist of a focused question which will guide your discussion

on a given topic and hence prevent scattered discussion threads, this will also help in eliciting your diverse views or experiences. We also encourage you all to interact with your peers by viewing and responding to others posts to leverage pure learning. In an LxI, the focused question and subsequent discussion is followed by a short graded activity called reflection quiz or RQ to ensure your participation on the discussion forum.

In this quiz, you need to reflect on your LxI interactions by answering specific questions related to your experience on the discussion forum.

(Refer Slide Time: 08:40)



There are two ways to reach to the LxIs one is through the ask a question present on the course home page which will take you to the discussion forum, details on how to join a group and participate on the discussion forum has been provided under general instructions in the course outline and the other way to reach to the LxIs is again through the left panel of the course outline. LxIs are also present in the same unit as LxTs for every week.

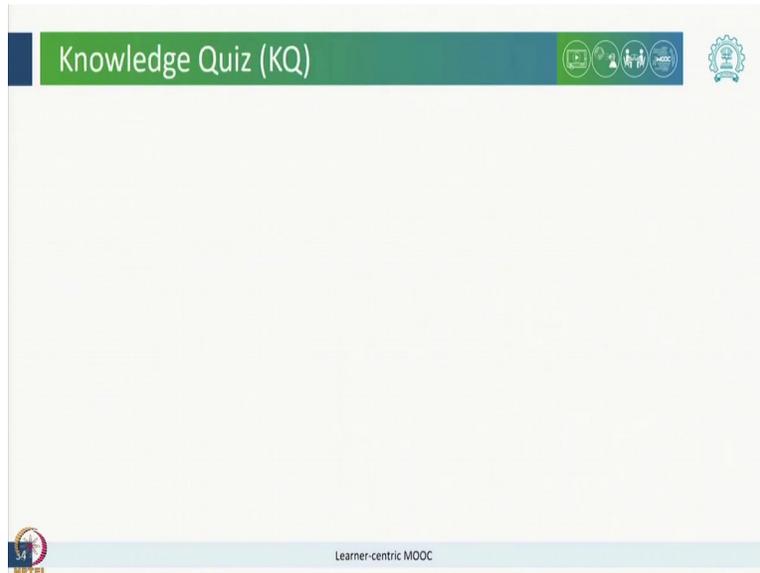
(Refer Slide Time: 09:13)

The screenshot displays a MOOC interface with a green header titled "Navigating LxIs". On the left is a sidebar for "Week 1" containing a list of activities: "Instructions for LxTs and AQs", "LxT 1.1", "Quiz - AQ based on LxT 1.1", "LxT 1.2", "Quiz - AQ based on LxT 1.2", "LxT 1.3", "Quiz - AQ based on LxT 1.3", "Learner Experience Interaction 1 (LxI - Week 1)", "Quiz - RQ based on LxI", "Quiz - KQ based on Week 1", "Weekly Feedback", and "Download Videos". The main content area is titled "Learner Experience Interaction 1 (LxI - Week 1)" and features a "Focus Question" icon, a description of the question, and "Instructions for posting" which include a red box around a dropdown menu set to "LxI - Week 1". Below this are "Instructions for discussion" and navigation buttons for "Previous Page" and "Next Page". The footer includes the NPTEL logo and the text "Learner-centric MOOC".

If you click on it, you will reach the page for the respective LxI which will also have the description of the focused question and instructions for posting the comments and instructions for peer discussion. We encourage you to contribute to the forum by answering some of the questions that your peers may post, this will further enhance your learning experience in this course. The reflection quiz based on the weeks LxI can be found immediately after the LxI in the same unit for the corresponding week.

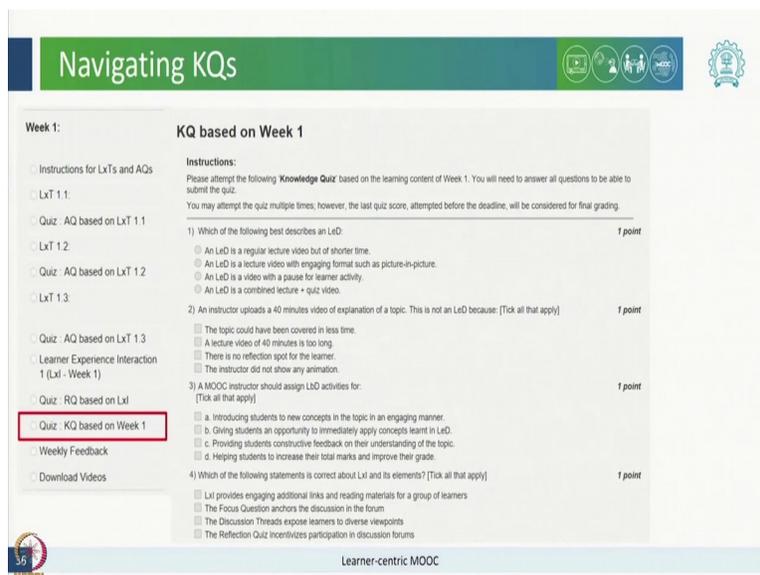
Once you click on the reflection quiz, it opens up for you to attempt the quiz. Again you may attempt the quiz multiple times. However, the last quiz core attempted before the deadline will be considered for final grading.

(Refer Slide Time: 10:06)



You will also have one graded knowledge quiz every week which will be based on the concepts covered in the whole week.

(Refer Slide Time: 10:15)



You will find the knowledge quiz again in the course outline panel in the same unit containing LxTs, AQs, LxI and RQ for the week. Once you click on it, the quiz will open up for you to attempt. Similar to assimilation quiz and reflection quiz, you may attempt the knowledge quiz

multiple times; however, the last quiz score attempted before the deadline will be considered for final grading.

(Refer Slide Time: 10:41)

The screenshot shows a course page with a green header titled "General Instructions". Below the header, there are two main sections: "Course outline" and "Course Handout".

Course outline

- How to access the portal?
 - How to access the course page?
 - How to access the MCQ, MSQ and Programming assignments?
 - How to access the subjective assignments?
 - Quiz: New Assessment
- General Instructions**
 - Getting Started
 - Course Handout
 - How to Participate in LxI

Course Handout

Designing learner-centric e-learning in STEM disciplines

In this course, you will:

- Identify the need for learner-centric approach in e-learning
- Learn about the research-based pedagogical design principles from learning sciences
- Witness examples in e-learning to acquire the pedagogical knowledge and technology know-how of designing effective e-learning content in STEM disciplines.

For the course start date and examination dates, please refer to the [Swayam Online Portal](#)

Learner-centric MOOC

Detailed instructions on the overall grading policy and other information related to the course, is available in the course handout which has been placed in the unit named general instructions. We hope that after going through this session, you would have become familiar with the upcoming course structure and its elements which will help you in navigating through the course. In case you have any further questions, confusions on the format of the course, please do not hesitate to ask them on the forum by clicking on ask a question and the course team will address your queries at the earliest.

Thank you.