

## **Psychology of Learning**

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**Lecture – 8**

### **Major Theories of Learning (Contd.)**

Hello viewers, welcome back to this NPTEL course on the Psychology of Learning. In the last class we were discussing about Gestalt School of Learning that means, the Gestalt approach towards perception, insightful learning and how they have also proposed some laws and principles of perception and how their approach is more of a molar approach. So, that was you can say that was the beginning of the cognitive era. Now, as we have already discussed one branch one group of psychology have gone towards neuropsychology, neuroscience and neuropsychological aspects of the brain and they started working on how the brain functions, different lobes, activities and where the psychological function, cognitive functions lies all kinds of things. So, they have adopted the brain metaphor whereas, in other places, the other group of researchers they adopted the computer as the metaphor and they followed the way the computer processes the information and then they are propounded the information processing theory approach towards you know learning towards intelligence towards cognition.

So, this is just a picture of the brain structure and I am just giving the clippings because here it has been narrated all the activities and all activities that is responsible and being brain as it functions and how the different lobes, portions, different nerve centers etcetera how they operate, how they function and what are the related activities brain activities. So, we will go to some aspects of brain activity like for example, some models are also there. There are models which adopted this brain metaphor? They adopted this neuropsychology of the brain, but these are some of the basic you can say basic structures of some of the theories like for example, cognitive learning models of Asubel, Gane, Bruner and Bruner all these have the educational implication, and pedagogical implications. Gestalt also has the educational implications. These are one group of learning models and they have given significant applications. It has shown significant application in the field of education and pedagogy.

So, Benjamin Bloom's instructional objective that this is the hierarchy of instructional objectives etcetera that we will be discussing later on. And the cognitive theories as propounded by different groups Gestalt psychology. It has brought the cognitive revolution that was the founder you can say for the cognitive it is the foundation. They have let the foundation stone for the cognitive era before that it was primarily dominated by the behaviourist school then after schema theory. Schema theory of Jane and P. R.J's approach and other kinds of cognitive approaches they have focused how the learning can be more meaningful their concept was more theory of meaningful learning. Multistore models are also there which is the cognitive structuralism and information processing model that is the cognitive theories that is more relevant in the classroom. So, we will not go. We will not cover all the theories all the aspects only the major prominent theories because it is not possible to deal with all aspects of all the theories. However, we will go through the important theories. So, now let us go to the information processing approach in information

processing theory that deals with.

So, information processing the approach theory approaches that as the computer as the computer processes the inform like input processor and the output. Similarly, we receive the information as an external stimulus from the external environment thereafter we process then it enters into our sensory memory and it stays there for it stays there for some time and we need to once we need to remember it or learn further then we have to rehearse it practices, so this is a short term memory short term memory sensory memory then thereafter initial processing then depending on the depth of the learning level of learning practice and information processing approach learning approaches then it goes to the long term memory, short term long term memory etcetera. So, this is actually we will cover all this details in memory section in memory section, but this is the information processing approach sensory memory only we just sense we receive it thereafter initial after initial processing it is also it also goes to short term memory and the long term memory and in between some activities will be will be taking place like elaboration coding all kind all kinds of thing learning activities different approaches to learning then only it will be retained to long term memory. So, long term memory you can say it is our repository backup it is backup learning it is a repository learning repository. So, that is why whenever we face a new or stimuli new situation new problem etcetera we always refer back to the long term memory.

And thereafter all these after all these processing etcetera then the outcome is a result that is the response is our is the manifestation of our behavior of our thought. So, after this so, you can say the planning decision making all these things takes place in in between in between these processes and that and you know in the models also they have given that that like which lobe frontal lobe primarily the frontal lobe is responsible for all the final decision making ability then planning all these things and which will be manifested which will be reflected through our response in the behavior. So, the information processing approach actually it studies the cognitive development evolved evolved out of the American experimental tradition in psychology. So, it has come up as an as against as a revolt against the behavioristic approach. So, it is and as as we have discussed that it has they have already taken up the computers metaphor and how computer and human mind is a system how the computer and human mind as the system it functions it processes the information and also applies different laws rules and logical rules strategies etcetera to enhance the learning to retain the learning material for a longer period.

So, that is a, but however, the mind has some limited capacity in comparison to the computer mind, Mind has a limited capacity, but by enhancing the strategies by you know strategically using the different different you can say different schemes different approaches different styles different resources we can enhance the retention. So, that we will be discussing in the different theories. So, first so, now, let us from learning to learning we are coming to the intelligence. Intelligence actually most of the things like for example, at the initial stage the intelligence was being measured through some tests psychological test that is IQ test, Intelligent Coercion Test. Actually it started with the with the Binet score Binet Simon scale Binet Simon scale of intelligent quotient which they the authors the propounded during the second world war in UK in Britain for dealing with the for how to train the soldiers etcetera, but there it is started the era of intelligence measurement of intelligence it started in terms of IQ.

IQ has a score also it is that means, after administration of the test then there is a formula through which IQ IQ score can be measured. So, intelligence for example, so, again it

intelligence has also lot of lot many theories and lot many criticisms and so, and so, etcetera, but intelligence just to know about it because intelligence is the capacity is the ability through which we can enhance we can engage our self in different kinds of learning activities. So, learning you can say learning is the nervous system is the flow is the flow of action and intelligence is the ability our ability our capacity to deal with to function to operate to translate all these things. So, intelligence is the individuals ability to understand the complex ideas and adopt effectively. So, and to learn from the experience.

So, intelligence has also been defined by different authors in different ways different ways and some renowned psychologists they have also propounded the scales like Weisler. B. N. Simon scale was on IQ intelligent question, but Weisler Weisler has also formulated that scale scales for measuring the children's Weisler's intelligence scale for children is there Weisler's intelligence scale for adults is also there. So, they have defined that intelligence actually is a total capacity the global capacity of an human being of an individual through which we can at least understand the situation the problem and thereafter we start thinking of how to resolve it and in between you also take the help of our past learning past experiences or you know previous experiences of previous learning to overcome that obstacle and can get the solution to the problems.

So, this is the general approach that is the global capacity is the holistic approach global capacity to think. So, to think rationally to act purposefully and to deal with the environment effectively like for example, the intelligent person we can say is the person who can have that capacity and ability to think rationally. Rational is a logically whenever we encounter we face an unique situation at least we must analyze it logically objectively that is the to think rationally and to act purposefully we or whatever we do we do we should have we should have some goal some goal some target some purpose purposefully and to deal with the environment effectively. That means, whenever we are doing something even if we are interacting with others it has an impact on others. So, it may be it may affect the environment it may affect the people it may affect the other stimulus in an around.

So, we it should it is it is it is the approach of an intelligent person to when to deal with the environment effectively that at least the positive impact should be there to avoid the negative impact. So, intelligence is typically it was measured by the IQ score now thereafter also many other standardized test also has come up with the in testing the memory span to attention to a processing abilities different kinds of psychological test standardized test have also come up. So, this is the formula of mental the IQ as you can see that is IQ is that the mental age divided by chronological age multiplied into 100 mental age is the actually the cognitive ability in which age group age group we are actually for example, they have developed the test items scale items test items for different age groups starting from the maybe 5 6 to 12 years. So, for every age group that is the for every age group they have formulated some questionnaire some questions some items test items. Now, suppose if we are administering the test on some students or children.

So, there chronological age is there actual age developmental stage or the actual age is chronological age as per their performance when they would be able to complete a test meant for class 6 or 5 or 7 as per the grade as per the grade if they could successfully complete this that means, their mental age is like that. Suppose if somebody chronological age is 10, but he could only succeed the succeed to complete correctly the mental as the test items of the class is 5 is 5. So, then his mental age will be 5 chronological age will be 10 is actual age and it will be multiplied by 100. So, whatever will be the score that is his IQ score. So, accordingly they

were analyzing the IQ, but later on later on you know in the recent also actually with the emergence of the positive psychology the emotional quotient that emotional intelligence has also come up as a major factor in the process of learning.

So, IQ and EQ. So, these are so, that is the famous saying is that IQ can get you hired in a company, but EQ can take you to the take you in the career ladder take you up in the career ladder. So, that means, along with the IQ intelligence emotions are also equally important emotional intelligence that we will discuss in the later part. So, now, we will discuss about the Gardner's theory of multiple intelligence. So, the how about Gardner's he has proposed initially he has started with few types of problem types of intelligence that means, as against the general capacity. Earlier the the the psychologist they were saying that general capacity is required to do all kinds of problems, but besides that Gardner's the researcher who said that besides the g factor of general factor of intelligence like the grasping factor or general understanding of the intelligence there may be other types of intelligence there may be other types of intelligence.

So, initially he has said there. So, that is a he he propounded a theory of multiple intelligence and he said that intelligence can be of different types like visual and spatial intelligence. This artist artist there they have they are having the high visual and spatial intelligence linguistic and verbal intelligence interpersonal intelligence that means, interpersonal relationship human HR relationships HR skills etcetera. Intrapersonal that means, within yourself the how much the individual understand himself about his about his strengths and weaknesses how he deals with his problems day to day life problems and he maintains other kinds of other kinds of responsibilities. Intrapersonal the relationship with himself that knowing yourself better intrapersonal.

Then logical and mathematics some people are very very good in the logic and math logical mathematical intelligence, the musical intelligence either either have a very good sense of musical sense or very good you know very good singer or composers like this thing. And body kinesthetic personal intelligence is that people those who are very good sportsman, athletics etcetera. Later on he introduced also two more two more types of intelligence one is this naturalistic intelligence another is also existential intelligence. Let us see the same thing here seven types initially propounded seven types of intelligences all this in linguistic logical mathematical spatial body kinesthetic all these are the seven intelligence. Linguistic intelligence is the capacity to use the words effectively just like the writers the right the novelist the right and the orators good speakers good orators they are having the linguistic intelligence.

Logical mathematical intelligence is the persons who are the great mathematicians you can say great great analogist great analytical person mathematicians they are the logical and mathematical intelligence is very high there. Then these two these two are actually these logical mathematical intelligence are primarily it is these are very much required expected to expected by the traditional school environment that is why traditional our traditional educational practices it gives it gives it was giving emphasis on the IQ measures of the test. So, IQ was more important because of this it was logical and mathematical intelligence is expected to be very high should be high for dealing with the academic scores academic subjects. Then the next is you can say so, the others are like the for example, the others are special intelligence the people who draws the that means, who deals with the space like the designers like the architects like who deal with the shapes sensitivity of the colors manipulating the pattern space etcetera. Body kinesthetic intelligence deals with that means, it

is that means, how flexibly how flexibly you can utilize your body parts like in like the athletes athletics like in athletes sports persons and coaches sports coaches all these things they have the high level of kinesthetic body kinesthetic intelligence.

Musical intelligence is I have discussed very good singers composers music directors interpersonal intelligence is primarily the capacity to perceive others moods to understand others they are it primarily deals with your social skills interpersonal skills then you know to understand others their intention motivation social perception to and the feelings of the others. So, interpersonal interpersonal intelligence is very much required in enhancing our emotional intelligence also. And the intrapersonal intelligence is the self knowledge the ability that how much do we know our self how much how much do we know our self our strengths and weaknesses and how quickly how quickly we can adjust our self in new situation or like our ability to adopt to act adaptively. So, ability adaptability is also one type of intelligence is that is and it primarily deals with the interpersonal intelligence. So, later on he added the two more types of intelligence that as I have told you that naturalistic intelligence that understanding the nature.

So, naturalistic intelligence is that expertise in recognition and classification of numerous species that is understanding the nature primarily the environment the space is different types of species ecology all kinds of things. Then later on he added most recently existential intelligence he is added he defines existential intelligence is that in this way like the capacity to locate oneself. Like that means, it is a kind of you know it is a kind of more of philosophical like our existence our meaning of life meaning of death what are the universal truths and those and the psychological and psychological and perspective of this world how all kinds of the activities that happens here in and around the world are the reasons the backgrounds and all kinds of what is that we asking lot many questions about our own existence and the universal truth the values and the psychological even the psychological perspective also. So, this is the definition given by Gardner's with regard to existential intelligence. We all of us we must be careful we must be cautious we must be alert conscious about what is happening in and around us that is about our existence.

So, then we have another theory. Steinberg's theory Robert Steinberg was very good information processing theorist and intelligent and the founder of the intelligence theory that is called the Steinberg has propounded notice called as the triarchic theory of intelligence that is he said that intelligence is not is not just one capacity it is also like three dimensions of the intelligence three dimensions like the one is he his theory is also known as the triarchic theory because he said that there are three types of intelligence. One is the practical intelligence, practical intelligence, creative intelligence and you know that is just a minute practical intelligence, theoretical intelligence and another is that creative intelligence. Creative intelligence, practical intelligence, and another is you can say another type of intelligence is that intelligence of experience. So, here three types of intelligence are there practical intelligence, creative intelligence, and analytical intelligence. So, to go back that means to refer back.

So, intelligence is considered Robert Steinberg said that. So, it is an alternative of the to the again to the general idea of the general intelligence it says that Steinberg says that practical intelligence actually the persons ability to deal to react to react to the environment to adopt in the world. Practical intelligence primarily rely that means, it is relevant it is related to more to our experiences and how skillfully we are utilizing those experiences. So, practical intelligence a persons ability to react and adopt to the world around them and as well as the creatively and

equally creative intelligence creativity are equally important like besides that practical intelligence how we can think creatively differently differently, but some and innovate something news out of a curiosity out of innovation. So, he said that intelligence is not fixed at all it comprises of the set of abilities and his theory is known as the composition of the sub many of the various sub theories.

So, let us see in this theory like for example, triarchic theory it has the three aspects of these are called the sub theories. Componential sub theory it has certain components, experiential sub theory experience plays an important role and contextual sub theory. So, he divided his theory triarchic theory into three sub theories and thereafter is under each sub theory there are different activities like for example, componential theories primarily deals with the cognitive aspects. Hence it has the meta components, it has the performance component and it has the knowledge acquisition component that we will be discussing later on. And the experiential sub theory is that novelty is there and sometimes with practice it may it gets automated with it is get automated.

So, experiential sub theory how skillfully we can use experience to deal with the novel situation and after after you know skillful practice then it becomes automated some activities some behaviors become automated. And contextual theory is that adaptation, selection and shaping sub context is primarily dealing with the new environment new context. So, in which context we can quickly adopt our self we can after adaptation after adopting our self into new environment then we can select some items, select some things, select some strategies, select some specific actions actions or plans selectively and then the shape the environment as per our requirements. So, this is the you can say essence of now how to deal with it. So, to deal with select for example, general intelligence he said that general intelligence was more of related to academic intelligence whereas, the other these type of intelligence are more you know more related to our practical aspects of life.

And it is it and it is an intelligence is not it is not fixed ability it is it is dynamic, it is flexible, it is ever growing and a Steinberg his assertion was led to the creation of the history his theory new theory is Steinberg triatholic model of theory. Now, let us discuss what are these details these things sub theories and the contextual what it deals with. Like for example, he broke the theories into the three sub theories one is suppose the contextual sub theory. Contextual sub theory intelligence is based on the way of the functions including how quickly we can adopt to once our environment select the best environment for our self, save the environment for as per our needs and desires or requirements etcetera. Experiential theory is that how there is a continuity of experience and from the novel to automation and how we by relating these our past experiences how flexibly how skillfully we deal with the current novel situation and over a period of time then automatically it becomes a part of our day to day practices.

So, continuum of experiences from the novel to automation like from the we start we begin with the novel situation, how to deal with it and gradually slowly it becomes a part of our behavior. And it is extremely so, it is so, at the it is extremely at this continuum is the intelligence is the best demonstrator. So, it is a continuous from the novel to the automation and this continuum if we move forward if you practice it with the this continuum at the towards the end it is that intelligence is the best intelligence that is demonstrated. Now, the another sub theory is that so, novel novel end of the spectrum like when we are exposed to new situation. Automation is the end of the spectrum when we become skilled.

So, then another is the componential sub theory. Componential sub theory actually outlines the mechanisms that results in intelligence like for example, before venturing into any new type of product or design etcetera especially in case of the creative intelligence. Three kinds of mental processes are there first the meta component. Meta component primarily deals with you know formulation of strategies like to deal with to monitor the thing, control the thing, evaluate the mental processing etcetera. So, create the plan that is the meta component that a planning especially decision making in a planning skills.

Then after that how to execute that planning that is after formulating the meta components then we try to perform it. Perform it means implement those planning and execute that that is the performance. So, suppose for solving a problem we have proposed some ideas in our mind that is the meta components the planning skills decision making decision plans planning have been made. Now, when we are going to execute it that becomes the performance component. So, execution of the performance component then thereafter we evaluate it at the same time we reflect on it evaluate it and then acquire the essence of it that is the knowledge acquisition component that enables us to learn the new information that will help us in the future also.

So, planning then execution now then knowledge acquisition that is at the end of the solution and of the activity then we grasp the theme the comprehend the theme of the things that is in terms of knowledge acquire the knowledge which will be helpful in future. So, here these three types of components of theories. So, they have that relevance in our life practical intelligence practical intelligence then creative intelligence and another is analytical intelligence. Analytical intelligence as you know is more related to our academic things analytical things are more related to our academic. So, practical intelligence is more practical intelligence is one's ability to successfully interact with the everyday world to deal with the day to day affairs mundane affairs etcetera.

And practical intelligence primarily is reflected is contextual soft theory. Practically intelligent people are specially very flexible adaptable and they have behave in a very successful way in the external environment. Creative intelligence people so, creative intelligence is one's ability to use the existing knowledge to create something new something novel something unique to deal with the new problem etcetera. So, and that is the and analytical intelligence is more of related to intelligence that is essential for the academic intelligence. So, analytical intelligence is used to solve the problems problems related to academics and then standard IQ test etcetera.

So, these are the three types of intelligence creative intelligence practical intelligence and analytical intelligence and its relevance in our life in different different situations. So, however, at the end he said that his theory is known as the theory of successful intelligence. What is the successful intelligence? All the three kinds of intelligence are necessary for successful intelligence which refers to the ability to be successful in life based on one's ability personal desires and the environment based on our motivation our goals our strategy our environment etcetera etcetera. So, this is I can say triarchic theory it has different soft theory why he has the propounded the sub theories and the component different components because for the better clarification execution of this theory analytical that is the come it is the analytical thinking's analytical skills required intelligence is required for evaluation computer comparability and what is whatever the skills that we need in academics creative intelligence is for creative productivity creative output and then practical intelligence is to dealing with the real world problems etcetera. So, this is all the theme this is

all the meta components which are componentials of theory. The meta components performance acquisition and you know experiential sub theory has a novelty in automation how we deal with the situation and how this intelligence, practical intelligence takes us up on the novelty scale. How we go from nowhere on the novel situation to the expert system that is automation. Contextual theories also help us in adaptation selection and shaping of our environment.

So, this is all about Steinberg's theory. In the next class, we will deal with the other types, other kinds of intelligence models and other theories, reconstructivity, of course. Thank you very much.