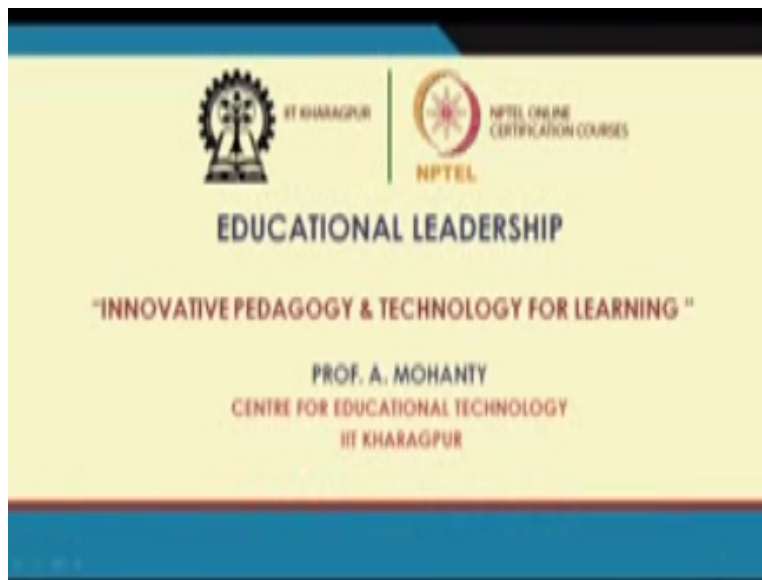


NPTEL
NPTEL ONLINE CERTIFICATION COURSE
Course
on
Educational Leadership
by
Prof. Atasi Mohanty
Center for Educational Technology
Indian Institute of Technology Kharagpur
Lecture 28: Innovative Pedagogy and Technology
for Learning

Good morning viewers welcome to this video course on education leadership.

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So the last class we are discussing about new pedagogy and deep learning approach, so today we will be discussing about innovative pedagogy and technology for learning.

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Introduction-

The 21st Century's knowledge – based economy & knowledge society need to bring transformational innovation in education through-

- a) 21st century's skill – based curricula;
- b) techno-based & learner centered pedagogy;
- c) innovative assessment tools

✓ The new paradigms of education not only advocates for “No child left behind” Act but also recommends for customized /personalized learning assistance & quality education to all

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How innovative pedagogy and technology help us in enhancing our learning and teaching behavior. So the last class we are discussing about now new pedagogy how it had looked for deep learning and whatever deep learning steel and we should we should develop among our students and what should be the deeply learning goals and how technology can integrate and enhance, the teaching learning effectiveness through connecting it to go to the open source of learning materials and to facilitate in facilitating the learning communities in achieving their deep learning goals etc.

Saying that continuation we can discuss it further like the 21st century is knowledge-based economy, now in the this present wall in proposed globalized world where we are living in a 21st century knowledge society which we got most importance to and knowledge sharing the knowledge, gaining knowledge, then say using the knowledge for solving social problems, so that is what is called as knowledge-based society and the economies of the primary based on this sort of essential knowledge skills and technology enhanced learning.

So for follow for what reason will for bringing the transformational innovation in education not only in the field of education for bringing the transformation in the industrial society as well in the community, as well endure in different kinds of resources as well. So how to bring the transformation in education and are in society through two different kinds of 21st century skills and knowledge and attitude, let our education system should primarily focus on developing nurturing the 21st century schemes among the students.

Through which through the curricular so we need to update our curricula in such a way that it emphasizes on developing 21st century knowledge skills and right attitude for the different kinds of the jobs and do not we need the 21st century knowledge-based curriculum, similarly we need also the knowledge-based her pedagogy that is a technology enhanced and knowledge-based like the techno based and learner centered pedagogy also. The third requirement is innovative assessment tool and then we also need a lot of innovative assessment tools and techniques and methodologies to evaluate the students' performance to assess the learning outcomes.

To understand that problem to diagnose their problem and to provide them the different kinds of intervention in helping them to facilitate learning and enabling their capacities and the capability, so 21st century knowledge-based economy 21st century knowledge-based society it emphasizes on are developing the curricula developing the right pedagogy developing the different assessment tools, which can empower the students which can enhance their learning performance and abilities and in this process in the through in the process of education.

We can develop different kinds of skills attitudes knowledge required for the 21st century jobs required for the first century knowledge based business or knowledge based economy etc. So the new paradigms of education not only advocate for No Child Left, where the same time the new paradigm the new pedagogy it advocates that no child should be left behind, so we have to adopt we have to apply multiple approaches multiple techniques, we have to use ice attainable and pedagogy, we have to provide in enormous resources whatever method technology pedagogy and resources we want to use we can do it.

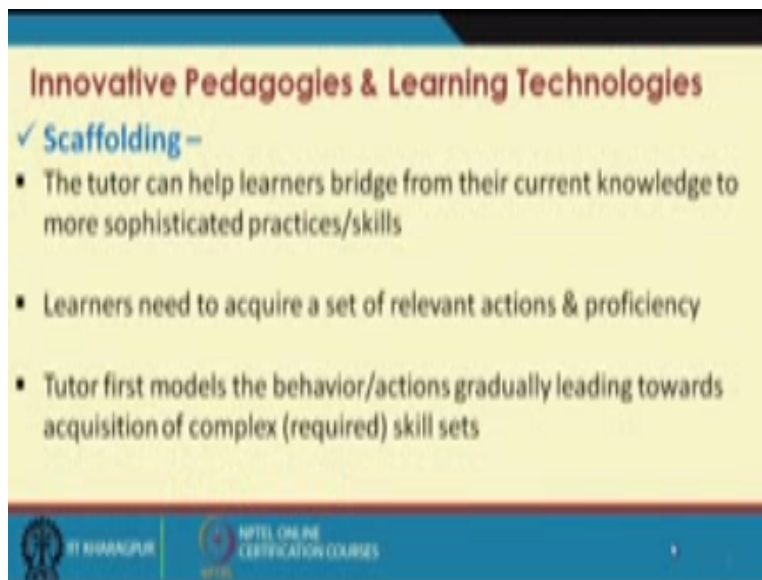
But no child should be left behind, so the new paradigm of Education it emphasizes on the No Child Left Behind Act as well as recommends and advocate for more customized form of learning that is the learning should be more personalized in case of each and every individual child for catering to his or her needs. So we are advocating for 21st century pedagogy curricular which is the up to get enter which develops erotic essential knowledge skills attitudes or attitudes among the students.

Which also advocate for the learner centered child center student centers curricula and Technology should be there to enhance and facilitate the learning process that is were using the ICT or techno based, pedagogy or you can say the e-learning platforms are also being suggested but at the same time it is a we need to or we need to personalize the whole learning experience

for each and every learner. So here it advocates we have to design a new curricular framework new paradigm of Education which advocates not only for the 21st century skill based curriculum.

But learner centered pedagogy technology assistance, technology enabled, pedagogy and open source of learning innovative assessment tools at the same time the whole learning experiences should be more personalized and customized according to the learners' needs learner's requirements. And we can ensure that the quality of education has been provided to each and every child in the country in the 1 so quality education ultimately our goal is that how to provide quality education to all.

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The slide features a yellow background with a blue header and footer. The title 'Innovative Pedagogies & Learning Technologies' is in red. Below it, 'Scaffolding -' is marked with a blue checkmark. Three bullet points describe the concept. The footer includes the IIT Kharagpur logo and 'NPTEL ONLINE CERTIFICATION COURSES'.

Innovative Pedagogies & Learning Technologies

✓ Scaffolding -

- The tutor can help learners bridge from their current knowledge to more sophisticated practices/skills
- Learners need to acquire a set of relevant actions & proficiency
- Tutor first models the behavior/actions gradually leading towards acquisition of complex (required) skill sets

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So in this context so we will be discussing about various techniques innovative pedagogical techniques, strategies and as well as the technology being used for the pedagogy, so we will be discussing some of these seeing some of these pedagogical practices, technology enhanced learning platforms that we are using or we can be using for enhancing the effectiveness of our whole teaching learning process and the program. So once such approaches firstly the scaffolding.

Scaffolding actually gradually unfolding the whole scale, sub task knowledge ability the etc, who scaffolding such a technique, which advocates that the tutor can help the learners breech from their current knowledge to more sophisticated practices and skills, so as a matter of learning goals as a matter of learning objectives or expected learning outcomes, when we design a course

or module a set students are expected to learn certain level of skills knowledge, attitude and abilities etc.

So that is the expected criteria learning outcomes, now how to achieve those things, so in order to help the children help the students to learn that level of that criteria of learning and performance, they need to go through a processing and inductive process or a sequential process and in that process stated learning process how the tutor can help them. In gradually unfolding new skills, new practices, new knowledge asset and how to gradually acquire it learn it, so that he can add instead that level of performance at the end.

So the tutor can help the learners breach from their current knowledge that means how to fill up those gaps off, without leaving the gap between the current knowledge, existing knowledge and the criteria knowledge, respected learn expected in knowledge and the skill. So learners need to acquire a set of relevant actions and the proficiency so as a matter of learning goals or the learners the students are expected to add to a certain level of proficiency certain level of proficiency in their disciplinary knowledge.

In the certain level of relevant terms, real knowledge performance performances etc according to the criterion level set for them for a particular level of education. That require to acquire those set of skills knowledge and proficiency, so the tutor first models the behavior and actions gradually leading towards the acquisition of complex requires Quintus. So in scaffolding what happens like the course like a coach the tutor first demonstrates first models the behavior which the learners the students are expected to learn and perform at the and the future learning outcome.

So the tutor first models of behavior he himself demonstrated and an explained how to acquire those skills and performance gradually leading towards enhancing the performance and acquisition of complex skill sets. So how the skills can be improved in a sequential way in an inductive wake-up inductive way and how to achieve the mastery over thus closing the conduct in the future learning course or as a consequence of the teaching learning program, so again in scaffolding the learners work on the context.

So it is better if the tutor if it coach demonstrates it in the real life, situation real life context because that will motivate in developing the sub skills requisite knowledge and applying this for

the solving the real one problem. So even if in the classroom situation the tutor demonstrates but he needs to apply it model it in the real world context, because when the suitors they will be observing these things learning those things in the real world context will be more motivated to find out a solution for the social problems real-world problems.

And they can apply directly apply their acquired knowledge in the real word counter real world context in solving the problem, so their application knowledge that analytical thinking that optimal their application knowledge will be enhance in the real world context for demonstrators. So the tutors guidance is embedded in the context to support the learners understanding and mastery of the queries so the teacher guidance is embedded it is being demonstrated in a particular social context real-life situation.

How to support the learners understand so that the learner can better understand how in the process of application of this knowledge, how what and what are the other factors that emerges what is the leg appropriate strategy appropriate, steps appropriate strategies for applying those knowledge in the real context and what is the outcomes for the subsequent consequences, what are the advantages what are the disadvantages. So they can themselves really evaluate the outcome the results of those applications those implications of knowledge in the real-world context.

And in that context they can also instantly graph the required sub skills require, sub skills to immediately resolve the issues in immediately a resolve you know conflicts any kind of problems. So gradually again with John as the learner become independent and self-reliant, so after demonstrating after modeling the behavior embedded in a particular context real-world content when the learner has adapted himself in the real-world context, he has well integrated and applied his knowledge and skills for solving the real world problem.

Now the moment the tutor feels that now the learner has really gained the desired knowledge and acquired the skills and aptitude etcetera, now he is independent he can lead all alone, so now he gradually the tutor gradually we draw the support, we draw the guidance to make him more independent and self-sufficient, self-reliant.

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✓ **Benefits of Scaffolding in Learning :**

1. Through sense making, articulation & reflection, managing investigation & problem – solving processes scaffolding can transform tasks more productive for learning
2. Scaffolding simplifies elements of tasks so they are within reach of learners (simpler sub tasks)
3. It can manage the process so that learners can engage in elements of the disciplinary work in real problem contexts

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So there are different benefits of scaffolding, so scaffoldings that ender in essence is that gradually unfolding gradually unfolding the skill, sub skills knowledge required for a particular problem-solving situation or required for solving different kind of real loved world problems and how to that means after demonstrating, with how to empower the learner to himself learn those skills sub skills practice, it apply it in the real world context and enabling him are making himself real and in dealing with the future such situations.

So there are certain benefits of scaffolding using scaffolding a real learning tool or the technique in pedagogy. Like through sense making articulation and reflection so managing the pro investigation and problem solving processes scaffolding can transform the task more productive for learning. So in this process the teacher or the mature demonstrates models the behavior and vetted in the learning in a real-world situation the learner gradually graphs are learnt the new skill, sub skills gradually learn demand learn how to solve the problem.

After the new skills practice 8 have the mastery over the skills and gradually applied those things and applied those knowledge and skills in the real world situation, so in this whole process in this learning process what happens very often the learner uses a kind of articulation spelling out articulating and what happens what did not happen why it has not happened and why the things have been different all these kinds of why, how when etcetera at all this making sense out of different kinds of you know and applying certain things in different situations.

So since making a particulate reflection he also reflects up on his own practice behavior approaches again and again and is managing the investigation and problem-solving process, the totally managing all the resources and the process of the mechanisms that have that takes place within the embedded context, how to solve it etc. So all in all this process it enables it helps the learner to work that we should use to apply his own knowledge skills for enhancing the his own practices on performances and understanding and understanding and to deal with the better deal with the real-life situation.

And can transform the task to be a more productive for learning, so in this whole process learning process or chances practical experience scaffolding helps a lot. Scaffolding simplifies the elements of the task, so they are within the reach of the learner. So suppose in the initially in the beginning it appears to be very complex very difficult very tough but gradual is while demonstrating are modeling the behavior the tutor can help the learner or through scaffolding can help the learner to break those complex tasks into soft paths, our sink lot more simpler task so it will be easier for the learner to gradually grasp and accurate each and every sub skills.

It can manage the process so that the learners can engage in elements of the Disciplinary work in the real world real work a real problem context, which can manage the process of the learners can engage in the elements of the discipline. So it is our suppose if it is related to or the learners own discipline basic discipline in a subject domain in subject domain.

So he can better understand how to manage those how to manage those with disciplinary elements and through these, how through this knowledge and skills are through the discipline and knowledge a subject domain knowledge and discuss. How he can resolve some of the real world problems.

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✓ Benefits of Scaffolding in Learning :

4. It can offset frustration & risk and maintain interest through balancing learners' participation & confidence building
5. It can prompt learners to explain, reflect & articulate their ideas in the process of problem solving
6. It can enable learning by doing, learning component skills & how to coordinate & integrate these for accomplishing complex disciplinary goals

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So it can also upset the frustration and raise can maintain the interest through balancing the learner participation and confidence. So as it involves a real-world problem-solving situation as it is embedded in the real world context and it you can fill it up sets of frustrations like that with the learner becomes more motivated more engaged, as he feels like now I am doing something practical something concrete, something visible, something usable, languages which will be beneficial for the society for my community.

Hence there that it will list chance of getting frustrated or de motivated or getting bored or upset and in this process he maintains his entry and also balance his but participation with the progress is a participation, with the progress and in this process he acquires, the confidence he builds the builds of his confidence. So scaffolding can also prompt the learners to explain or reflect articulate their ideas in the process of problem-solving.

So it is even though he moves gradually or north in an inductive way through an inductive approach of gradually acquiring, the sub skills gradually covering the tasks path and slowly applying and observing in the real world education. So very often very often heeded prospect he comes back reflect upon his own activity behavior approach things again and think again come back again.

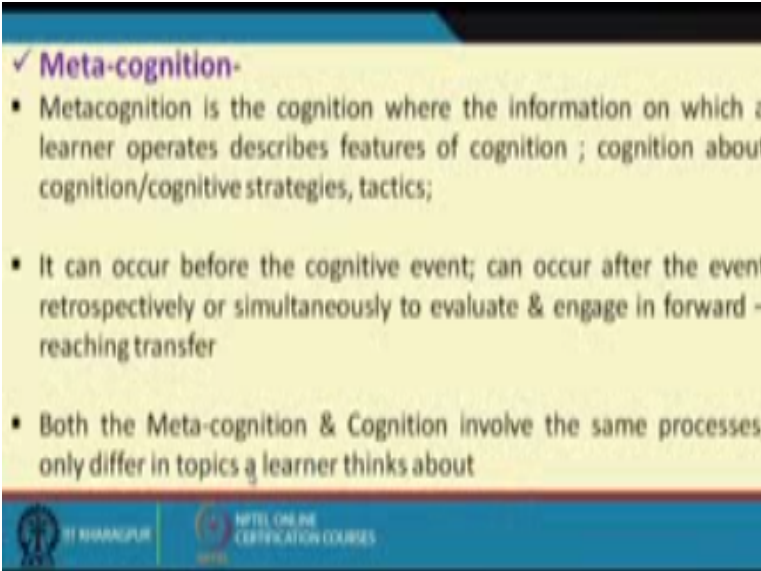
So in this way he this moves back and forth for reflecting for analyzing for modifying, you know for regenerating the new ideas and I did not experimenting on this, so it helps them a lot in explaining reflecting articulating that why he has not done something in the past, now he is doing

he is changing his only strategy. So it helps him on all kinds of active thinking in reflecting explaining and articulating the whole process of problem solving.

So next similarly it can enable the learning by doing again it is an experience seller learning, it is an active learning, by doing learning the component skills and how to coordinate and integrate these for accomplishing the discipline complex disciplinary goals. So whatever he has down the smaller tasks or the less complex tasks you have already done he has already experimented it in the realized context that can boost his confidence, that can boost his you know knowledge and that can further enhance his understanding of.

How to you know how to integrate these real-life experiences with his domain knowledge because disciplinary knowledge for solving the higher level of complex and complex the learning problems although the signatory goals.

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✓ **Meta-cognition-**

- Metacognition is the cognition where the information on which a learner operates describes features of cognition ; cognition about cognition/cognitive strategies, tactics;
- It can occur before the cognitive event; can occur after the event retrospectively or simultaneously to evaluate & engage in forward – reaching transfer
- Both the Meta-cognition & Cognition involve the same processes, only differ in topics a learner thinks about

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So the next approach is like scaffolding is one such technique, we often very often use it primarily in the more you know technical subjects in the more you know practical subjects like you know in engineering or in medical science or you know, you know we can say the technical the field on the field related also like in agriculture or engineering all kinds of good there, so this is a kind where we need to develop multiple skills and practices and proficiency for doing something, for demonstrating something, for experimenting in the real life situation.

So another such approach is the Meta cognition analysis approaches, the Meta cognition Meta cognition is like Meta cognition like thinking about thinking or cognition about our own understanding and cognition. So Meta cognition is again another such pedagogical technique approach, that we very often use it sometimes consciously sometimes unconsciously also use it what we need to emphasize or need to focus on it and explicitly I will articulate these things. So Meta cognition you know is the cognition, where the information on which a learner operates describes the features of the cognition. So the cognition about cognition of the cognitive strategies, suppose we are trying to solve a problem, so the problem at the problem is the content of our thought right. Now okay for how to solve the problem particular problem, now we are focused on that, so the problem itself is the content is the topic of our cognition, like while trying to solve that problem while trying to solve that problem by adopting different approaches by adopting different formulas.

We actively think applied we formulate different kinds of hypotheses try to verify it a set of that means we are actively engaged in this in solving that problem, that is our content that mean it is a cognitive process the cognition is going on because we are focusing on how to solve the problem and that is our content. So now we are already engaged in some kind of cognitive activity that is the cognition but when we did prospect about it when we evaluate it, whether this approach is right or not that approach is right or wrong or whether whatever I have done if I was correct or not.

So when we retrospect on all these things are evaluate the efficacy of our adopted strategies that is called the Meta cognition. So when we come back when we come back or retrospectively we analyze the adopted the strategies we reflect upon this we reevaluate it and we modify it that this will evaluate our own cognitive process to verify a few cases, to verify it effectiveness and if it is required that means you can change you can modify the whole single thing we did. So that is we are evaluating our own cognitive process that is Meta cognitive program called knowing about knowing about understanding evaluating our own cognitive process.

So that is called the Meta cognition, that is cognition and bound the cognitive processes when we are reflecting on how we are doing the whole team then it is Meta cognition process. So it can occur before the cognitive event or can occur after the cognitive event retrospectively or simultaneously to evaluate and induce in the forward reach interval like. When we are engaged

in solving that problem when the cognition is going on this Meta cognition can also fixative it can also take this it can also take place after the event.

Like after we have completed one form of form of problem-solving behavior one part of the experimentation or one part of for hypothesis testing, it can take place it prospectively it can take place then simultaneously while we are engaging very often very quickly, we comeback and again can redo it undo it and reflect upon it, so it can occur simultaneously it can occur before it before it can occur after subsequently after the whole task, so that ultimately we take the substance of this whole exercise.

As a as a matter of a forward transfer that means we can take the economy can extract and take this and substance or a sense of this whole exercise, to apply it in the future form of problem-solving. So that means we are often engaged in Meta cognition at different points of time while we are engaged in solving different problems and at the end we try to take the essence extract and sense of the whole exercise cognitive a profile and to use way to reuse it in future learning situation that is called the forward transfer.

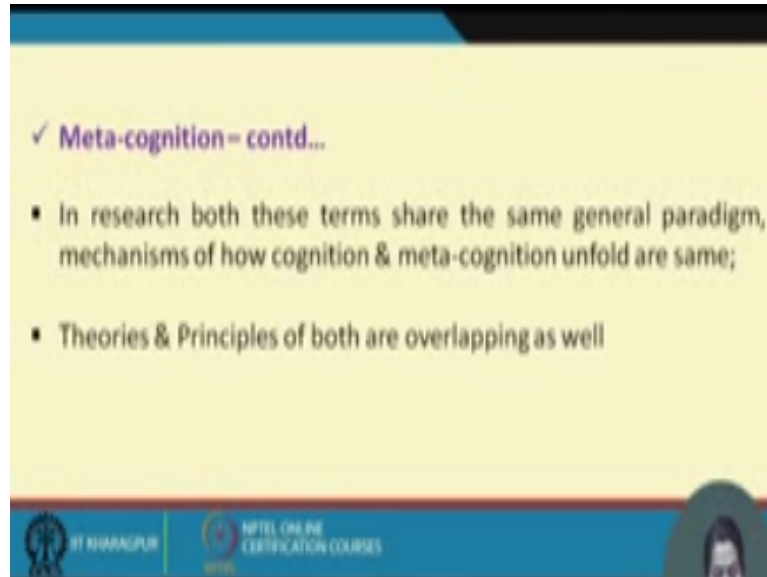
So both the carbon Meta cognition involves the same processes, only differ in the topic of learner things about so cognition and Meta cognition actually it involves a same kind of cognitive processes, for example in cognition we focus on the problem is a Content right now, so we are thinking about the problem how to solve it but that for that solution we are getting the solution we have formulated certain hypothesis strategies etcetera. So now our focus is on wonder are on content our problems.

So here the cognitive processes are the same but the focus is topic okay, so when we engage in reflecting upon or in Meta cognition again our focus process remains the same the focus changes is the content changes here, we are evaluating our own cognitive processes or strategies who have adapted so here our content becomes our own strategies or hypothesis here formulated for that problem okay the content the focus changes but the processes cognitive processes remains the same.

Hence the Meta cognitive processes as in both the Meta cognition and the cognition the cognitive processes are same only, the focus changes that is a topic the context changes, in one situation

we are focusing on the content as the problem as the content another situation and Meta cognition we focus on our own strategies or the hypothesis that becomes our content.

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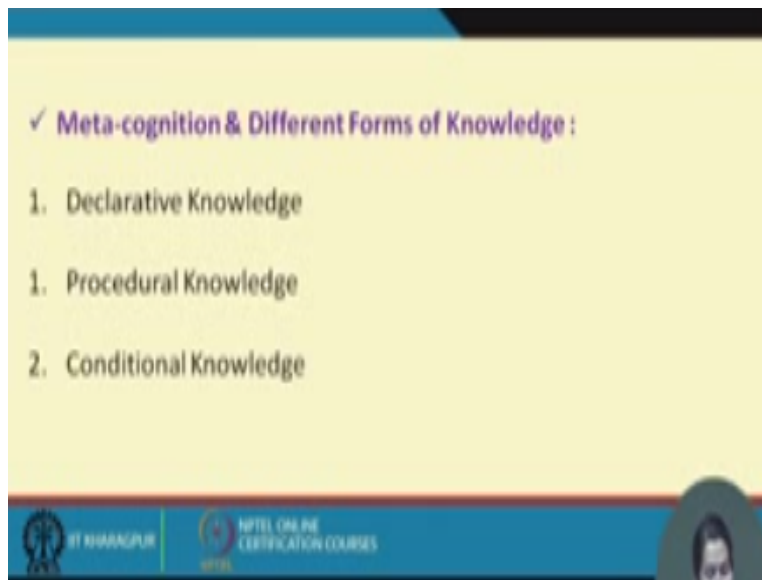


So in research both these terms have the same general paradigm, so in any way gives Meta cognition or the cognition are not two different processes are same only the content of the focus changes the topic changes. So in research also there is both this process both these terms share the same general pattern and like it both these terms are being taken into the same paradigm of you know knowing or understanding the cognitive mechanism, of how the cognition and Meta cognition unfolds are the same.

So similar research and research is also going on like how these two processes Meta cognition process and the cognition processes are being unfolded and how these processes are similar even though the content the topic or the focus is different. So the research is going on and the theories and the principles of both are overlapping as well, so even Meta cognition also follows certain the principles of learning and cognition similarly cognition also follows the same principles of learning and understanding.

So the theories and principles of both the things are overlapping as well.

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So now discuss about Meta cognition of different forms of knowledge, so Meta cognition is an ice even is the high level of cognitive process when it evaluates our own cognitive process it is the higher level of cognitive process higher-order thinking we can say. So how this Meta cognition takes place with different forms of knowledge primarily, there are three forms of knowledge, one is declarative knowledge, procedural knowledge, in the conditional knowledge declarative knowledge primarily deals with the factual knowledge the information of facts the data.

Although which you can explain in statements that these aim in terms of the information data, so there is a declarative knowledge procedural knowledge means, no how is the process the underlying mechanisms the process of processes like process of solving a problem process of doing the math process of for demonstrating certain skills. So it is the know-how of procedural knowledge conditional knowledge is that in which context in which condition conditions in which context how to blend declarative knowledge and the procedural knowledge for getting the solution or for effectively using the strategies for resolving the issue.

So that is a conditional knowledge which gives us feedback about in which context under which condition, how to use declarative knowledge in federal and procedural knowledge effectively, so let us discuss about how Meta cognition takes place in these forms of knowledge.

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Metacognition about Declarative Knowledge –

- a) Being aware that one possesses the domain knowledge , facts, information, self efficacy;
- b) This knowledge can be verbalized in the form of declarative statements;
- c) Also includes beliefs about a task & its context, judgment about applicability of particular strategies , estimates of what one needs to know & what knowledge will meet the task demands;
- d) May not always predict the actual learning outcomes

So Meta cognition about declarative knowledge declarative knowledge that means are like the do not primarily deal for the domain knowledge facts information self executing the learners self-efficacy, one self-efficacy in the sense that learners and such beliefs about his own abilities capabilities, what he can do and what he said handle how difficult problem we can solve or conceive knowledge about his own efficiency enough capability, so then again this knowledge can be verbalized in the form of declarative statements.

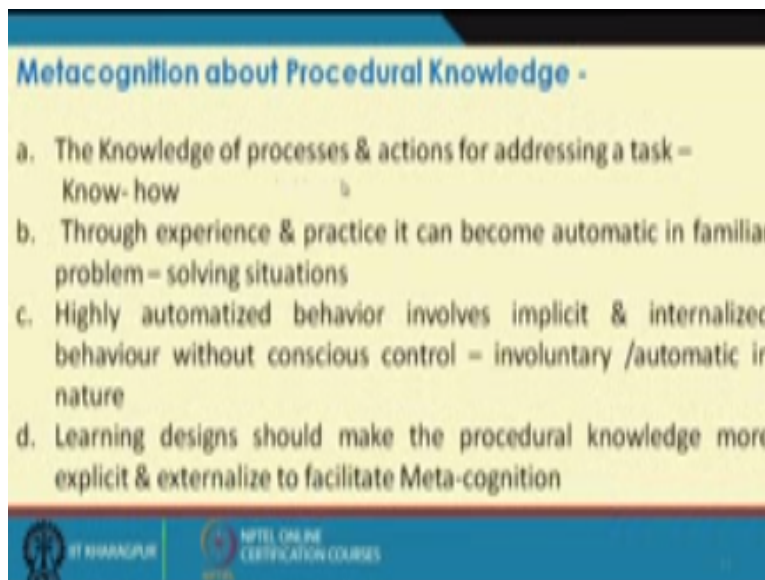
So when we openly a declare that yes I can do these are these are the facts the knowledge the data I know these are the information is this is that this when we explain the theory etcetera, so in terms of the domain knowledge in terms of facts and information and in terms of our own self-efficacy when we declared that yes I will be able to do these and active in terms of the declarative statements that is that knowledge is called the declarative knowledge as well. It also includes the beliefs about a task and its context again when we come across a particular kind of problem, and when we evaluate that problem of the task in which context it is embedded so and the judgment about the applicable of the particular strategies there we give certain options, we hypothesize certain things estimates of what one needs to know and in order to solve suppose it is a mechanical problems the electrical problem it is you know biological problem or it is an instrumental problem what kind of problem in that in that context what kind of knowledge and skills are required.

To solve that problem or to resolve that issue etc, so when we hopefully state about that but in order to solve this problem resolved this issue etc. We need to have this kind of skills potential is

knowledge domain knowledge etcetera etc this is all about the declarative knowledge and in that context how magnetic read it, so it may not always predict the actual learning outcomes but now in this particular context we are trying to apply our knowledge or skills, our experiences past experiences in resolving certain issues embedded in a particular context.

But we cannot ensure about the outcome what would be the outcome; we cannot 100 percent accurate in predicting the learning outcomes.

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Metacognition about Procedural Knowledge -

- The Knowledge of processes & actions for addressing a task – Know-how
- Through experience & practice it can become automatic in familiar problem – solving situations
- Highly automatized behavior involves implicit & internalized behaviour without conscious control – involuntary /automatic in nature
- Learning designs should make the procedural knowledge more explicit & externalize to facilitate Meta-cognition

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Similarly procedural knowledge a procedural knowledge how Meta cognition takes place and the knowledge of the processes and actions for addressing the task that is if it is a problem, when we take up a problem or the problem can be you know an abstract problem theoretical problem the mathematical problem, real-life problem, social problem, financial problem whatever may be the problem. So while resolving that problem that issue that task and well addressing this task the mechanisms of the knowledge and processes and actions steps of action plans we design the steps the steps we want to use we should follow.

We should execute we should implement then all kinds of know-how, is how it will not take place how it will proceed what worked, what are the what will be done with our you know shortcomings are the problems, we may face in this process for all these know how is about the processes the make an is on the like mechanism of resolving the problem or resolving the task

this is all amount of Meta cognition, but in that case we spin this procedural knowledge Meta cognition takes place that means we keep on evaluating our own house.

And power and ear and continuously map it to what extent these are accurate actually, these are effective. So to experience and practice it can become automatic intermediate problem-solving situation the more and more we become experienced with that kind of task without problem with resolving that kind of problem, so with graduate with accumulating experience and mastery and the practice a number of practical auto material gradually becomes more automatic more automatic.

That means we have completely absorbed that and out of our experience and rigorous practice and master it automatically that means what less we can do it that is it becomes more automatic in similar and problem-solving and situation for example lately mechanic a car mechanic, a motor mechanic, so out of these are 20years experience for 15 years pretty experienced and experience all for you know dealing on dealing with the different kinds of four models.

And motor different kinds of the car different companies mechanisms there are all kinds all kinds of experiences helped him in gaining the knowledge and knowledge and experience which enables him to become you know effortless or the spontaneous and resolving some of the critical and regular problems. That instance in it is a professional in your job so it becomes more automatic families smooth in our Simeon similar problems or new situation highly automatized behavior involves implicit and internalized behavior without conscious control.

Like when it becomes a most you know at the most automatic in the sense that not only you have and we can also, we have also that means you can say we have developed a certain kind of competency competence in auto wheel that mechanical you have learned it to have experienced a to have completed with us, but in the whole process of doing the things performing the whole thing for the last 12 years 30 years 15 years whatever not only we have acquired the experience but also we have acquired the mastery over that skill over that performance.

And again not only mastery us can master the skill but we have also thought about it to have flexibility analyze the whole thing, so we have put our intellect also that is called you have develop the competency as well. So where in that cases it becomes more automatic automatized in our you know system your behavioral system, so it becomes more implicit and internalized

behavior that means our system our brain has properly has our totally adopted that whole mechanism, so it becomes an involuntary mechanism of our past tablet unlimited.

Without conscious control or without that means in it has become already become involved to be more automatic in nature because our system has completely absorbed it, not only you have experienced it and master and acquired the mastery over that but we have also developed certain competences enter higher cognitive level such which help us help us in absorbing the whole thing in our systems automatically. Now it has become high automatic means more involuntary automatic because you have completely internalized the whole things then learning designs should make the procedure knowledge more explicit.

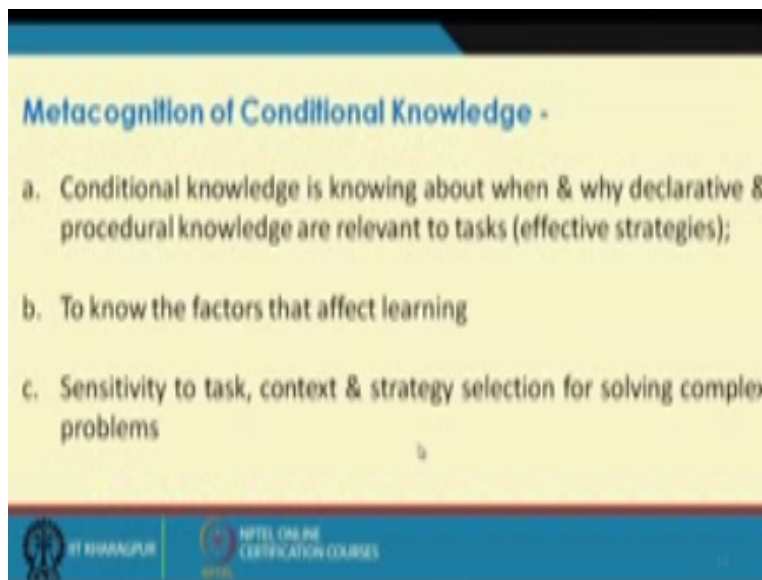
Learning design should make the procedural knowledge more explicit and externalized to facilitate the Meta cognition, so therefore what it implies is that our learning designs are molar the pedagogical design for the content design etc, mode modules so that we design for particular kind of topic etc, it should be it should be so make the procedural knowledge more explicit. So when we are solving the problem is not about the answer to that problem solution to that problem but how we are gradually approaching that problem trying to solve it preceded towards the solution so that procedural knowledge is also equally important and our learning design.

So explicitly explaining demonstrated, so it and externalize it so that is why in the classrooms or in teaching learning problems the tutor should explicitly elaborate on it and Meta cognitively analyzed in the sense that are by asking, why it has not happened in that way why by asking various questions asking evaluating the various alternative approaches to that problem. So by asking different questions having the dialogue about different conditions approach etc we need to explicitly elaborate on it explicitly externalize the whole solution the process of the solution and the procedural knowledge and to make it to first and the Meta cognition.

Though when the tutor the course the teacher himself demonstrates it but it enables the learner to think actively and it helps him in his own met cognitive activities. So while solving it another problem in future he himself restoring himself will be induced in met cognitive activities like the teacher or teacher was doing in the last class and he will also start thinking in a critical way in a critical way to ask himself many more questions to evaluate, the approach evaluate his the strategies evaluate the approach approaches he has adopted for solving that problem for it to this.

The explicit analysis and explicit demonstration of these procedure and knowledge definitely helps it helps Meta cognition.

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So similarly the conditional knowledge again conditional knowledge is that knowing about when and why the declarative procedural knowledge are relevant to the task, that means on the reach condition and in which context why the declarative knowledge and procedural knowledge are the combination of both the things are relevant for ourselves in this particular task that how to how to select the effective strategies for solution and for getting the solution of a problem and how it combines both the crucial procedural knowledge and the declarative knowledge.

And in which context it proves to be relevant and effective, so to know the factors that affect the learning again besides phase knowledge domain knowledge and the procedural knowledge declarative knowledge and the procedural knowledge. What is the other factor that affects the

learning and sensitivity to the task context and the strategy selection for solving the problems, so here are in conditional knowledge also a while analyzed and Meta cognition plays an active role in enhancing our awareness in enhancing our sensitivity to the task that means how sensitive the task is and for solving the problem of the task.

Which situation and context or environment will be more suitable will be optimum and in that particular context which strategy should be selected and adopted and applied, so for solving the problems so under which condition and how to identify the problem a suitable for that corner how to identify the problem and this solution like the strategies and the approach more suitable for that problem-solving behavior, in a particular context and how to develop the sensitivity it also helps it also been developed by this met cognition.

Some at cognition in the curve while using the conditional knowledge enables our embossers in selecting a problem or when we face a problem encounter a problem, we also develop a kind of sensitivity and to the relevance to the relevance of that context and the strategy that we should select and how to resolve it and how to resolve the complex problem and again, how to again how to apply this is this thing with the solutions the mechanisms or what the knowledge that we have gained out of that in future situation.

So here Meta cognition in conditional knowledge helps us in developing the sensitivity towards the table sensitivity towards the problem the complexity of the problem, the context under which it should be attended it should be a result and the appropriate selection of the strategy, so this kind of sensitivity this kind of you know factors affecting the learning or this kind of the cofactor the situational factors, contextual factors, under resources strategies that kind of awareness sensitivity develops as a result or Meta cognition being applied in the conditional knowledge. So now all we stop here the next class I will continue with this Meta cognition only its benefits in different learning situation now thank you for the time.