

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

Lecture - 07
Instructional Design process: overview

We have seen the need and some of the benefits of a learner centric approach in e-learning. Before we delve into the details of designing e-learning based on these learner centric principles, let us do a brief digression, and look at an overview of the process of designing and developing learning content, the materials, the strategies, the formats and so on.

(Refer Slide Time: 00:46)





The slide features a light orange background. At the top, there is a dark orange banner with the text 'Reflection Spot' in white. To the right of the banner are four small circular icons and a larger circular logo. The main text on the slide reads: 'In case you want to create some e-content, what are some of the fundamentals questions that you would ask before you go ahead designing and developing the content?'. Below the text is a large blue circular icon with a white pause symbol. In the bottom left corner, there is a small video inset showing a woman (Prof. Sahana Murthy) speaking. At the bottom center, the text 'Learner-centric e-learning in STEM' is visible.

Let us first pause at a reflection spot. In case you want to create some e-content, what are some of the fundamental questions that you would ask before you go ahead and go into designing and developing the-content? As usual pause this learning dialogue, write down your answer, and then you may resume.



(Refer Slide Time: 01:10)

Discussion of Reflection Spot



Fundamental considerations *before* we begin design & development of e-learning:


- What am I going to teach through e-content?
- Why am I going to teach this?
- Who all would want to learn this?
- How am I going to teach this?
- What should be the pre-existing conditions?



Learner-centric e-learning in STEM

You may have thought of questions like what am I going to teach through the e-content why am I going to teach this, for what purpose, to whom, who all would want to learn this and or who all should be-learning this, how am I going to teach this, what are the pre-existing conditions under which we need to develop these-learning materials. These are some of the fundamental pre-design considerations. See, how many of these you have addressed. And in the rest of this learning dialogue, we will consider a systematic process by which we will try to address many of these questions.

(Refer Slide Time: 01:55)



The slide features a green header with the title 'Instructional Design' and several icons. The main content area is white with a black title 'What is Instructional Design?' followed by a bulleted list. A presenter is visible in the bottom left corner, and a small logo is in the bottom left. The footer contains the text 'Learner-centric e-learning in STEM'.

Instructional Design

What is Instructional Design?

- Systematic process of translating general principles of learning & teaching into plans for instructional materials and training programs
- Iterative framework that guides us for design
- Process of creation of learning activities
- Focuses on learner and learning goals

Learner-centric e-learning in STEM

To answer these questions in a systematic manner, the process of instructional design needs to be adopted. Instructional design is a systematic process of translating general principles of learning and teaching into plans for instructional material, strategies, formats and the training programs. Instructional design is a systematic and iterative framework that guides us; it is also a process of creation of instructional materials and learning activities and strategies. Instructional design is based on research and most importantly most fundamentally it focuses on the learner and the learning goals.

Now, a bit of disclaimers some of you will know or at least have heard of instructional design especially if you are experienced in e-learning or you have been working in the e-learning industry for a while. So, what we will do in this learning dialogue is only to look at an overview, we would not go into details of instructional design, but we will pose some pertinent questions for everyone who will be designing e-learning. So, regardless of whether you are a student looking to become an instructional designer or design some e-learning, or whether you are a teacher who is trying to design e-learning for your students, or whether you are a professional id in an e-learning company, when you create e-learning you will be an instructional designer.

So, lot of the points in this learning dialogue in the next one will be relevant for these categories of participants. Let us first look at why at all we need instructional design. So, for this, let us

consider a scenario. Let us say there is an e-learning multimedia design team that is creating some instructional materials may be hosted somewhere on the web, for college level science and engineering courses, and they are primarily animations at this stage. The team creates a template for all the screens to be created within the animation. The development team creates what are called storyboards which are very systematic screen by screen plans and this is approved by all team members.

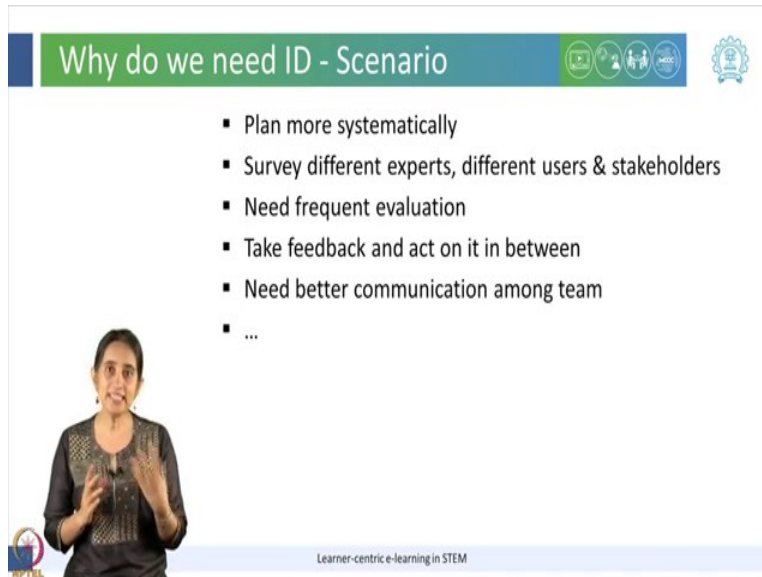
The coding of the-content begins and the team moves along very swiftly. At this point, what happens is one team member gives feedback that his daughter who is a college level college undergraduate student was confused by some sequence of steps in the animation that he was working on at home. He suggests some sequence, he suggests a change in sequence of steps based on his daughter's feedback, and then a design expert in the team says that the template button should be modified for ease of navigation. At this stage the development team is unsure if they can make all these modifications and still meet the project deadlines.

(Refer Slide Time: 05:16)





So, what went wrong in the scenario?

(Refer Slide Time: 05:21)



Why do we need ID - Scenario


- Plan more systematically
- Survey different experts, different users & stakeholders
- Need frequent evaluation
- Take feedback and act on it in between
- Need better communication among team
- ...

Learner-centric e-learning in STEM



Perhaps you thought that the project could have been well-planned from the beginning; some of you may have thought that there is a need for constant evaluation especially with the stakeholders, and the entire team should be in sync and they should be act on the feedback and communicate with each other, all of you are right. These problems are avoided when a team follows a systematic instructional design process.

(Refer Slide Time: 05:50)



What does instructional design bring?

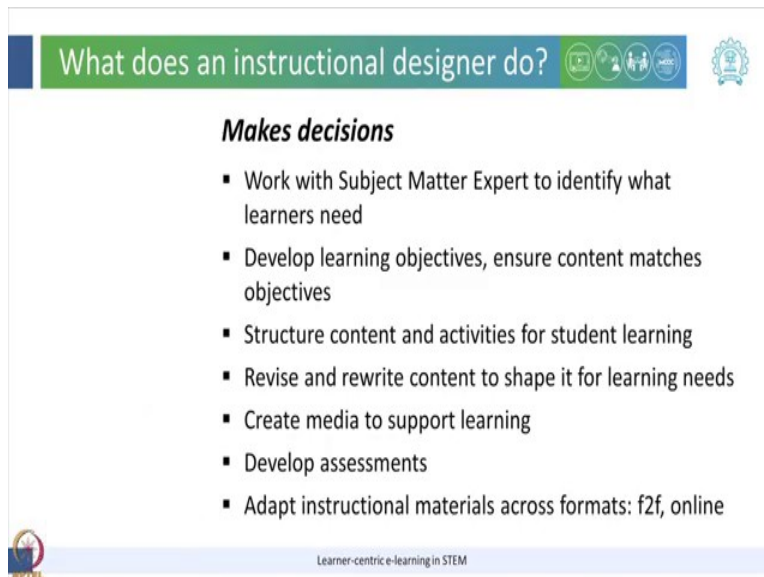
- Enables consistency—across courses, developers, instructors, designers.
- Considers effective ways to communicate content of different types
- Driver of quality of course(s)
- Structures the student's path through course
- Tracks and utilizes the experiences of teams
- Begins with the learner and the learner experience

Learner-centric e-learning in STEM

So, the instructional design process enables consistency- across multiple people in the team like we saw across various courses or various modules in one course, across various instructors. It pays attention to effective ways to communicate-content of different types. ID is actually the driver of the quality of e-learning materials. It structures the student's path through the course, and again like it was emphasized earlier instructional design begins with the learner, the-learning experience, the-learning goals and so on.

(Refer Slide Time: 06:33)



The slide features a green header with the title "What does an instructional designer do?". To the right of the title are four circular icons representing different aspects of instructional design: a person, a document, a gear, and a network. Below the header, the text "Makes decisions" is followed by a bulleted list of seven tasks. The slide also includes a small logo in the bottom left corner and a footer text "Learner-centric e-learning in STEM".

What does an instructional designer do?

Makes decisions

- Work with Subject Matter Expert to identify what learners need
- Develop learning objectives, ensure content matches objectives
- Structure content and activities for student learning
- Revise and rewrite content to shape it for learning needs
- Create media to support learning
- Develop assessments
- Adapt instructional materials across formats: f2f, online

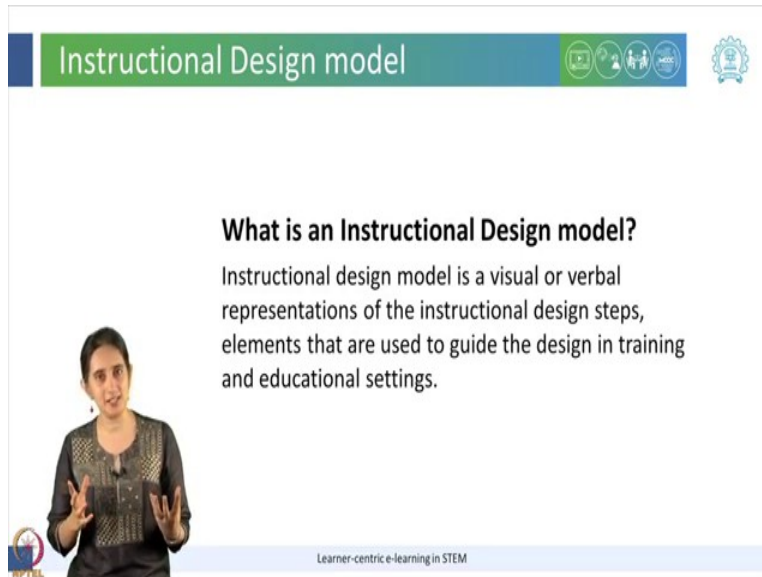
NPTEL

Learner-centric e-learning in STEM

What exactly does an instructional designer do, or what exactly will you be doing when you design e-content? Essentially you will be making a lot of decisions. You will identify what learners need based on the subject matter, you might talk to experts on this. You will develop learning objectives ensure that there is an alignment between the-content and the objectives and the pedagogical strategies. You might structure the-content create activities, you might decide on the media and the formats, you might develop assessments and you will put it all together.

Now, that we know what is instructional design and why instructional design is important, we need to discuss on how to implement instructional design.



(Refer Slide Time: 07:23)



Instructional Design model

What is an Instructional Design model?

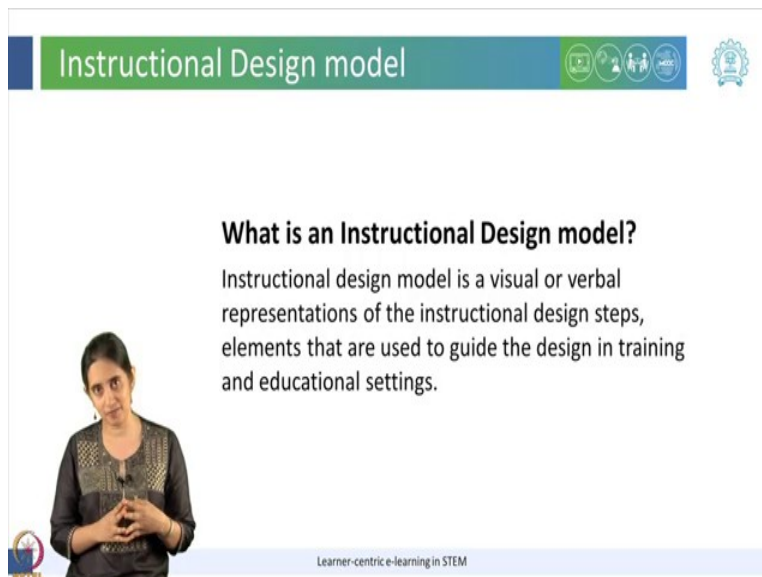
Instructional design model is a visual or verbal representations of the instructional design steps, elements that are used to guide the design in training and educational settings.

Learner-centric e-learning in STEM

Implementation of the instructional design process is done through instructional design models. And an ID model is a representation a visual or verbal representation of the various steps of the process, various elements of the process that are used to guide and complete the design in the training and educational settings.



(Refer Slide Time: 07:46)



Instructional Design model

What is an Instructional Design model?

Instructional design model is a visual or verbal representations of the instructional design steps, elements that are used to guide the design in training and educational settings.

Learner-centric e-learning in STEM


There are many instructional design models.

(Refer Slide Time: 07:46)

Examples: Instructional Design models

- Gagne's nine events of instruction
- Dick & Carey model
- Ross/Kemp Model
- Merrill's 5-star model
- ADDIE

ADDIE
Analysis, Design, Development, Implementation, Evaluation

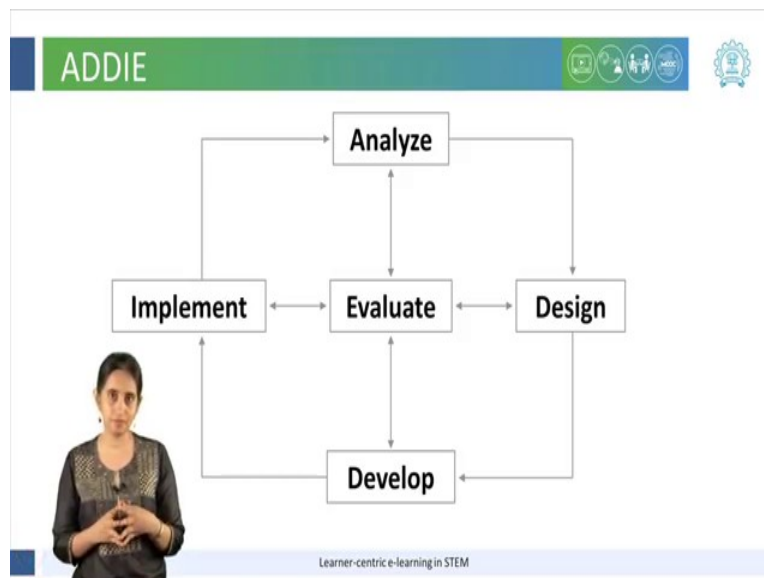


NPTEL

Learner-centric e-learning in STEM

The more popular ones are ADDIE, Gagne's nine events of instruction, Dick and Carey model, Merrill's 5-star models, some of you may have heard of some of these, in fact, there are many many such models.

(Refer Slide Time: 08:08)



Now, in this course we will focus on ADDIE which stands for Analysis, Design, Development, Implementation and Evaluation. It is essentially a sensible structured process that guides us to design, create and develop e-learning.

Thank you.