

**Designing learner-centric e-learning in STEM disciplines**  
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**Lecture – 09**  
**Constructive Alignment**

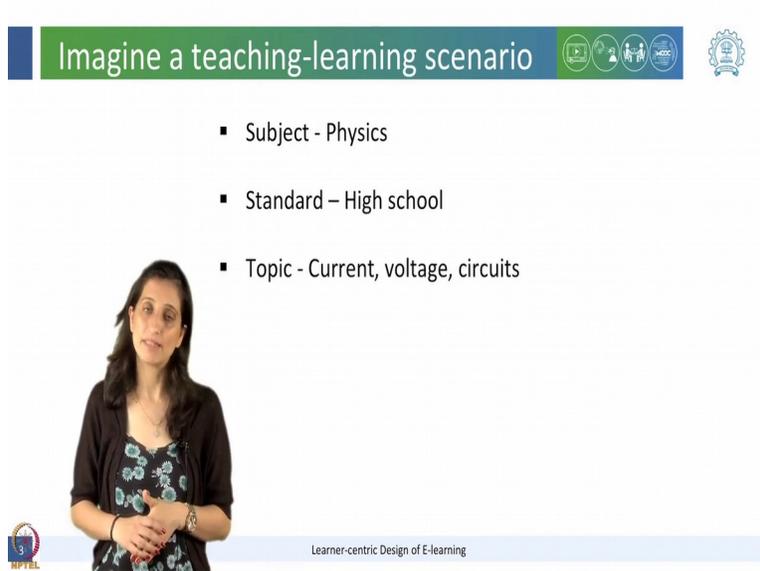
Welcome back to the second week of the course.

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The slide features a green header with the text "Triangle of effective learning" and several icons. Below the header, a woman is presenting. To her right is a diagram of a blue triangle with three pink circles at its vertices. The text "Teaching Learning Process" is centered within the triangle. At the bottom of the slide, there is a small logo on the left and the text "Learner-centric Design of E-learning" on the right.

Constructive Alignment is the triangle of effective learning which consists of three major components in the teaching and learning process. Before unravel more on this let us look at a scenario.

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Imagine a teaching-learning scenario

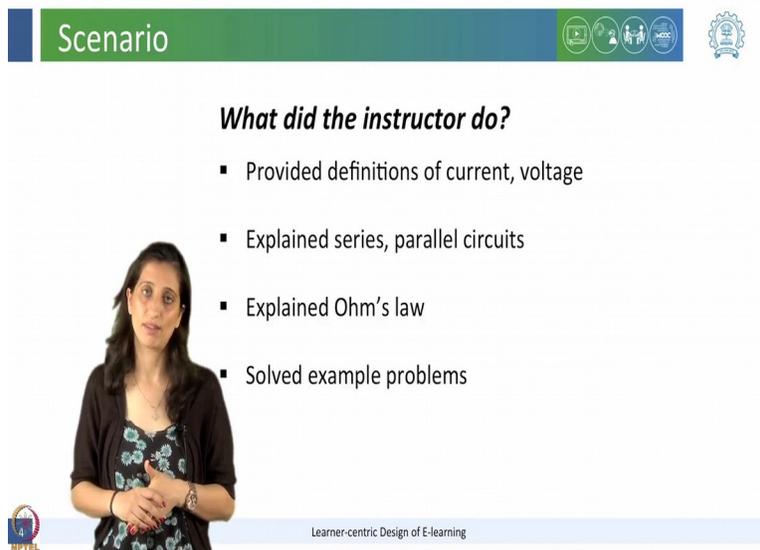
- Subject - Physics
- Standard – High school
- Topic - Current, voltage, circuits



 Learner-centric Design of E-learning

In this scenario an instructor is teaching to a high school physics class about current voltage and circuits.

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Scenario

***What did the instructor do?***

- Provided definitions of current, voltage
- Explained series, parallel circuits
- Explained Ohm's law
- Solved example problems



 Learner-centric Design of E-learning

The instructor provided definitions of current voltage to students explain them about series and parallel circuits, explain about Ohm's law and solve problem questions.

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**Scenario**

*What did the instructor do?*

- Provided definitions of current, voltage
- Explained series, parallel circuits
- Explained Ohm's law
- Solved example problems

*What did the students do?*

- Studied definitions
- Studied series vs parallel circuits
- Memorized Ohm's law
- Practiced similar problems



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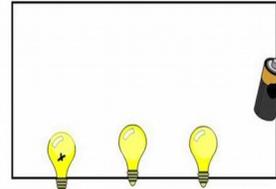
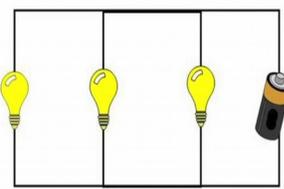
While the students study the definitions that they were provided they also studied about series and versus parallel circuits, memorized Ohm's law and practice some similar questions as demonstrated by the instructor in the class.

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**Scenario**

*What was on the exam?*

Given these two circuits, determine in which of them will the bulbs glow brighter.



  
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Now in the exam to circuits were shown to the students and they were asked to determine in which one of them will the bulbs glow brighter.

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**Scenario**

<i>What did the instructor do?</i> Provided definitions of current, voltage Explained series, parallel circuits Explained Ohm's law Solved example problems	<i>What did the students do?</i> Studied definitions Studied series vs parallel circuits Memorized Ohm's law Practiced similar problems
<i>What was on the exam?</i> Given these two circuits, determine in which of them will the bulbs glow brighter.	<b>Result</b> Most of the students were not able to solve this problem Students unhappy Instructor unhappy

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The results of this exam showed that most of the students were not able to solve this problem, which made the students unhappy as well as the instructor unhappy. Now when we look at this result we are forced to us as to what went wrong.

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**Views of students and teacher**

**Students' comments**

The question was out of syllabus, and we had not done such problems in the class.

**Instructor's comment**

The question was simple since students know Ohm's law, series and parallel circuits. All they had to do was to reason qualitatively. In fact, it is simpler than numerical problems.



 Learner-centric Design of E-learning

Well the students commented that the problem question was out of syllabus, and they have not done such a problem question in the class. Whereas the instructor commented that the question

was easy for simple students since a new Ohms law series and parallel circuits and all they had to do was to reason qualitatively. In fact, it was easier than other numerical problems.

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The image shows a video slide with an orange header. The header contains the text "Reflection Spot" on the left and several icons (play, volume, full screen, and a logo) on the right. Below the header, the text reads: "Who do you think is right, instructor or students? Justify and write down your answer." A woman with dark hair, wearing a black cardigan over a floral top, is standing in the lower-left corner of the slide. In the bottom-left corner, there is a small circular icon with the number "10". In the bottom-right corner, the text "Learner-centric Design of E-learning" is visible.

Now, listening to this comments let us do a reflection spot. Who do you think is right the instructor or the student? Justify and write down your answer pause your video here and resume when you are done. Some of you may think that the students are right others might think the teacher was right when the answer is that both of them I am right at their respective places then what went wrong here?

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Discussion on Reflection Spot

Both are right!!  
Then what went wrong?

**Mismatch**

Instructors' expectations

Students' expectations and level of learning

The learning activities and the assessment task did not align with the intended learning outcome.

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Something that went wrong here was a mismatch between instructor's expectations and student's expectations and their level of learning. The learning activities and the assessment task did not align well with the intended learning outcomes.

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What is the solution?

Need to match. How?

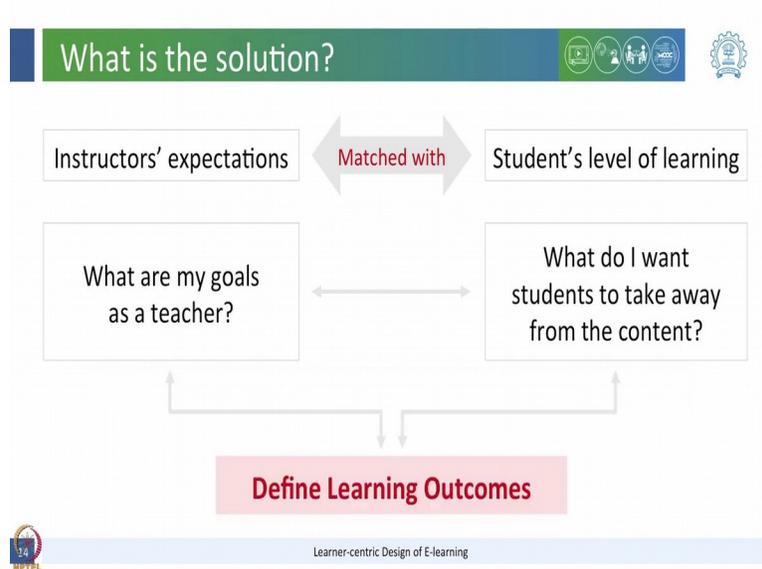
Instructors' expectations

Students' expectations and level of learning

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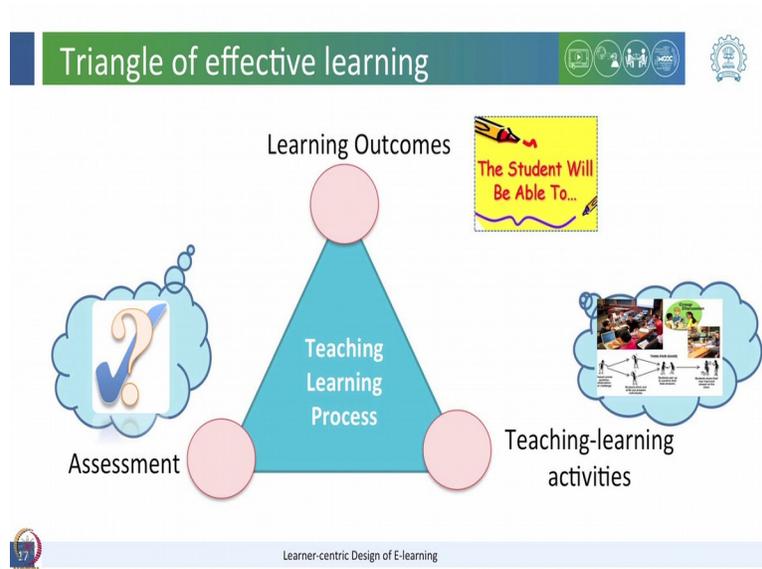
Now, solution this is that we need to match these two expectations by aligning the two.

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And to align the instructor expectations with the student level of learning the instructor first need to ask a few questions such as what are my goals as a teacher, what do I want students to take away from the content which will help instructor in defining specific learning outcomes for the teacher learning process.

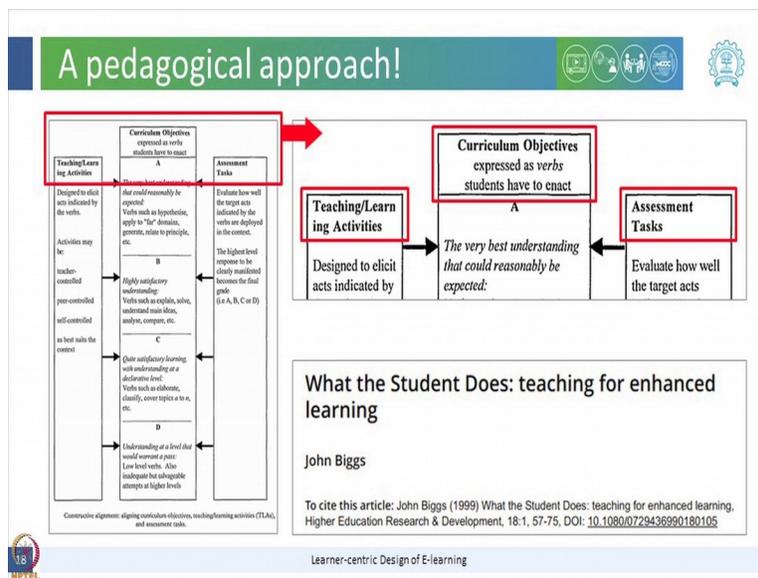
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This learning outcome is the first component of the triangle of effective learning. Also the learning activities should be designed to enable the students to achieve these learning outcomes.

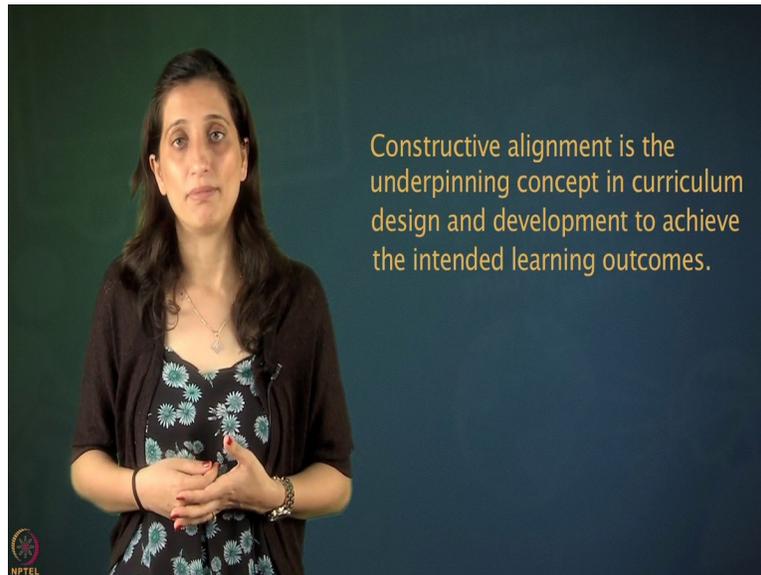
Similarly the assessment should be designed in alignment teaching learning activities to measure students learning and achievement of the intended learning outcomes. And this golden triangle of learning outcomes, teaching and learning activities and assessment constitutes constructive alignment.

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It was a pedagogical approach which is based on constructivism and was defined in 1999 by John Biggs who stated that constructive alignment is about defining learning outcomes and aligning them with teaching and learning activities and assessment tasks.

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This principle of constructive alignment is the underpinning concept in the curriculum design and development to achieve the intended learning outcomes. We will talk more on how to implement this constructive alignment in e-learning in a next LED.

Thank you.