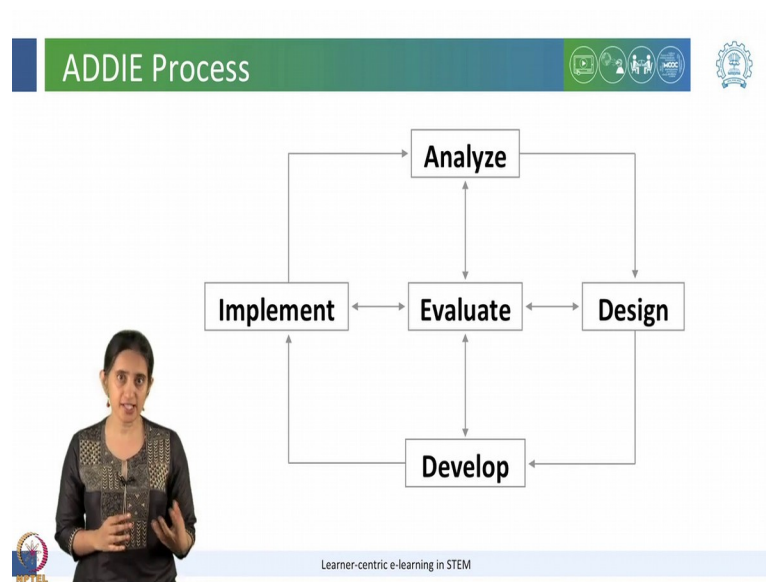**Designing learner-centric e-learning in STEM disciplines**
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Lecture - 08
ADDIE Process of Instructional Design

In this learning dialogue we are discussing the house of Instructional Design which is a systematic process that guides us in the design of e-learning, focusing on the learner and learning goals. While there are many instructional design models that guides us in this process, we will go through an overview at a very high level of what is called the ADDIE model.
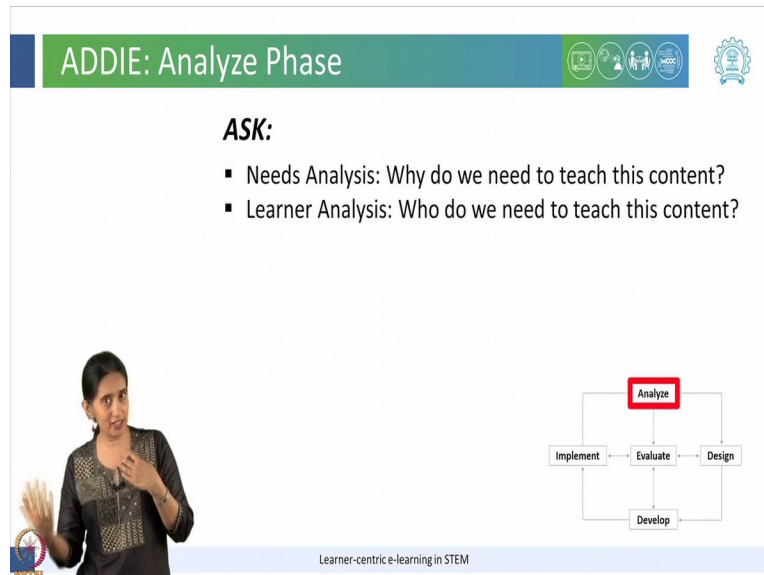
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ADDIE stands for Analysis, Design, Development, Implement, Evaluate. So, ADDIE is really more of a process that helps us in designing effective e-learning. If you look at the ADDIE process diagram, you will see that it is cyclical, it is iterative and while there seems to be a guiding sequence, it is possible and in fact it is recommended to go back and forth occasionally between the various phases and there is one phase which is sitting in the center of the entire diagram this is the evaluate phase.

So, when we go through each of the phases of the ADDIE process now, we will discuss the key questions that each of us has to keep in mind as we design learner-centric e-content.

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In the analyze phase, we have to do a number of different types of analysis. So, we begin with what is called the needs analysis, where we ask why do we need to teach this content or in our case, why do we need to design e-learning on this topic. So, here we have to actually think of addressing some particular need that comes from the, from our learners or from the situation maybe the, it is if you are a teacher. For example, you may want to create some e-learning animations to supplement your face to face class so that is one need. On the other hand, if you are working with an organization that is trying to teach computer literacy in a rural area, it is a different need. So, that is what we mean by needs.

The next type of analysis that we need to consider is what is called learner analysis and there the focus is on the whom; for whom are we designing this e-learning, for whom are we designing the content.

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Let us pause at a reflection spot briefly. Having thought of the needs analysis now we shift our attention to the learner. So, as a designer of e-learning, what aspects of the learner or your audience would you want to keep in mind when you design your e-learning materials. As usual, pause this learning dialogue, think of a few characteristics or aspects of the learner that you really have to keep in mind and when you are done please resume.
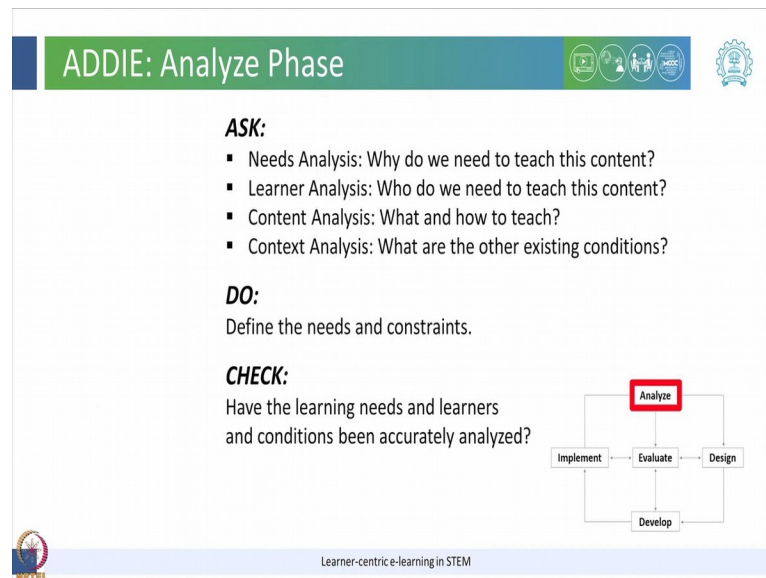
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The focus of learner analysis is the question, who is the learner of our e-learning. Perhaps you have considered characteristics such as age, gender location maybe their background and profession, maybe their educational background all of these are part of learner analysis. What is important in learner analysis is to identify learner's prior educational level and their educational background. So, if you are so, for some of you may have the same answer for all of your learners for example, if you are a teacher trying to create e-learning for seventh grade students, you know that all your learners have finished sixth grade and come.

On the other hand if you are a trainer in the LND division in some e-learning in some industry then your learners may come with varying educational levels. You have to consider questions like, what is the prior knowledge which may or may not be the same thing as the educational level. What is the motivation to learn and this is something we have discussed when we talked about the need for a learner-centric approach, why are your learners enroll for your online course or why is some learner going through the e-learning materials that you developed, what is their motivation.

We need to also consider learners interest and attitude towards the topic and towards e-learning, these are slightly separate things and these do affect the final outcomes as well as the learning experience. For example, some topics are notorious for it is a perception that some topics are difficult, unfortunately topics like mathematics gets this rap in our educational system, it may be some other subtopic in your main subject. Or you may have some learners who come with the attitude that nothing can be learnt well unless there is a face to face teacher or e-learning is at best second rate substitute.

So, if you have learners of that kind or if you have learners who have never experienced e-learning, they may be daunted or they may be unfamiliar with the medium. So, knowing this is important before we go ahead and design because the strategies and the supplementary materials and the formats everything will depend on who our learner is.

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Going back to the analyze process we have a couple of more types of analysis that we need to do, one of them is called content analysis what to teach if it is a large topic, how do we break it up into sub topic, how do we chunk it, how do we sequence it and so on and we have to do this over and over again. And the context analysis, what are the other existing conditions, is it a one to one model where every learner has a device, are they working on laptops or are they working in tablets or is it the teacher who is showing this in a classroom, what is the kind of internet bandwidth that learners might have access to and so on.

So, in the analyze phase we have to ask all these questions then related to the needs analysis, learner analysis, content and context analysis and we have to define the needs and constraints, and we have to check see there is the evaluate box going back and forth that have the learning needs and the learners and conditions been accurately analyzed.

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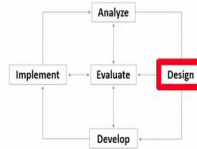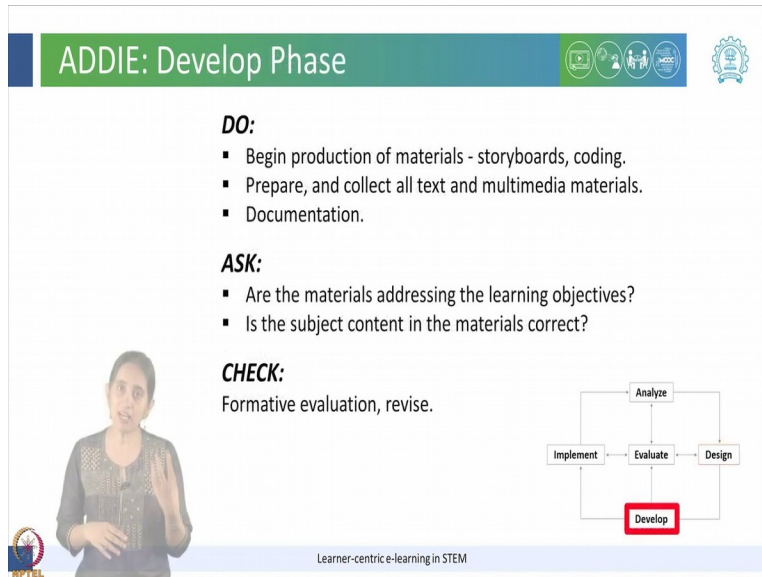The next phase of ADDIE is the design phase where we actually dive into designing the materials and this is what most of the rest of the course is going to be about. So, here we ask questions like what are the learning objectives; we will talk a little bit about that in the next learning dialogue. What is pedagogical strategies will we use, what resources will we use there is a lot of focus on this question in this course. We ask questions like how will you structure the content, how will you assess learners understanding; assessment also needs to be thought of right from this point. We will ask these questions and then what we do is specify the learning objectives, specify the activities and the assessment. So, we have to start thinking of all three and we also have to start aligning all the three.

And then we have to choose methods, instructional strategies, media all this happens in the design phase and between the design and evaluate arrows, we ask questions like where the learning objectives appropriate with the needs that we analyzed in the previous phase, are the learning objectives being met by the chosen activities. So, there is a lot of alignment that we have to check at this stage.

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In the develop phase of ADDIE, we actually begin production of the materials; the storyboards, the coding, we prepare and collect all the text, we have decided the multimedia the media and then we start collecting the materials. For example, if you want to insert images you have to start collecting the images at this point, there is a lot of documentation involved. And you ask questions like are the materials addressing the learning objectives, is the subject content accurate and again we do a formative evaluation.

So, this course we will not focus too much on the develop phase maybe a little bit and almost not at all on the implement and evaluate; actually a little bit on the evaluate, but not so much on the implement, but we just for completion sake of completeness, we will go through these phases.
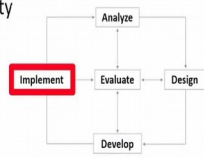
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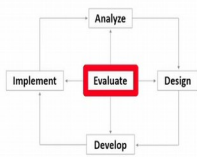

In the Implement Phase of ADDIE, we will train the instructors or the users of these materials, we may even create short videos and insert it into the e-learning on how to use the materials, we will make sure learners have access to the materials, equip infrastructures and so on.

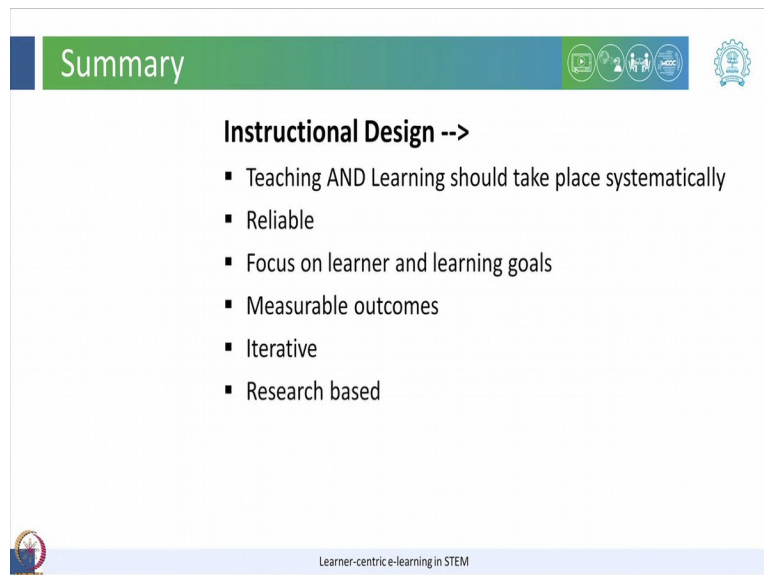(Refer Slide Time: 09:56)

Now, we come back to the evaluate phase of ADDIE. So, we go in and out of evaluate phase after each of the previous phases. But after the entire outer circle is over, we come back to the

central evaluate phase and here we do what is called summative evaluation where we actually plan how to figure out whether our e-learning is effective. So, if you want to collect data this is where you want to plan, think about how to do it you want to start thinking about writing reports of the summative and formative phase and so on.

Not each one of you may be focusing equal amount of effort in each of these phases, but as designers of e-learning focused on a learner-centric approach, we need to know and we need to be very familiar with what is required in each of these phases because the decisions made in each of these phase ultimately will affect whether our approach was indeed learner-centric and whether to take it further learners indeed benefited from it.

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To summarize, instructional design is a systematic framework that guides us in the whole process of designing e-learning, where the focus is on the learner and learning goals as well as a thought on the outcomes. So, if we follow an ADDIE process systematically, it will actually help us measure whether what we desired to achieve through our course has indeed happened or not, ADDIE's as we saw is iterative and it is it has a lot of research based strategies.

So, if you want to know more details about instructional design itself, please go through the learning extension trajectories the LxTs on this topic. From now on in the rest of this course, we will look at learner-centric strategies that will help address various learning needs. So, we will

focus somewhat on the analyze process of ADDIE, a lot on the design and maybe a little on the develop.

Thank you.