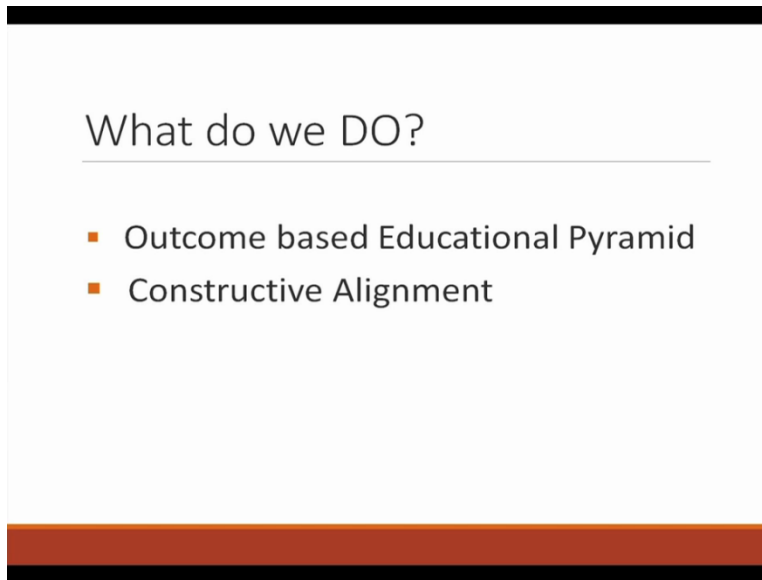**Outcome based Pedagogic Principles for Effective Teaching**
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Lecture 10
Outcome based Education (Contd.)
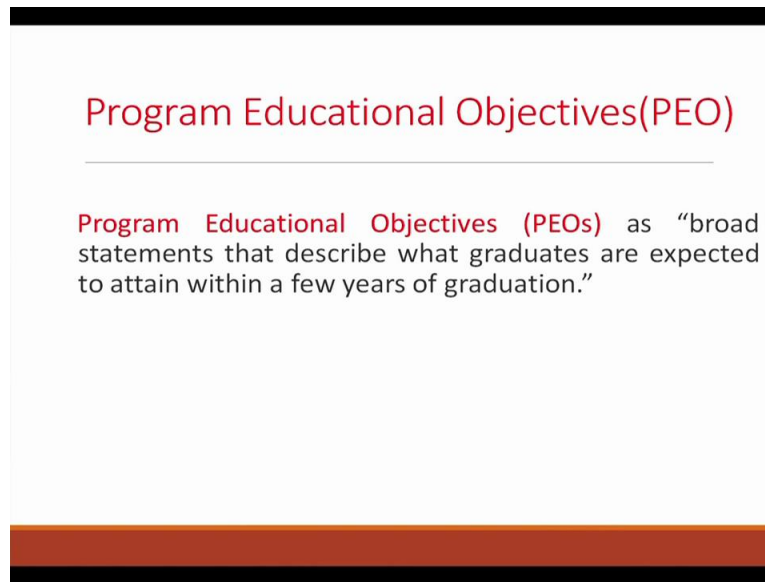
Good afternoon.

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Outcome based Education, today actually we will cover the Outcome based Educational Pyramid and Constructive Alignment.
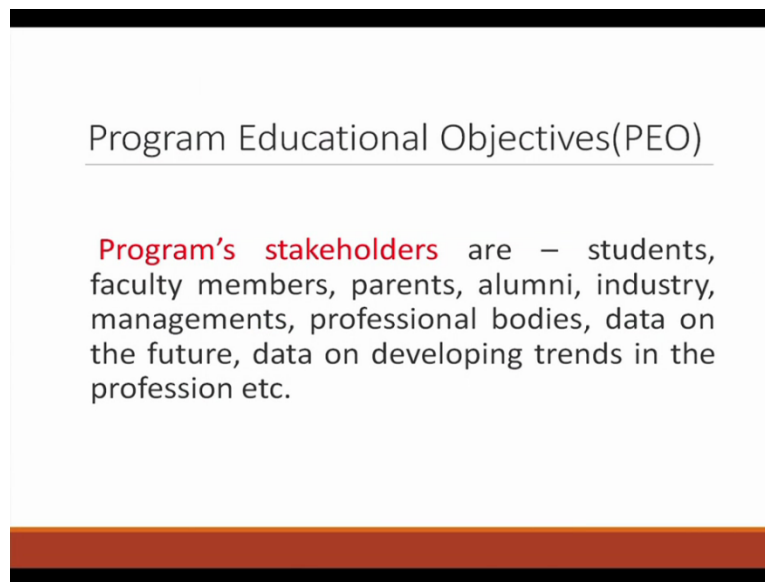
Now in that Outcome based Educational Pyramid, before that I will…what is the Program Educational Objectives? Program Objectives. First, Program Educational Objectives, a broad statement that describe what graduates are expected to attain within a few years of graduation. That is the Program Educational Objectives.

Input from the students, parents, faculty, alumni, employers and managements is used to validate the definition of the program educational objectives as wells as assess their achievements. So the program at educational objectives, the guidelines for the PEOs are:

1. PEOs should be consistent with the mission of the institution – So what is the mission of this institution, the program educational objective, there should be a relation. So the number of PEO should be manageable, not too much PEOs. So it they it should be manageable.

2. PEO should be achievable by the program – so whatever we expect, it should be achievable.

3. PEO should be specific to the program and not too broad. Okay.

4. And PEO should be based on the needs of the constituencies.
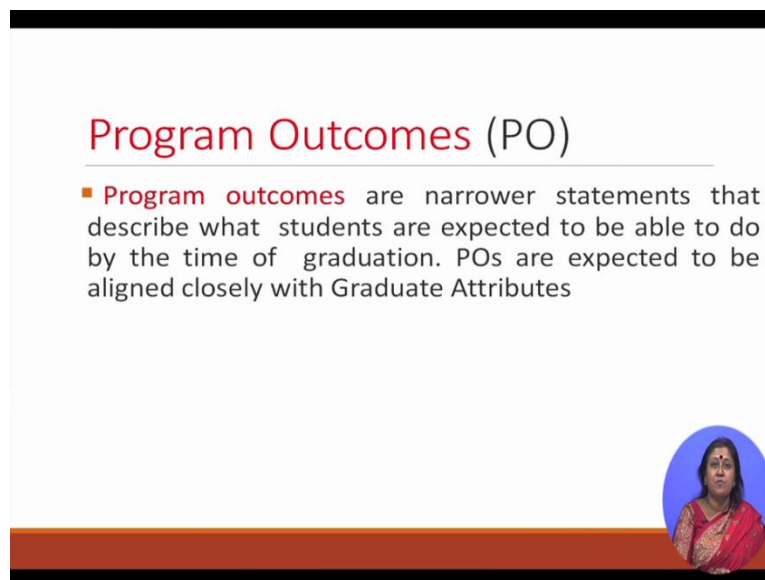
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Program Educational Objectives(PEO)

Program's stakeholders are – students, faculty members, parents, alumni, industry, managements, professional bodies, data on the future, data on developing trends in the profession etc.

So this is the program educational objectives. So what are the stakeholders are, already I mentioned that the students, faculty members, parents, alumni, industry managements; that is very important, professional bodies, data on the future, data on developing trends in the profession, etcetera.

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Program Outcomes (PO)

▪ **Program outcomes** are narrower statements that describe what students are expected to be able to do by the time of graduation. POs are expected to be aligned closely with Graduate Attributes
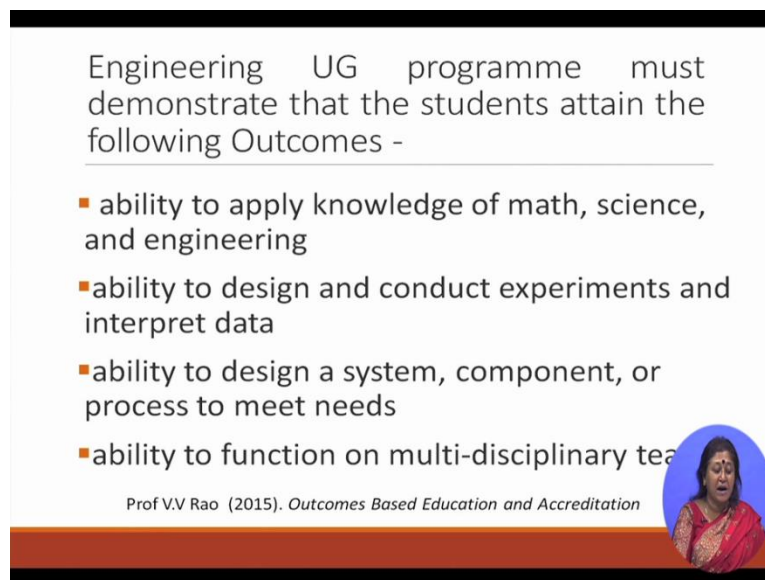
Now Program Outcomes: Program outcomes, this is the narrower statement. Program educational objectives is a broad statement. So outcomes are the narrower statement that describe

what students are expected to be able to do by the time of their graduation. POs are expected to be aligned closely to the graduate attributes. Okay.

Program outcomes, it should be very specific and it is should be measurable and it is achievable. Program outcomes transform the POs into specific student performance and behaviors that demonstrate learning knowledge and skill development. Engineering undergraduate programs must demonstrate that the students attend the following outcomes. What are the 11 outcomes?

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Engineering UG programme must demonstrate that the students attain the following Outcomes -

- ability to apply knowledge of math, science, and engineering
- ability to design and conduct experiments and interpret data
- ability to design a system, component, or process to meet needs
- ability to function on multi-disciplinary tea

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One is the ability to apply knowledge of mathematics, science and engineering; ability to design and conduct experiments and interpret the data; ability to design a system, component or process to meet these needs; ability to function on multidisciplinary things; ability to identify, to formulate and to solve all the (eng) different engineering problems; not only to know if they to solve it or to formulate it that the engineering students should do.

Understanding of professionals and ethical responsibility not only the knowledge, not the the ethical responsibility and the impact of engineering solutions in the global, the social context. So in the global, the ethical, they should they should help you know in the society. Ability to communicate effectively and the motivation and ability to engage a lifelong learning. Knowledge of contemporary issues and the ability to use the (tendent) the techniques, skills and modern engineering tools necessary for engineering practice.

So all these are learning what learning these are 11 outcomes where in these things they can achieve one or two points. Now the course or the subject objectives, these are the statements that describe what students are expected to attain in terms of specific knowledge, skills and attitudes after completing the course or the subject. Course or the subject objectives are based on the syllabus content of the course and the subject. So these are all the teacher-centered. Right?
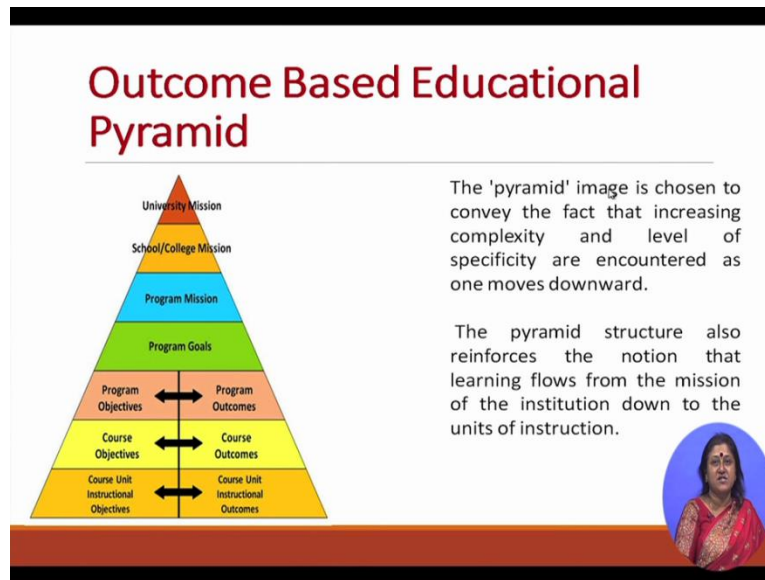
But course or the subjective outcomes, it describes that what students are expected to know and be able to do at the time of the completion of the course. So this is not the teacher-centered; this is the learner-centered. So these relate to the, to the skills, knowledge and behavior or attitudes that the students or the learners acquire as they progress through the course or the subject. So these are very specific; they are measurable and of course they are student or the learner-centered.

Points to be remembered while setting the course outcome: It should be student-focused not the….Or the faculty-focused, it's not that because we are focusing the student here. Align the course, program and the institution level – whatever the institution objective, there is….there should be a balance in the program and the course. State in terms of the knowledge, skills, attitude and ability that the student will acquire and it express in terms of a measurable and observable behavior.

Need to reflect the objectives, outcomes and mission of the academic program. So in the pyramid only in the picture, you can understand. Focus on the aspects that will encompasses student's new mode of (thank) thinking – what the student is thinking the new mode of thinking, that's the outcome base; the course outcome should focus on that.

Limit to the manageable number, three to four – not more than that to be accomplished with the course or the semester. And it begin with the action verb, already the action verb but always try to avoid here the verbs such as you know, know, understand. These are this way… these are not…So the proper action verb, design, evaluate, justify, these type of action verbs.
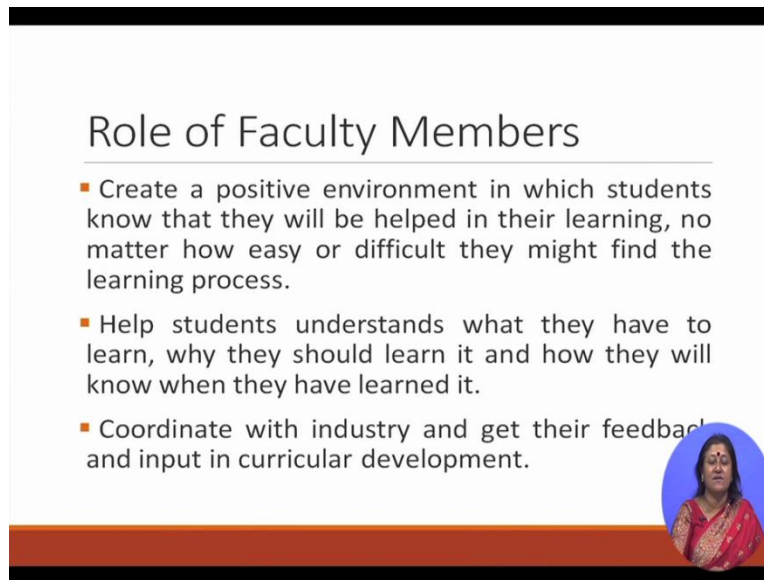
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Now here, here you can see on this pyramid… In this pyramid, in the top, university mission, school or college university mission and their school or college mission, already I explained you the vision and mission. In the top is the university mission. And then, there is school or the college mission. After the school college mission that the program mission, program mission.

In the program mission that send me the program goals. So here, program objectives and the program outcomes, there should be a balance in the program objectives and the program outcomes. Under the program, the course, course objectives and course outcome. And in the course, lots of different units are there – so course unit instructional objectives and course unit instructional outcome.

So the it is a pyramid structure. So the pyramid image is chosen to convey the fact that increasing complexity and the level of specificity are encountered as one moves downward. So the pyramid structure also reinforces the notion that learning flows from the mission…From the top, mission of the institution down to the units of instruction. University, school, program and in the top, in the bottom that the unit level. So this is the outcome based educational pyramids.

To sum up, program educational objectives are to be limited to three to five. Program outcomes are minimum one to eleven or more. Program objectives are limited to two to five. And according to the (po) course objects, sorry, course objectives is two to five. And course outcomes are limited to also two to five because there should be a match between the objectives and the outcome.

Outcomes are broken down into one to four objectively measurable performance criteria. Now, I will explain what is the role of the faculty members: Take responsibility as a mentor, counselor, facilitator, guide, learner, and finally as a teacher in the outcome based educational system; introduce research activity for students in the undergraduate and the postgraduate levels; prepare the student adequately so that they can succeed; create the positive environment, you have to create a positive environment in which the students know that they will be helped in their learning no matter how easy or difficult they might find the learning process.

The main thing is a, you have, as a faculty you have to create an environment. Help students understand what they have to learn, why they should learn it and how they will know when they have learned. So there is a coordinate – you should coordinate as a faculty. You should coordinate with industry and get their feedback and input in the curriculum development, then only the total development can possible.
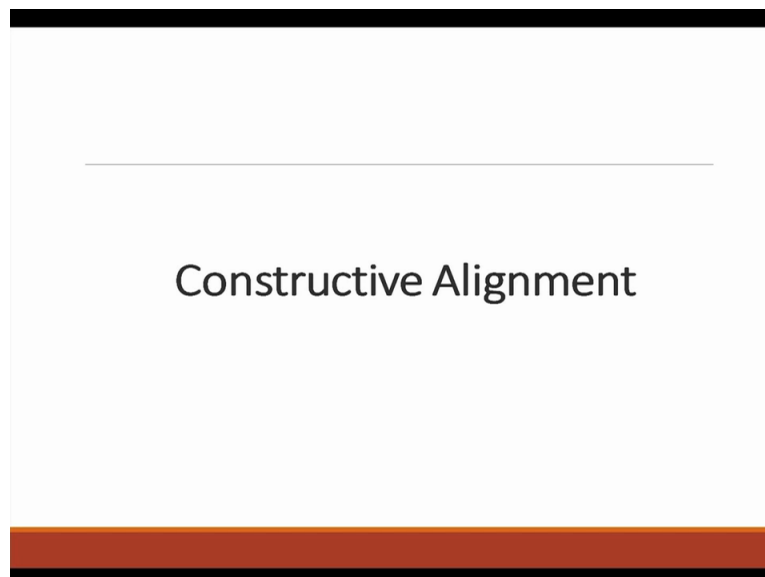
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Improve placement by introducing outcome based education system sincerely at all levels of the program. Involve all the faculty members of the program, course and the assignment design, then only the total development can possible. And provide faculty development programs, that is very important to improve and update the quality of pedagogy. Provide modern tools to teaching and learning methods. So these are the role of the faculty members.
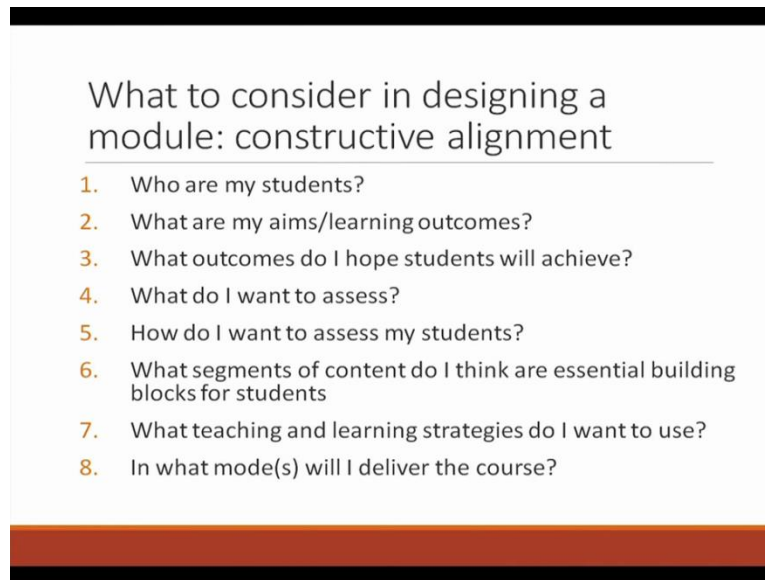
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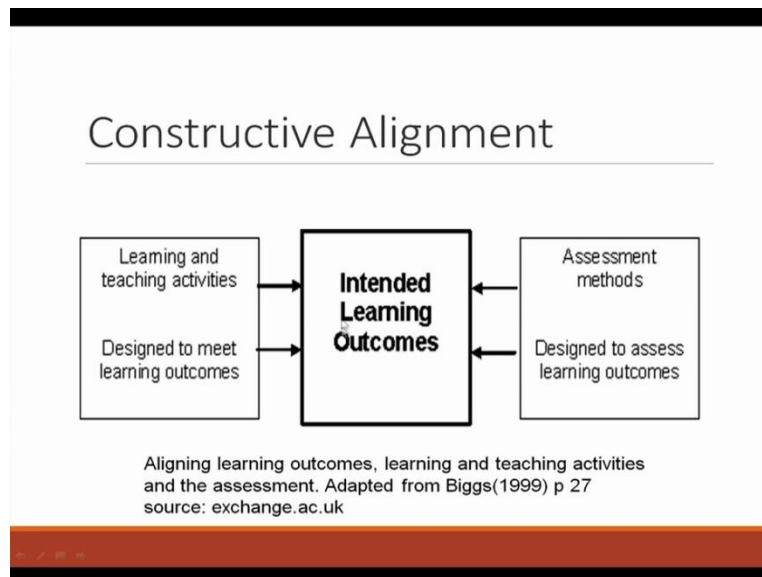Now the Constructive Alignment. There should be alignment.

What is that? First, some courses comes to our mind. What to consider in designing a module: Who are my students? What are my aims or the learning outcomes? What outcomes do I hope students will achieve? What do I want to assess? How do I want to assess my students? What segments of content do I think are essential building blocks for students? What teaching and learning (act) strategies do I want to use? In what modes will I deliver the course? So these all questions as a teacher it comes to our mind.

So the main, that the constructive alignment is developed by Biggs in the year of 1999. He mentioned that it is a theory of learning that begins with the premise that the learner constructs his or her own learning through relevant learning activities, according to Biggs.

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So here in this picture, it is also developed by, adapted by Biggs in the 1999, here just see here the intended learning outcome where there is a learning and teaching activities and the assessment method, there is a link. Designed to meet the learning outcome and designed to assess the learning outcome, so the intended learning outcome is the important thing and there should be alignment.
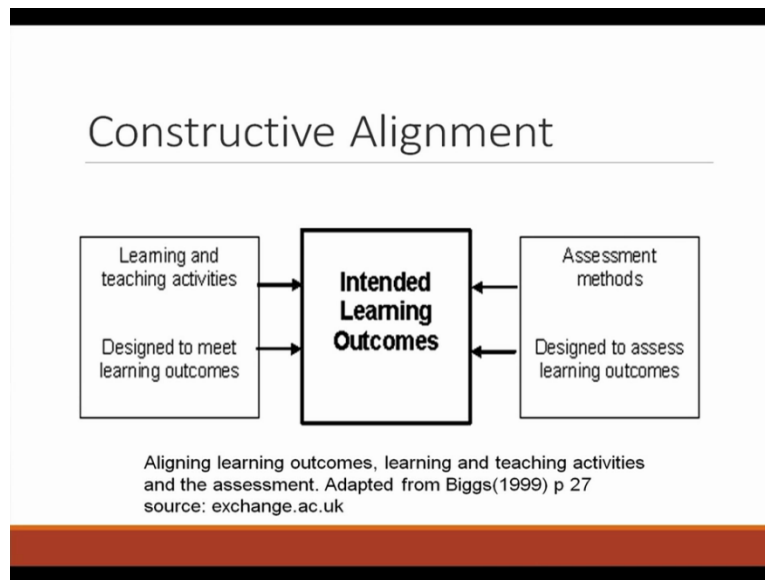
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Now what is alignment? First, I will I will see the the constructive alignment. The key to achieving the goal is that all components in the teaching system, each aspect from the inception to completion, there are aligned to each other to facilitate the achievement of the intended learning outcome.
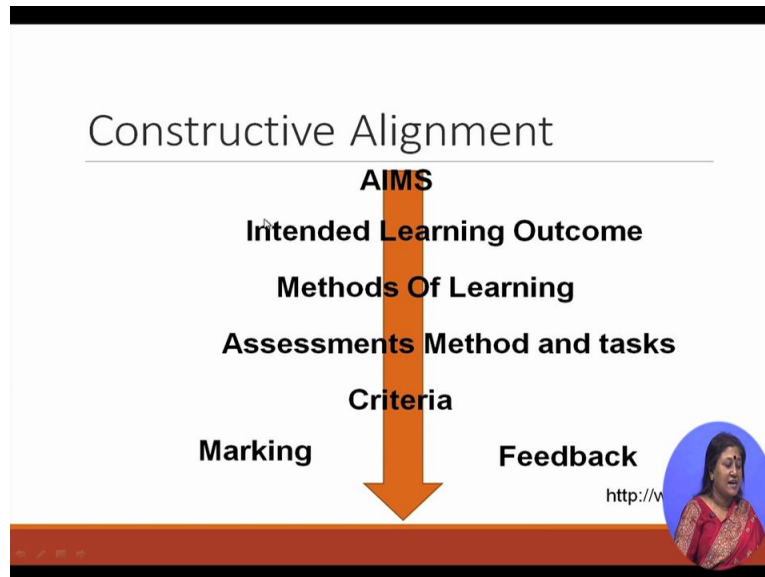
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So in the in the picture you can notice that there is an there is an alignment, right? So what is that? Thus, the curriculum, the intended aim, learning outcomes, teaching methods, and resources what we are using and the assessment tasks and criteria for evaluating all, are all aligned. So alignment is very important. So alignment is the central to effective assessment. So there should be a clear relationship between the learning outcomes and the assessment. So there should be an alignment.

So here, the advantages of this constructive alignment is that this is obvious learning activity being aligned towards and the needs of learners and the needs of the assessment allows the students while the advantage so the students progress successfully. So a classroom either online or blended or traditional method, it is would be chaotic.

So if the teacher choose intentionally to allow learners learn on their own and assess in another, so it means that during the journey, during the learning journey student will rightly experience a

wide variety of teaching methods, assessment methods and the learning activities. But Biggs proposes that generally learning and assessment that should be aligned.
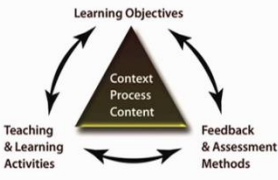
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So first, just see here, this is the alignment. So first the aims and the aims, the intended learning outcome. So methods of learning, assessment methods and tasks, criteria, here marking and the feedback. So what is the first? Defining the first, the intended learning outcome that is the aim. Choosing teaching or learning strategy likely to lead the help and encourage the students to attend those objectives is the second part.

Third one is engaging the students in these learning activities through teaching process. As a teacher, you should engage the students. Assessing the student's learning outcome using methods that enable students to demonstrate the intended learning and evaluating how well they match and what was the intended. So that is an arriving in the final grade and perhaps in the case of the formative assessment giving feedback to help the students to improve their learning. So this is the in the picture, in this picture it is very clear.

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Now then the constructive alignment, here we can see this is the learning objectives, teaching learning strategies, feedback and assessment methods, and the context process content. So here constructive alignment is an approach to course design which begins with end in mind, i.e., what the student know and what be able to demonstrate at the end of the course. So what is the skill set that is very important.

It it assumes that when the learning objectives, assessment methods, and teaching and learning activities here just, learning objectives, the assessment method, and teaching objectives they are intentionally, if they are aligned, then only the outcomes of the learning will improve substantially. This is according to Bloomberg in the year of 2009. So that is important that there should be there is alignment and intended learning outcome is the major part. Thank you.