Introduction to Psychology
Prof. Braj Bhushan
Department of Humanities and Social Sciences
Indian Institute of Technology, Kanpur

Lecture – 16
Learning: Cognitive Learning

We are now on the 6th Lecture of this very topic learning, and we would be talking about Insight Learning now.

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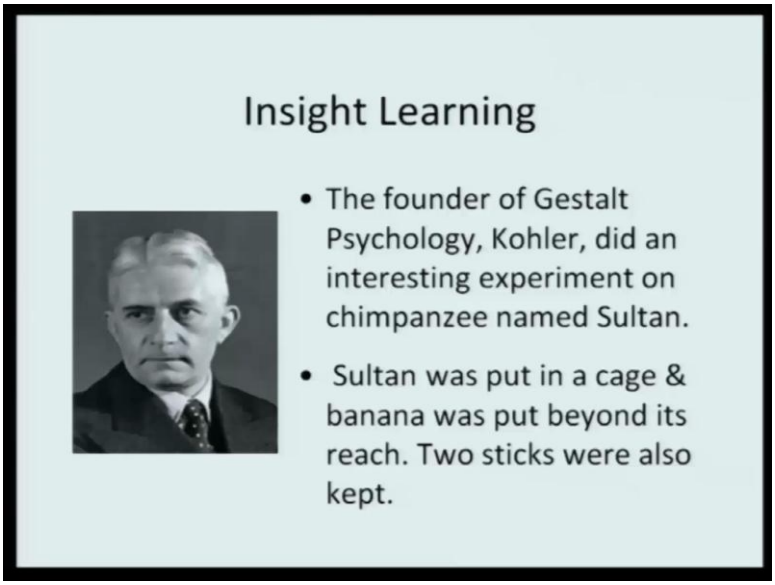

You all Kohler, we talked about him and when we are talking about Gestalt Principles. The founder of Gestalt Psychology, Kohler; he did a interesting experiment on chimpanzee and the chimpanzee was now named Sultan. It was a very interesting type of experimentation, Sultan was put in a cage and the banana was put beyond his reach.

So, you can imagine situation. Sultan in the cage, banana at a distance and two sticks where also kept there. Now the distance of the banana was such that the chimpanzee, Sultan was not able to extend is hand through the bars of the cage to reach the banana. If he would have use the first stick, so the length of the hand plus the length of the stick still would not reach the banana. But, if Sultan could fit those two sticks together and

hold it then the length of the arm plus the length of the first stick plus the length of the second stick this length would be help Sultan reach the banana.

This is what Kohler did and you wanted to see how chimpanzee processes the information and what type of response Sultan come forwarded.

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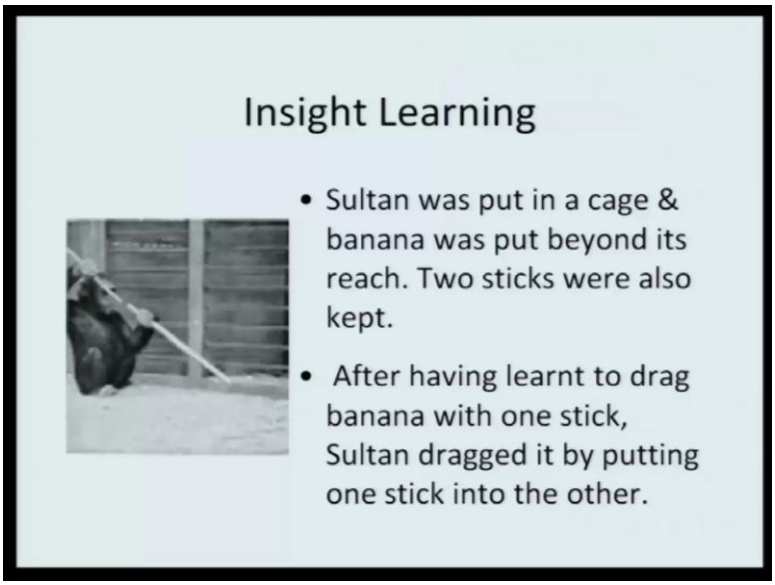

And you can see the photograph here, Sultan basically kept observing the bunch of banana kept there and two sticks. Then what he did? He simply took the first stick second one he just fix one in the other and then Sultan drag the banana using the stick. This was an interesting demonstration of a very very peculiarly phenomena what is called as Insight Learning. Sultan had that insight. It was again a pure case of problem solving that we have been talking about. But then Sultan unlike the previous case did not try out options, he just had some approximation based on which thought of a possible consequence and executed it. Finally, Sultan could solve the problem.

Is it that Sultan would be successful only in case of the two sticks put there? That means, there is now some where a mental map that you draw in terms of the possible sequences that can result you into the desired behavior.

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Following researchers what they did, now you can see in the image on the screen. Banana handed to the ceiling; cases where banana could simply plucked through the help of the stick the way it was done in the case of a banana outside the cage. It was just that instead of putting on the ground the banana was attach to the ceiling and Sultan had to drag it. Other cases where some crates where keep in the wooden crates where kept there and then although multiple crates where kept the chimpanzee could sense that although I have an excess to two crates only two crates are sufficient to reach the height where the banana is hanging.

And several such manipulations are done in the entire experimentation I am not showing you the full images sequence of images rather. But say to say horizontal boxes, one horizontal one vertical layout of the box horizontal two second horizontal, but then because its square box so the chimpanzee was not able to reach the banana some other chimpanzee has to help. And then you realize that all of these things actually took place. The second chimpanzee when they are put in a group situation, this group somehow collaborated they helped in each other in order to each the banana, because the thickness of the thigh you know one chimpanzee was needed to add the desired height.

So these are interesting demonstration of insight learning; as to how in a normal type a situation we use our cognitive map, we use our past experience to thing of the possible solutions that would help resolve the problem. And I am sure all of you have several of these experiences with you.

Having discussed all these things now because we are on our last lecture let us now focus on the bio cultural factors and those bio cultural factors that would play extremely important role in cognitive learning

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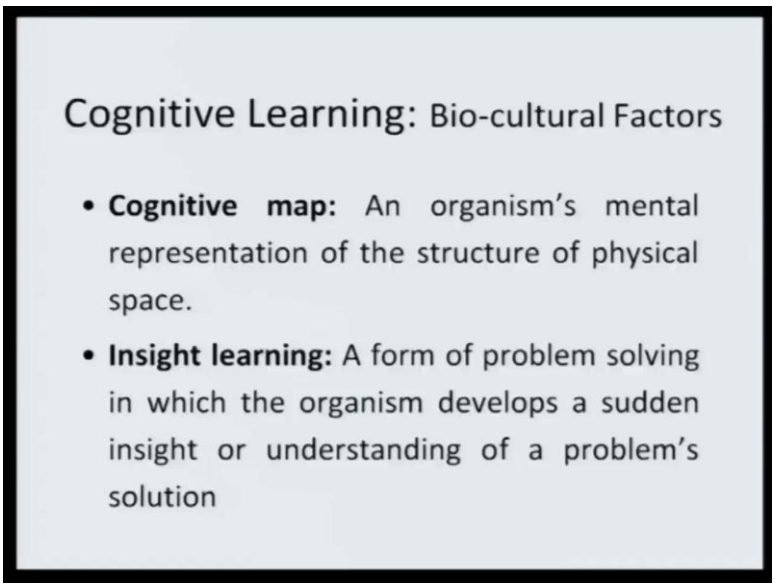

First important thing of course we have talked about it the cognitive map; that is basically the mental representation of the structure of the physical space, how things are the layout you can imagine. Say for instance, we took the example of the this route map from your house to your school or college, but take example say you are a visiting office area which is say spread into six floors and you go on the third floor of the building, but still you can make a sense of how the space would be.

So, the movement pattern although you are not given training into going into this building there is no previous exposure to it, but you can still find root for yourself; with help of signage's, with the help of mental map of construction space that you have with

you. You can think in a given situation what would be the layout, which area is to search for and which areas to eliminate. Cognitive map therefore is always of great help to us as human beings.

Second important we talked about the insight learning. One form a problem solving where the organism develops a sudden insight the individual suddenly understands what could be the possible solution in very case. I am sure many a times in your earlier examination if you where stuck on a given question you would suddenly thing that this could be one of the ways of resolving this very problem, you work it out. And sometimes you must have succeeded that you thought that this could be how the problem this numerical problem could have been sorted out you do so and you succeed.

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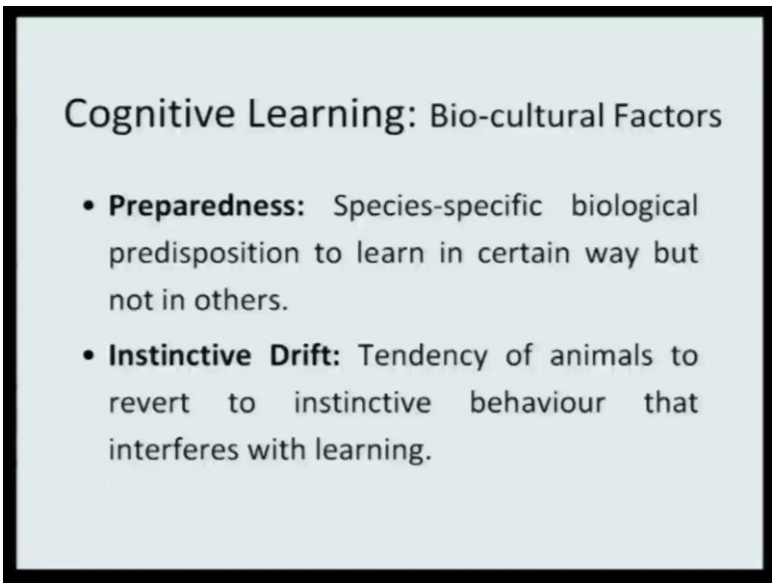

From a biological point of view there are certain things which are extremely important because of the simple fact that you are a biological creature. The important concepts here are one, preparedness. Preparedness basically is what you call predisposition of a given species to learn things in certain ways and not in the other way. Therefore, it is basically a species specific biological predisposition.

Let me give you an interesting example. The famous scientist Konrad Lorenz, he worked on the species specific behavior and basically he was trying to understand how the ducklings behave. What he observed was that when the eggs of the ducks when it hatches and when the duckling come out, the mother duck will start moving towards water body. And all these newly born ducklings they would fall the mother. The mother will go into the water body and will start swimming and so will these young ducklings.

This made Lorenz did a fantastic experiment. What he did was that, he replace the mother duck and instead of the mother duck with the outfit which made him look like a duck he thought that probably ducklings would be guided by this, when the eggs hashed out and ducklings come out Lorenz started going towards the water body then he started swimming and all these ducklings religiously followed Lorenz.

Next time Lorenz what he did he removed the output, he was just like a normal human body and ducklings came out this see Lorenz they again started religiously following Lorenz they went to the water body. And then several other researchers repeated this type of experiment. But the reason I am coating this experiment here is that it is the biological predisposition of the ducklings to follow the mother duck in order to learn swimming. So, swimming is basically a species specific behavior and this is species specific behavior has to be learned in certain way and not in the other ways. It is not that ducklings will have to get (Refer Time: 09:57), will have to go swimming pool; will have to meet a couch pay the fees, the way we humans do.

We are now not biological predispose to learn things that way, whereas the ducklings are and entire animal kingdom we would realize that there is concept called critical period, with in this limited amount of time you have to expose to that very situation. Say like, in the previous lectures we saw the pigeons pecking. Pecking in many many birds is basically a species is specific behavior and when the babies they come out of the egg the mother bird is suppose to make them learn how to peck and this pecking has to now take place within very very shorter period of time immediately after birth ok.

So that is what I am referring to according to the researchers that are available with us. Now one of the most important biologic the bio cultural factor is the level of

preparedness that is needed to learn a behavior. Second interesting thing which is related to preparedness is what is called as instinctive drift. Drift means you withdraw. Instinctively, it already biologically predisposed in you. So, what you do in terms of instinctive drift basically is that you are already biologically endowed with that insight that in certain type of situation which basically goes against the way you are biologically programmed you withdrawn.

Why, you have a tendency to reward to your instinctive behavior, that interferes with the way you are suppose learn as a biological creature. If I am suppose to learn something, for instance pecking, for instance swimming; if I am suppose to learn this very behavior in one way and if you give me some other root to learnt it, it interferes if my learning. And then the movement that happens I will suddenly withdraw, I will reward to my instinctive behavior that is called Instinctive Drift.

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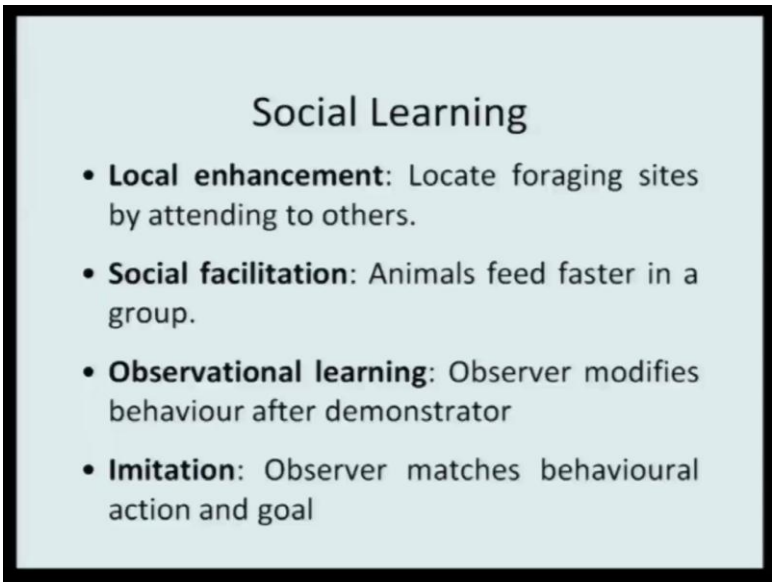

Couples of things which are also important are factors like; local enhancement. Local enhancement basically refers to locating of foraging sites by attending to others, which also is associated with social facilitation. Social facilitation again when you do something more vigorously when you are in a group set up, you behave in a little different way when you are in outer situation outside situation you are exposed to others.

The way you sit when you are all alone in your house to watch television is different from the way you set in the auditorium when there are people sitting on both sides of you.

The behavior changes, the sitting pattern changes, the way we are respond to the situation that changes. So, what happens in the case of social facilitation, the behavior is guided by the fact that you are in a group set up. The best example in the animal kingdom, because we have been talking about instinct biological creatures and such things; is that animals they are they eat faster when they are in group rather than when there are all alone.

Important also from the learning prospective is the fact that the observer modifies behavior after demonstration of it. So you have the model, you try to imitate the model, and then you try to map whether your action is leading you towards the goal or not. In between there could be a possibility that based on certain feedback you change the trajectory of your behavior, you change the course of your behavior in order achieve goal. Say for instance, perhaps one of the best examples could be where you have set a target for yourself, example that we took in the previous lecture that you have set the target of achieving say the president medal or say scholar batch after attaining the height possible score in your group, but then it is not only the goal that matter it.

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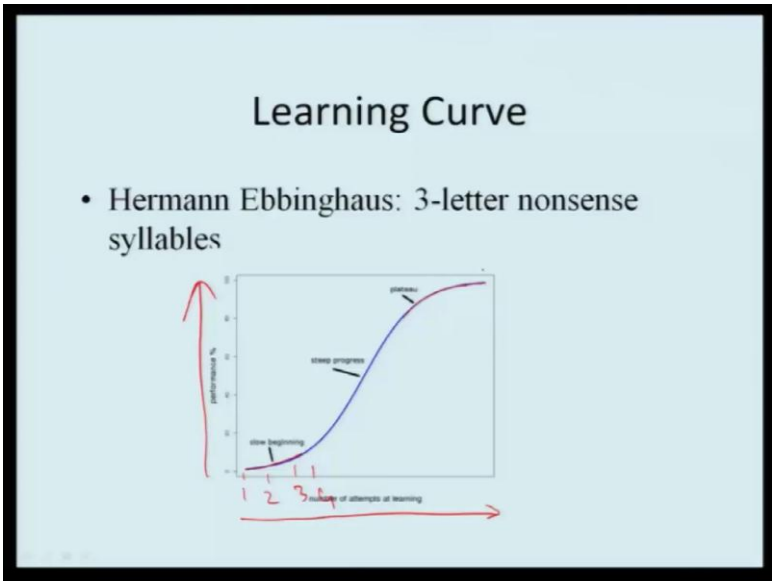

What also matters is the means that you adopt for it, whether I prepare myself well for the exam and then attain the maximum possible score or I go for cheating and then score the maximum possible score. Now what happens although you have set the target achievement of the target is that something that you are (Refer Time: 15:03) for, but then it is not now only nearly achieving the highest score in your exam rather the means that you adopt. How, whether it is a socially celebrated, socially acceptable, model of behavior which will help you attain the goal or any how you attain the goal and nobody will care what means was adopted to attain that goal. So, that is very in interesting and important in case of human beings.

Now let we are left with just few minutes to end this topic let us talk about two important constructs; one the experiment performed by Ebbinghaus. What Ebbinghaus did was that he created a three letter composites what are in psychology called as nonsense syllables. Nonsense syllables are just the opposite of meaningful words. For instance say we say cat; now c a t are three independent alphabets but when put together human beings considered that this is a meaningful word it represents an animal. But say for example, you have something like n l a o f p these are collection of alphabets, but they does not make any sense.

So, these meaningless type of assembly of letters which does not allow you to make a mental representation because they are nonsense therefore they are called Nonsense Syllables. And nonsense syllables are basically very generously used in research in psychology, because it helps you understand learning in purest form. If you use meaningful words then many context dependent variables will interferes with the outcome, and you will not be in a position to come forward with the purest form of a research outcome. It will have confounding in factors.

You want to eliminate those confounding factors and therefore you need a things which although might appear nonsense, but it helps to understand how people learn. What Ebbinghaus did was he created set of nonsense syllables with three letters and then he wanted to understand that when we learn what is the rate of learning, how many attempts do you take, and what is the success rate.

So, what he did was he plotted a curve out of it. The curve basically had the number of attempts here, so the number of attempts here how many trials you take first time second time likewise, first time, second time, third time, four time, so likewise the number of trials. And here on the y axis he had the percentage of recall. How many of the nonsense syllables were you able to recall. What he realized was very interesting and this is called as Learning Curve.

In the beginning our learning is slow and suddenly you realize that this is a steep progress. You learn very fast and then after a particular level you realize that you reach a level of stability, what is call as the plateau state now. So, no more learning or no more significant enhancement in learning after that that is called as Plateau State. So, slow beginning, reaching plateau state and in between you have very steep progress that is what is called as learning curve. And this was given by Hermann Ebbinghaus.

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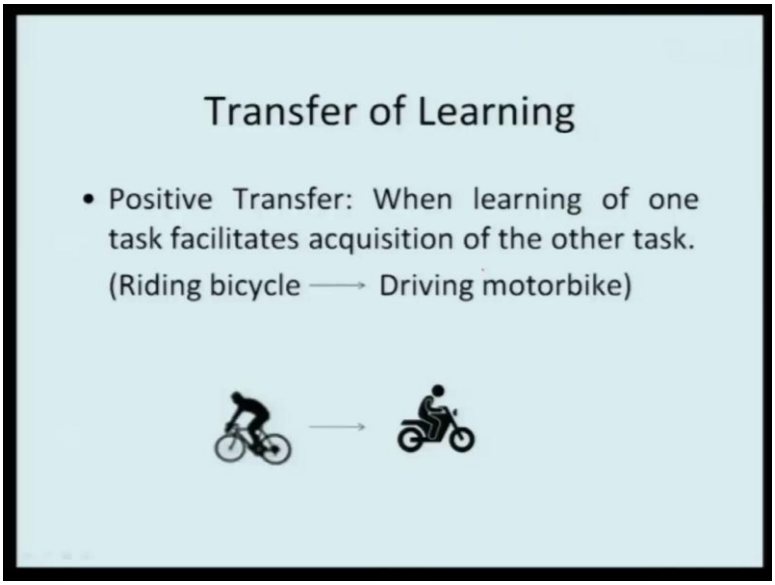

Now, at the end let us talk about transfer of learning. Is it that learning of one thing helps us to learn the other thing. So, is it that what we learn first has any influence on what we learn later on, what could be the possibility. So, the facilitate role or the inventory role or perhaps no role that the previously learned has over the new thing; the incoming learning information that is what is called as transfer of learning. There are three possibilities, positive transfer can be there. For example, when you learn one task and the acquisition of the first skill helps you understand and learn the second set of task that is the example of positive transfer.

For example, you learn how to ride a bicycle. You learn how to pedal, you learn how to balance the vehicle, you learn how to take turns you learn, how to use break entire mechanism you learn. Next time when you learn riding motor bike you realize that it is now facilitated; only few mechanisms have tries to learn. But otherwise riding your bicycle has very easily helped you learn the new skill that is driving a motor bike. This is an example of positive transfer.

Earlier learn task facilitates acquisition of the new task positive transfer. The other possibility is a negative transfer.

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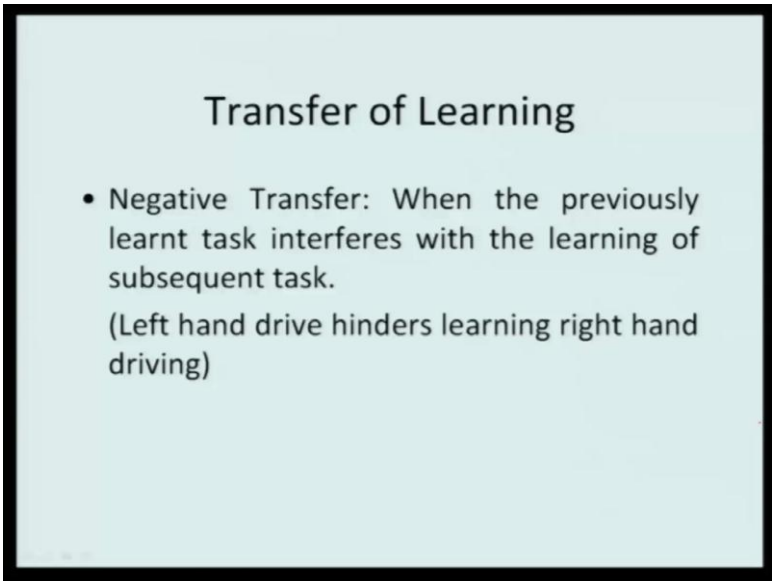

Negative transfer would be a case where thing that you have learnt previously now it interrupts the learning of the subsequent thing. You know that in few countries you have cars with steering left side and in few countries you have cars with steering on the right side. For instance, in our country we have the cars with the steering on the right side. Imagine if you are made to drive a car, if you ask me to drive a car with the steering on the left how would I perform. And it has been realized that the left hand driving it always the hindrance the learning of driving using the right hand. Those who know we are says know left hand drive, so you always you are suppose to be on the left side.

In few countries a rule is different; you are supposed to be on the right side. You have great difficulty because you have learnt task in a particular way and this learning has how started interfering when you have to learn things in the new situation. Such type of interference they are called negative transfer because it is adversely affecting learning of the subsequent task.

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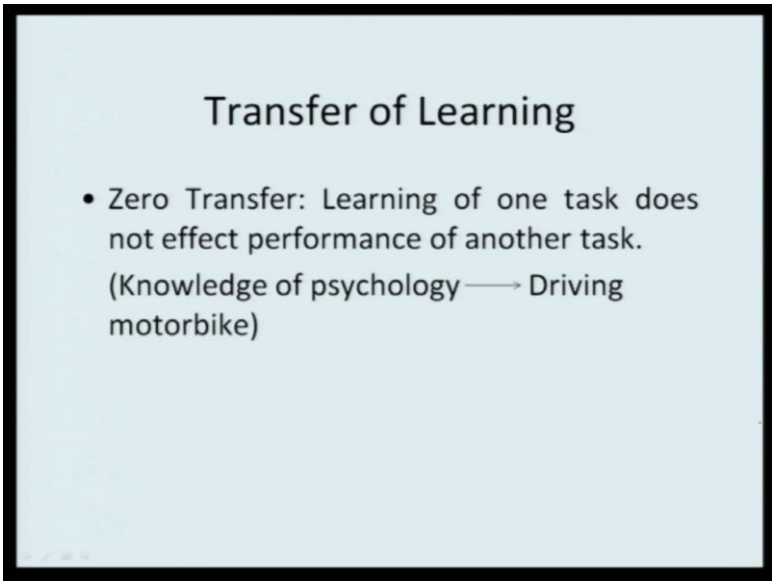

And another possibility could be that the previously learnt thing and the new coming thing both of them are completely disconnected. There is no connection between the two. So, learning of one task there is not affect the performance on the other task. And the best example could be that after attending how many 12 lectures of this very course, if you have to learn how to ride a motor bike knowledge of psychology is not going to either positively or negatively interfere or help in the driving the motor bike, so there is zero transfer. This is a different that is a different (Refer Time: 22:30) all together. So, knowledge of psychology has no relationship with driving of motor bike this is the example of zero transfer. So, you realize that this does not work. This is the case of zero transfer.

So, with this we come to our end of our discussion on learning. What we have done till now, we have talked about how we sense stimuli in the world, how we assign meaning, how we perceive things. Having perceived things we learn certain things, there are certain guiding principles, we are biological creature, they are some certain bio cultural factors, certain things which we passively learn, certain things that we actively engage our self and then we learned. First was classical case, second was the operant conditioning case. Something which we learn because of our insights; there are cognitive

factors that helps in this phenomena. And now having perceived things I have learned things now, what after this.

After I have learned I will try to retain it, when I retain it and that retention helps me recollect that information which further facilitates my healthy survival that is what is called as Memory.

So, when we meet next we will be talking about a new concept that is memory.