Teaching And Learning in General programs (TALG)
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Lecture - 03
Learning, Instruction and Assessment

Greetings and welcome to unit 3 of module 1 of TALG Teaching and Learning in General programs.

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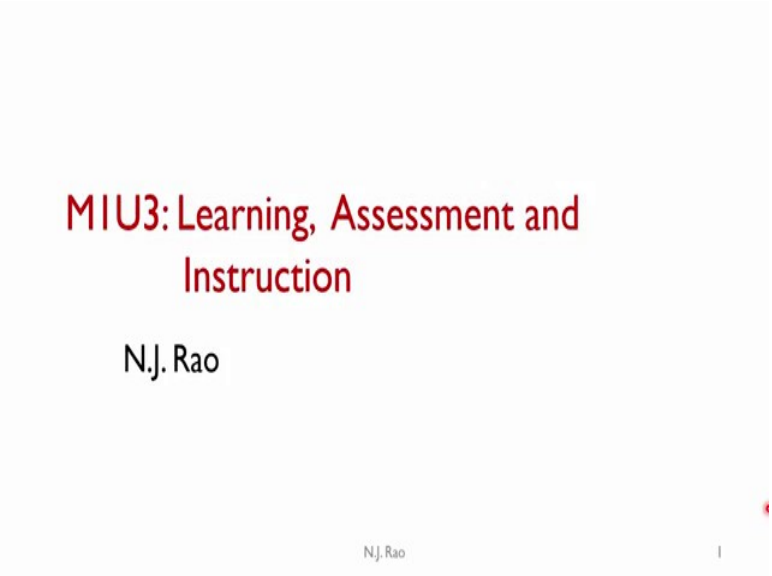

Our unit 3 is related to Learning, Assessment and Instruction, these are the three words that we propose to address in this unit.

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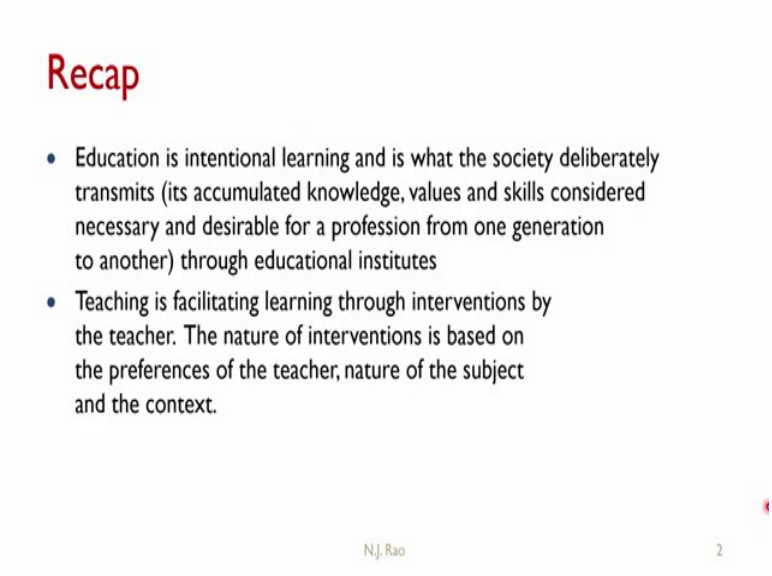

In the last unit, unit 2 we looked at the two words very familiar words education and teaching and we stated education is intentional learning and generally and is what the society deliberately transmits through educational institutions.

So, we are only referring to as far as our program is concerned education as intentional learning and this intentional learning takes place in formal educational institutes dominantly or in some formal setting one way or the other. If you are attending a short term course which is still a formal setting, but not necessarily in educational institution.

Whereas, teaching is facilitating learning through interventions by the teacher. These interventions are not necessarily only lecturing they will be several as we have seen and even this teaching you have a wide range of teaching models. And people have been experimenting with variety of teaching models and they find them relevant or effective in different contexts.

But the nature of intervention is based on the preference of the teacher nature of the subject and the context. This will get reflected when we go over to the actual instruction part. These are the two words that we have looked at in the last unit and I strongly urge all teachers to spend some time explore on their own these two words and there is a tremendous amount of literature available on the net.

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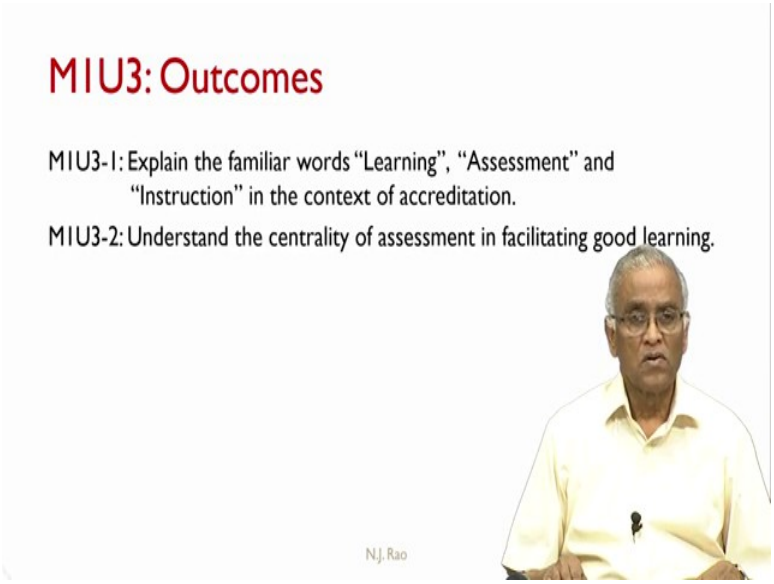

And now coming to unit 3, the expected outcomes of this unit are explain the familiar words learning, assessment and instruction in the context of accreditation. Why we say context of accreditation is; these have very specific meanings with regard to the accreditation. And most importantly which will keep repeating the statement understand the centrality of assessment in facilitating good learning. So, these are the two outcomes of this proposed unit U 3.

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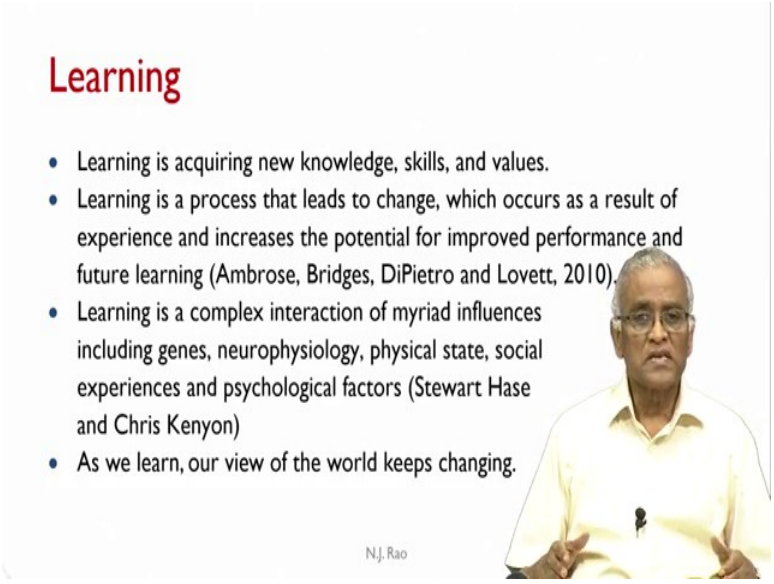

Now, coming to learning; "learning is acquiring new knowledge skills and values". What

does it mean, prior to learning we did not know something and after learning we knew something different and this something different can be new knowledge or we acquired some new skills or we also acquired some new values. Values would mean here what we consider important, important to as far as subject is concerned or to individuals or to life in general.

But where does exactly learning take place? Learning takes place in the brain to that extent understanding really what learning is a very complex thing and we are far from understanding how exactly learning takes place. Another definition of learning is – "learning is a process that leads to change which occurs as a result of experience and increases the potential for improved performance and future learning".

So, learning is always a process that leads to some change, this is one formal definition by Ambrose and others. Another way of looking here it is "learning is a complex interaction of myriad influences including genes, neurophysiology, physical state, social experience and psychological factors."

So, what happens if you want to facilitate good learning, teacher may have to pay attention to many of these things as well, though we fully do not know how to take care of all of them, but all these factors have influence on the nature of learning as well as quality of learning.

And as we keep learning our view of the world keeps changing, what does it imply? Because each one of us right from our childhood go through a series of learning experiences and the sequence of learning experiences of each individual will significantly different from others. So, to that extent our world view or our view of the world will be different from the others. So, everyone's views of the world will be different, that is what has to be kept in mind.

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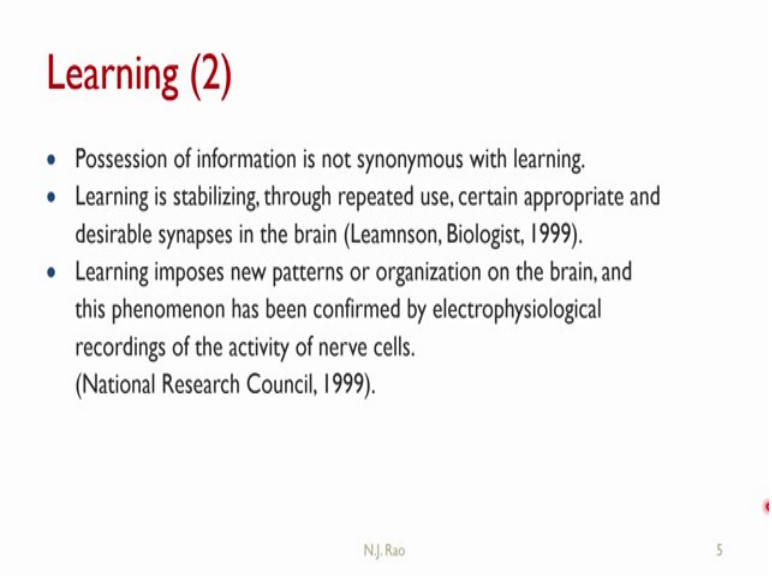

And another thing is mere possession of information is not synonymous with learning. See mere position of information may stay with us for some time as long as we keep repeating something, otherwise it will kind of fade out that is the nature of the memory processes of the brain and it will fade out. Otherwise just merely having information alone is not synonymous with learning by having information you may or may not be able to use it effectively either to solve a problem or to present yourself and so on.

And another biologist view, "learning is stabilising through repeated use, certain appropriate and desirable synapses in the brain". Now, we come to a little more specific detail the learning can be interpreted in terms of - how the synapses in the brain are getting connected to them or where how new synapses are forming. So, learning can be interpreted in terms of what do you call desirable and appropriate synapses forming. And even then they form they may not stay permanently like that they may fade out, but they will stabilise only through repeated use.

So, this is the basic you can say physiology or neurochemistry of the brain and so on, but what it means is for something to stay with us if the learning to be effective we must repeatedly use this information or a particular skill or practice that knowledge, otherwise the synapses will kind of fadeout over a period of time. And learning imposes new patterns or organisations on the brain and this phenomenon has been confirmed by electrophysiological recordings of the activity of nerve cells.

So, prior to learning and post learning if you take the electrophysiological recordings they will be different; that means, if there is no difference between the two recordings; that means, absolutely no learning has taken place. So, if you want you can say there has not been any electrophysiological activity in an inattentive student you can say.

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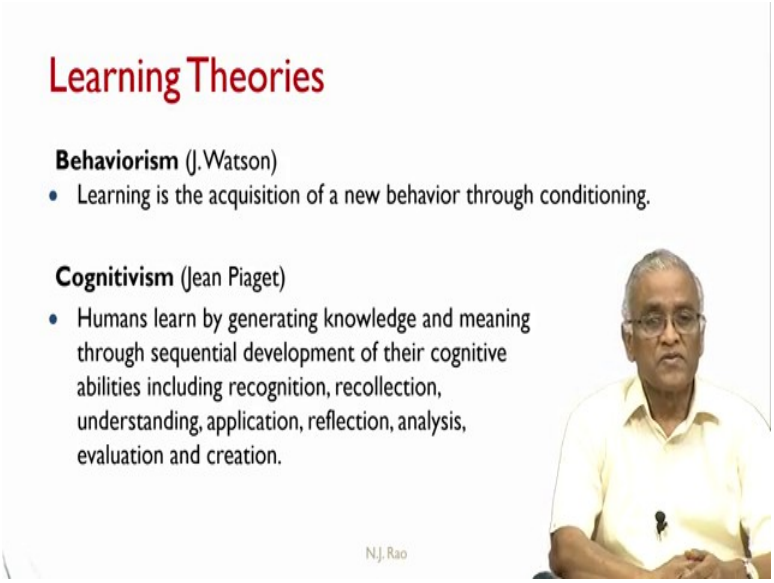

Now, there are several learning theories once again, right from the beginning of the 20th century or even a little prior to that people have been trying to understand how do people learn. So, very first we can say theory is due to Watson, they call it **behaviourism** and he believed learning is acquisition of new behaviour through conditioning. We will not elaborate these theories in detail, but through conditioning means humans react if there is a stimulus there is a response; for any stimulus there is a response and for a sequence of stimuli you may get a sequence of responses.

So, by the behaviourists, this school believes that by controlling the sequence of stimuli and also associating a reward and punishment type of mechanism with that I can influence the learning. That is why this conditioning by a reward and punishment is the central approach of behaviourism and it has been practised heavily, there have been heavy criticism of this. But yet there are many things that we still do today in the classroom which come from this particular behaviourist view of learning like repeated practices or by doing a certain say set of exercises, you learn something many of these things were the products of this particular school.

Then comes **cognitivism**, this is around Second World War time 1940's, it was recognised humans learn by generating knowledge and meaning through sequential development of their cognitive abilities. These cognitive abilities include recognition, recollection, understanding, application, reflection, analysis and evaluation and creation. So, all these list of processes that we are talking about recognition through creation or what we call cognitive processes. We call these processes as cognitive process which we will have occasion to elaborate in the subsequent units.

One thing you should notice - humans learn by generating knowledge and meaning; that means, when I am learning I am generating my own knowledge and meaning from the inputs that I have received. So, to that extent my cognitive processing is likely to be different from somebody else's cognitive processing to that extent the knowledge that I generated or the meaning I generated can be different from somebody else's. So, to that extent a teacher should realize though he is saying the same thing to the entire class different students, different learners will generate their knowledge and meaning differently, this needs to be recognised by the teacher.

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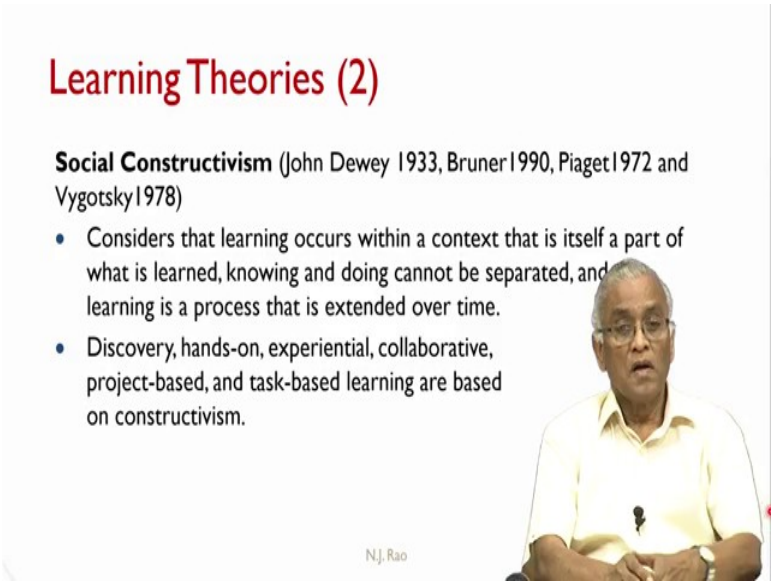

Now, another theory is what we call **social constructivism**. There are several people who contributed to this. This theory considers that learning occurs within a context that is itself a part of what is learned. Knowing and doing cannot be separated and learning is a process that is extended over time; that means, just by receiving one input your

learning is not complete, it is extended over a period of time and generally it happens it improves or learning itself happens through social interactions that is why we call it social constructivism, by discussing with our peers or with somebody else our learning seems to be improving.

Once we accept the importance of this particular learning theory, several types of activities become important like what we call discovery learning, hands on learning, experiential learning, collaborative learning, project based learning, task based or problem based learning are the consequences of this social constructivism. Actually, today all these methods of learning are considered very central to good learning. So, social constructivism place a very dominant role in present days considerations of good learning.

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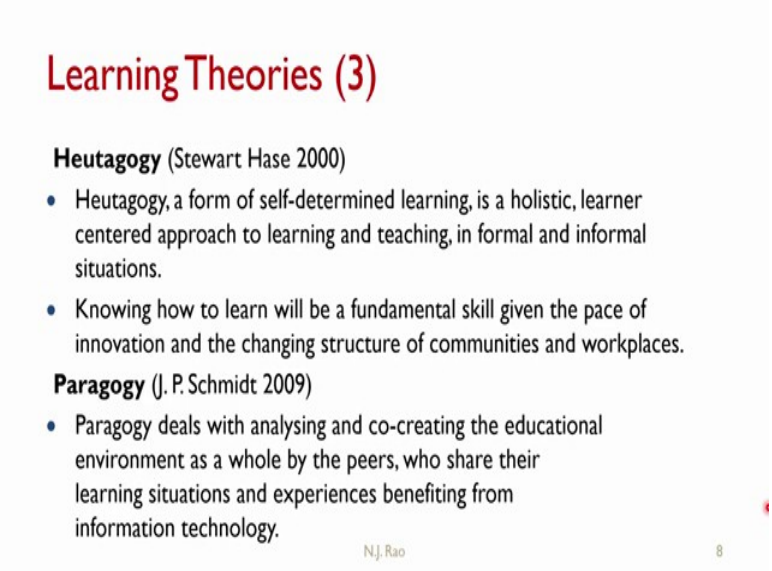

Now, there are a few things that have come relatively recently it is called **heutagogy**, a form of self determined learning is a holistic learner centred approach to learning and teaching in formal and informal situations. What this theory tells you is, the ability to learn or knowing how to will be fundamental skill; that means, the most important skill that a learner has to get is ability to learn by himself or herself. This becomes important because the changing structure of communities and workplaces and the technologies that are coming for your day to day operations that makes it because the context in which you are operating is continuously changing and the knowledge is growing very fast. So, this

ability to learn becomes more most important skill in today's world, to that extent this particular learning theory is an important one to be considered in present days.

Now, there is another thing called **paragogy**. Like here pedagogy and andragogy, paragogy deals with analysis analysing and co-creating the educational environment as a whole by the peers, who share their learning situations and experiences benefiting from information technology. Already in today's even in majority of the colleges the students keep exchanging their notes or how they solve the problems they discuss for example, using let us say WhatsApp that is only one tool people use.

And then they use whole lot of exchanging photographs, you take a document and take a photograph and share with your group; that means, you are now creating an environment a method of learning is getting created by groups of learners and that is what makes a difference and then we need to understand the dynamics of this to further facilitate good learning. So, paragogy has a role in today's context as well.

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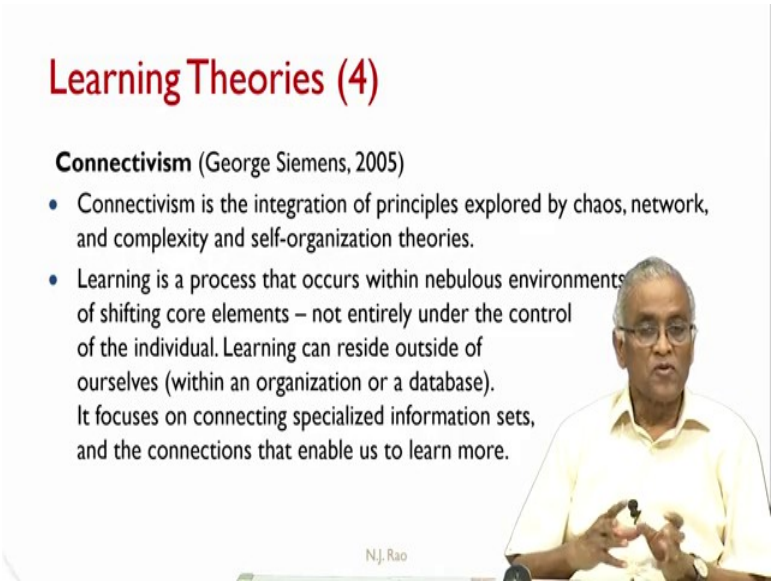

Still next one is **connectivism.** Connectivism is the integration of principles explored by chaos, network, complexity and self organisation theories. Any organisation as large number of groups and to achieve any organisational goal different groups have to work together, I may or may not know majority of the members of this other groups personally and yet we interact with each other.

So, to that extent we are creating what you unlike classroom environment where there is a single teacher and there are a group of students, see that is the nature of learning environment today, that learning environment is becoming nebulous. In the sense who exactly are the members, peers or who are exactly the people who seem to act as a facilitators that is not very clearly known, but somehow that is a kind of a self evolving thing and mainly it is it is the network are and the database. These are the ones that really form the core and even the nature of this network and the database keeps changing with time to that extent the whole system itself will become self organising over a period of time.

So, another learning theory is how do people learn in such a connected environment. So, can we take advantage of that even in classroom? So, a teacher can consider whether one can use principles related to theories, related to **connectivism** as a part of his instruction.

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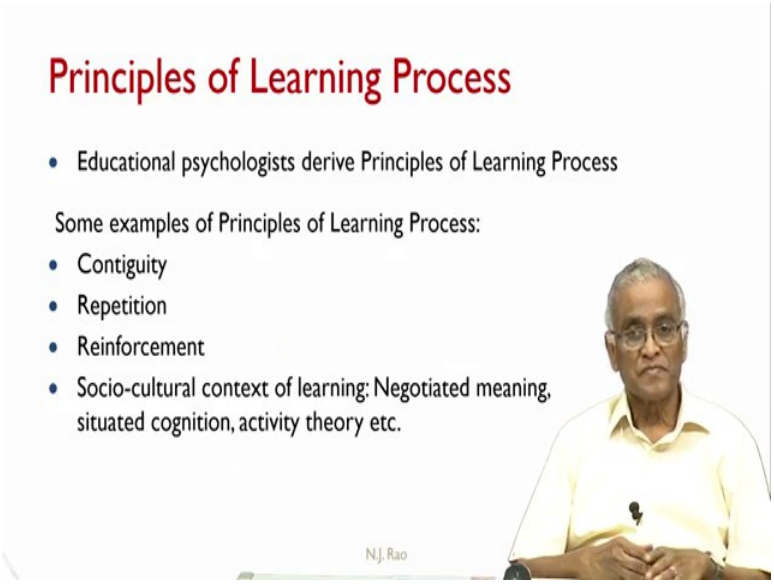

Now, we have identified a few learning processes, learning theories, from this educational psychologists derive principles of learning process. So, what are these? Some examples of learning process **contiguity**; that means, this is a very self evident and very obvious it does not have to be called really a principle. Contiguity means what follows what and what is the connection between the two if one is adjacent to the other in terms of concepts or information whatever it is then one is likely to learn belter.

So, contiguity, repetition, reinforcement, socio-cultural context of learning, these are all

the examples of principles of the learning process. And the specifics can be worked out in each environment once again, if you are working at a primary school level or middle school level or higher education level the specific implementations will differ. So, these are principles of learning process.

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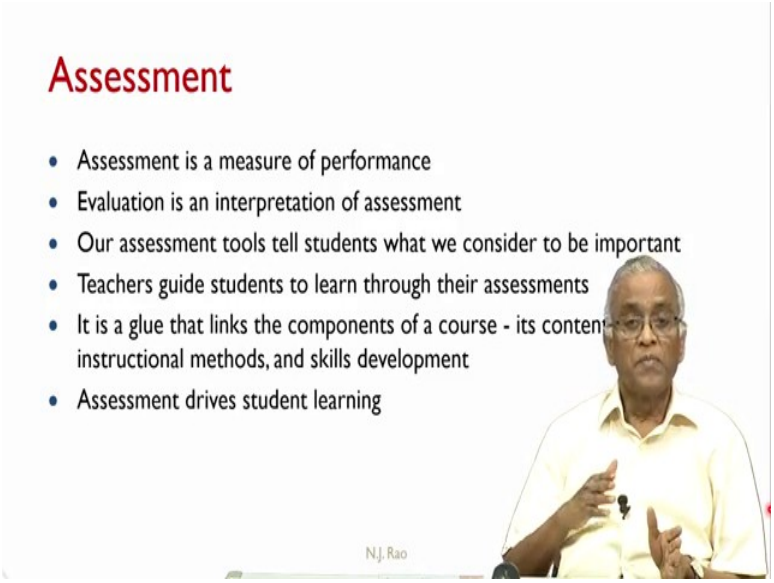

So, we got a general picture of some learning theories and I strongly advise each teacher to spend some time to explore by himself or herself on the internet to have a feeling for some of these methods. So, one should be familiar with that.

Now, come to the what we call very important topic of **assessment**. First thing we need to clarify is the words assessment and the evaluation somehow are used interchangeably even by the teachers, these two are completely different activities. Assessment is a measure of performance that is to find out what the student has learned what kind of measure do I use? This measure could be writing an answer to a question on a piece of paper or solving a problem or it could be making a presentation or submitting a report and so on; that means, the kind of performance that we are expecting student can differ. So, assessment really refers to what is the performance measure am I using.

For example I can have a quiz as a measure performance or I can have a what is called assessment instrument an examination paper as a measure of performance, what exactly do I measure? Because once again why is it important? Depending on the measure of performance, there is a time and infrastructure that is required for it. Like if you want my

student to write an examination or write on a piece of paper over a period of time, there is a time associated, there is a context infrastructure is associated and so on.

Similarly, another one if I want my students to make a five minute presentation in today's context we have to make arrangements for a LCD projector and a particular room that is appropriate for it and so on. So, many of the measures of performance which we consider important may not be possible because of the infrastructure that is required for that, that is one aspect, that is assessment is a measure of performance.

Evaluation is an interpretation of assessment, now I ask students to perform in some way and then how well he has performed, I am evaluating. That is I interpret his performance like I read the answer that he has written and then I can give a rank, I can give a grade, I can give a mark, whatever method that I want to use evaluation is an interpretation of assessment. These two are two different activities they are sequential activities, in the sense first the student has to perform and then it gets evaluated. So, one should not use these two words interchangeably.

Now, comes how do students prepare for, for example, in any formal setting that you operate there is always an examination to be conducted. And the nature of the examination because we cannot ask the student to perform in a every minor detail that I have taught in the classroom; that means, I am selecting something, I am selecting from whole bunch of possible measures a small number in a limited period of time.

So, what happens is finally, whatever the tools that I use will tell the student what is considered important by the teacher. So, you are communicating to the students through our assessment tool what is important.

For example after all everyone will try to minimise the effort that is required to reach a particular goal, a goal for a student is really getting a good grade at the end of the semester or at the end of midterm exams. So, to that extent he will work towards getting the good grade, the grade is dependent on the nature of the test or examination that you conduct and the test or examination is nothing, but an assessment instrument. So, our assessment tools tell the student what we consider to be important because finally, if he performed well with regard to the our assessment instruments then we give him a grade ok.

So, we are officially acknowledging performing well in our given test instruments leads to good grade; that means, we consider that he has learnt well. So, this is what needs to be understood and the teacher will have to say by setting up a particular examination you are telling him what is important. A teacher should never state in the classroom a learning well is not the same thing as performing well in the examination, these two should not be different. Then in my opinion you are doing disservice to the students and teachers guide students to learn through their assessments. Many times we also will have quizzes and so on, these are other type of assessment they may carry or may not carry marks.

So, we teachers guide students to learn through their assessments and it is a kind of a glue that links the components of a course, what are the components of a course? It is contents instructional methods and the skill development, the assessment really becomes a kind of a thing that links all of them. And that is why many educationists consider assessment really drive student learning and what is the implication of that? If you want to improve the quality of learning by the student, you have to start from what kind of assessment you are conducting not in terms of changing the content of the course immediately. For the same content I can improve the quality of learning by improving the quality of my assessment that is what it means assessment drive student learning.

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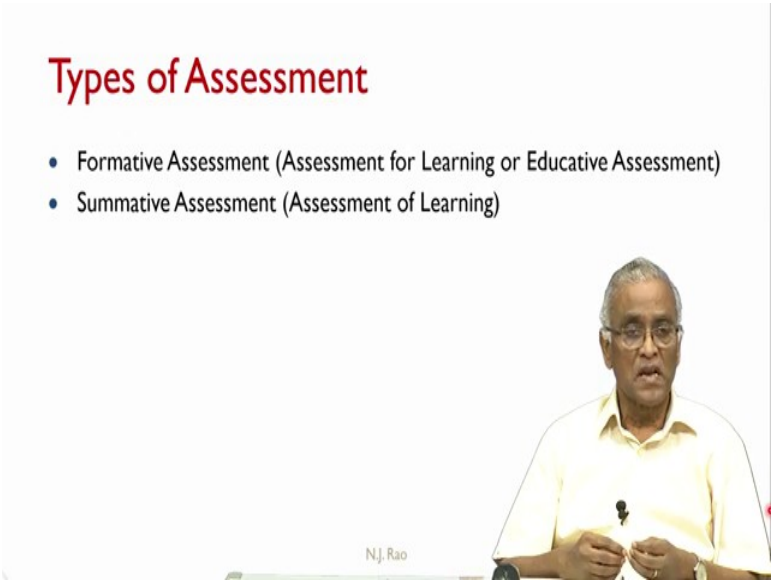

Now, we will deal with assessment lot more in later modules, but there are

fundamentally two types of assessment, formative assessment like the kind of questions that we ask in the classroom or conduct a quiz which does not carry marks. These are the ones that we try to find out at what stage the student is and also guiding the student that he needs to learn, what is it that he need to learn next, this is what we call formative assessment and other word for it is assessment for learning. And we have summative assessment like when you conduct an examination midterm exam or final examination you are finding out to what extent to student has learnt; that means, it is assessment of learning. So, these are the two types of assessments, **assessment for learning** and **assessment of learning**.

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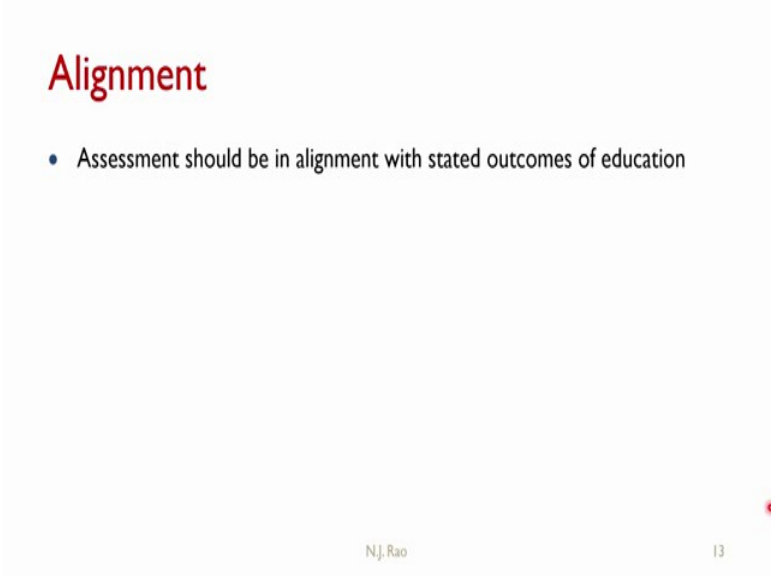

And the most important aspect is the assessment should be in alignment with stated outcomes of education. Let us assume that you want your student to be able to do something at the end of a course or at the end of a let us say by end of first week in a course and so on, your assessment should be in alignment with that what does it mean? Let us say you want a learner to be able to drive a car whereas, in actual test you will only ask him what is the role of carburettor or what is the how does the beak function.

If you ask such questions, then it has nothing to do with the intended goal or intended outcome namely that is ability to drive a car. Now the only way you can test him whether he is capable of driving a car or not is to make him drive a car that is when the assessment is making the student drive a car. So, that is what we call alignment,

assessment should be in alignment with the intended outcome of learning.

And this is where in many places in India, in some places there is some misalignment, in some places there is the gross misalignment. The intended outcomes and the actual test items that you find in the examination are not at all aligned, again this alignment we will look at it in a greater detail in a later unit.

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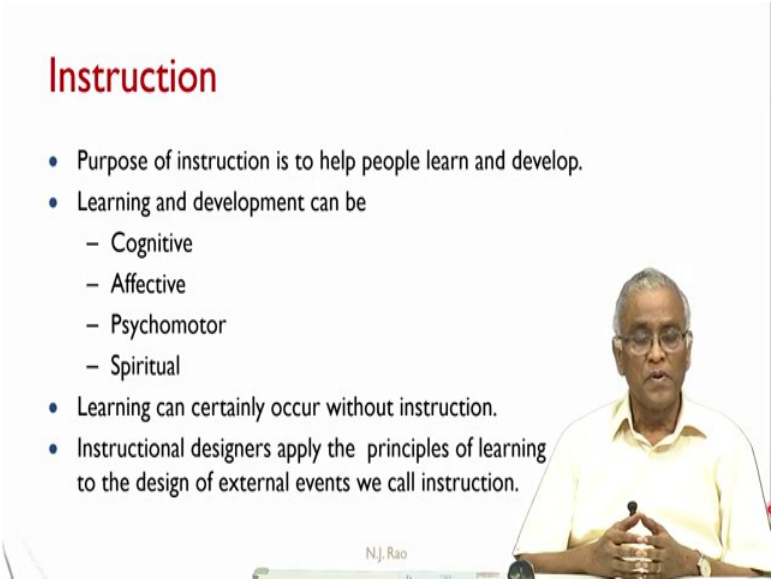

Now, comes this next one namely **instruction**. Instruction; the purpose of instruction is to help learn and develop. Learning and development can be c**ognitive, affective, psychomotor** and **spiritual**. Now that is you want your learners to your students to learn and develop and this learning and development can be in any of these four domains and once again we will elaborate this domains in a later unit when we come to the taxonomy of learning.

Learning can certainly occur without instruction, if you walk on a street and even if you do not observe as you keep walking several sensory signals will come from which we seem to be learning something or the other or without intention as you keep interacting with people we keep learning. And instructional designers that is a particular profession you can call it apply the principles of learning to a design of external events we call it instruction. That is using the principles of learning the instructional designer plans a set of external events that lead to better learning that is what we call as instruction.

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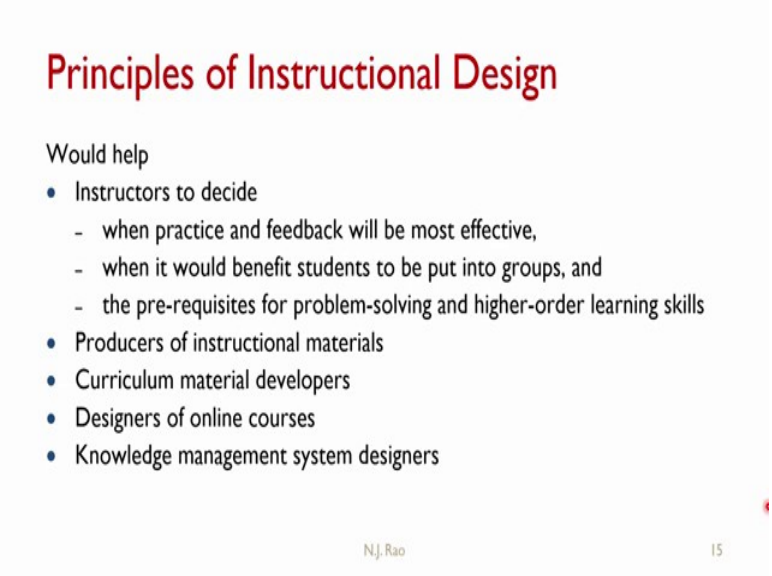

There are principles of instructional design we will not be going through the theory of this instruction and instructional design, but as a teacher one has to understand the principles of instructional design would help instructors to decide when practise and feedback will be most affective, when it would benefit students to be put into a groups. For example, sometimes we want a group of students to work together or we want to decide when exactly to give feedback. So, these decisions are made based on the principles of instructional design.

The prerequisites for a problem solving and the higher order learning skills, everybody wants people to acquire higher order learning skills, but then how do I lead these students through a series of steps to achieve this higher order learning skills. So, even the planning is the part of instructional design and besides instructional designers, there are producers of instructional materials, curriculum material developers, designers of online courses, knowledge management system designers, all of them will greatly benefit from the principles of instructional design.

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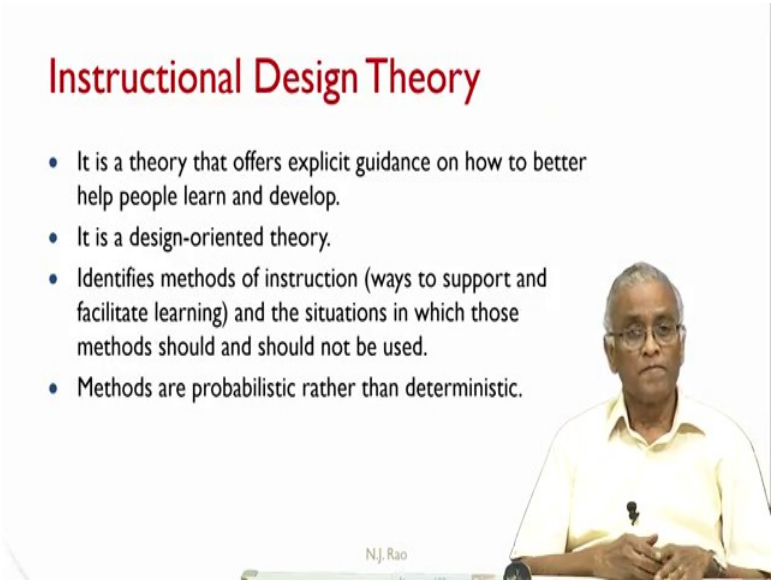

The instructional design theory is somewhat different from the theories that we learnt through various subjects. The theories that we deal let us say in physics, chemistry and any of those subjects they are what we call descriptive theories. Descriptive theories means essentially we are trying to find out what is the cause and what is it is effect, is this cause leading to a particular effect. You have to establish it is correctness or what we call validity of that either mathematically or experimentally.

Whereas instructional design theory is somewhat different from that it is what we call design oriented theory. See it is trying to say design oriented theory means, if you do the steps ABC, you are likely to lead to a better result. Sequence ABC is not the only way to achieve the result, but I might say if I follow ABC, I am likely to achieve my result better either in lesser time or better quality and so on. So, to that extent the methods proposed by this are probabilistic rather than deterministic ok.

That means, take a different type of example, if I design my cell phone in a particular way having this features, it is likely to be accepted by the customer better. What features, what kind of physical shape it should have, this can be different when different people design them. As you can see you have a whole bunch of models that are available in the market and each one of them performs your activity all right, but some you prefer some you do not, that is where the nature of design theory and one needs to understand with respect to those examples.

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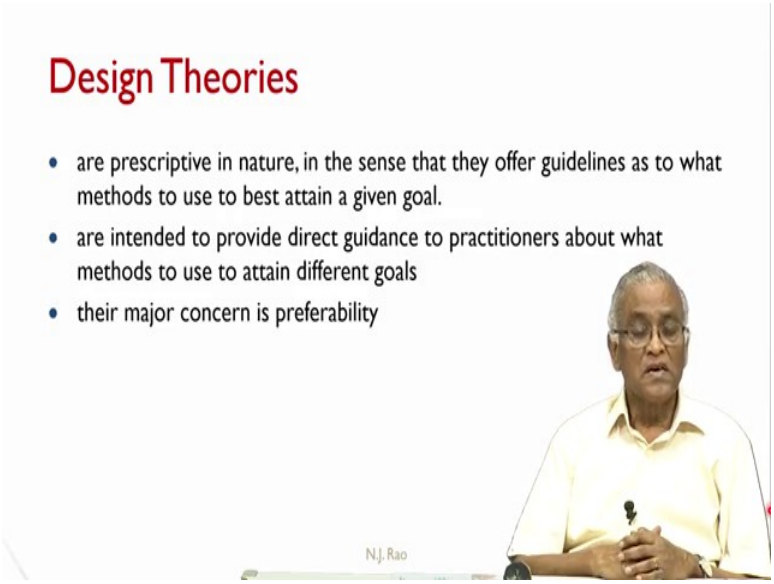

Now, here to that extent the major concern of design theory is **preferablity**; that means, when I design something like this my customers are likely to prefer my product. Similarly, in the case of teaching and learning we say if I follow these sequence of events my students are likely to learn better could be their level of understanding has improved or they may be able to learn in a shorter period of time.

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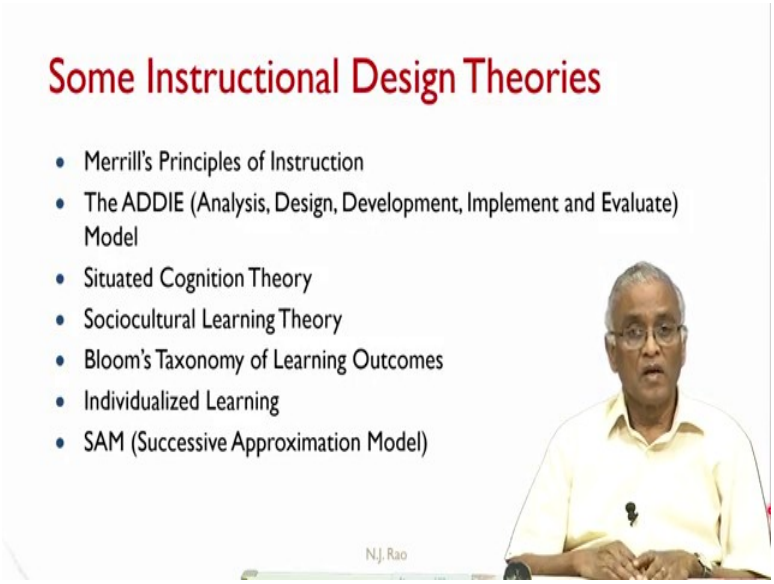

So, there are a whole bunch of instructional design theories, M**errill's principles of instruction** which we will deal with in another unit, **ADDIE** this also will be dealing

with another unit, **situated cognition theory, sociocultural learning theory, Bloom's Taxonomy of learning outcomes**, that is what we will be doing in this unit itself, individualised learning, SAM **Successive Approximation Model** these are some instructional design theories.

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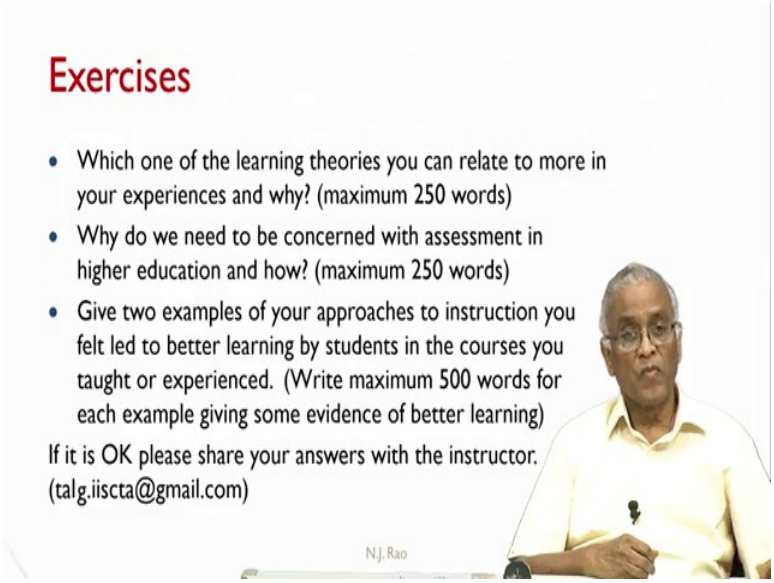

Now, what we would like you to do as you are not specialising in learning theories, but spending a little time on exploring that will possibly will sensitise you to the learning process better. So, we suggest these three exercises which one of the learning theories you can relate to more in your experiences and why? Because the some learning theories make more sense depending on the subject that you are dealing with. Write maximum of 250 words.

Why do we need to be concerned with the assessment in higher education and how? Give two examples of your approaches to instruction you felt led to better learning by students in the courses you taught or experienced. Write maximum of 500 words for each example giving some evidence of better learning. If it is ok, you can share your answers with the instructors, but this is not the assignment that we are giving that assignment comes later.

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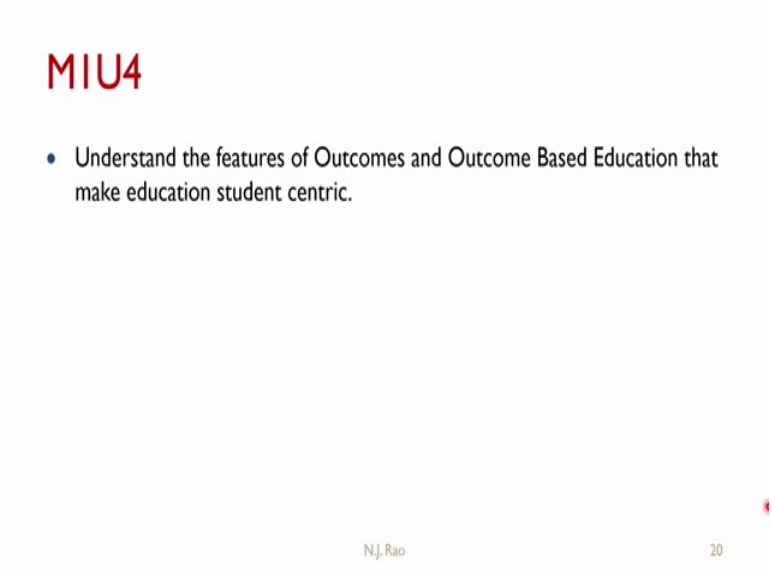

In the next unit 4, we try to understand the features of outcomes and outcome based education that make education student centric, that is the goal we properly look at what are outcomes and outcome based education in the next unit.

Thank you very much for your attention.