

Psychology of Learning

Dr. Atasi Mohanty

Humanities and Social Sciences

IIT Kharagpur

Lecture – 31

Learning and Instruction

Hello viewers, welcome back to this NPTEL course on psychology of learning. So, today we will start a new topic new lesson that is learning and instruction. So, by this time all of us we are already having some definitions about learning. So, learning is a cognitive process and again it is you know it is an it is an skill of adaptation skill to get it get our self adjusted to the environment to is a relatively learning brings relatively permanent changes in our cognition in thought process it influences our behavior. And again learning is a thought to be act or the as an act as a process which develops changes in our behavior in our cognitive reframing in our even emotional intelligence in social adjustment all these things all these are the definitions of learning that we have already gone through it. Now, but what others are thinking about learning what the people are thinking about learning what how a layman will define learning.

So, learning as a if you analyze the different aspects of learning. So, learning as a quantitative increase in knowledge. So, learning is always progressive learning bring changes which are positive in nature unless until it is positive we cannot say that it is learning ok. So, learning is acquiring the information knowing a lot about the know hows know wants know whys all kinds of thing learning is also related to memorizing storing the information and reproducing it retrieving retrieving this information whenever it is required learning is also acquiring the fact schemes methods of doing certain things problem solving conducting the experiments all these things learning is also as making sense of abstracting and meaning at the higher level of learning because we have already discussed about the cognitive hierarchy. So, in this hierarchy you know learning memorization application to then analyze analysis then analysis then then evaluation then creative thinking creativity. So, in this way when we move up move up towards the higher level of cognition then automatically we also we also learn we also conceptualize we construct the new concepts new schemas and we can understand the abstract meaning of certain things some abstract concepts. So, making sense or abstracting the meaning again. So, it is a learning is also it involves not only the theoretical knowledge, but also subject matter related to the real world practical knowledge two aspects as per his or her understanding or perspective. So, learning also involves the comprehending the comprehending the world and reinterpreting the knowledge.

So, all these are the definitions of learning that people think about it. Now we can say again learning can be a product because when we map it in terms of learning outcome in terms of behavioral changes in terms of behavioral outcomes which can be measured which can be assessed and evaluated then it is a product then learning as a product because it is a result is a result it is a outcome. So, Robert Gagne actually he defined the learning as a change in human disposition or the capacity that persists over a period of time and is not simply an ascribable process of growth. So, Robert Gagne is a theorist is a instructional theorist he said that learning as a product means how can we define it as a product? Because it whatever changes it brings in the human disposition and his capability to persist over a period of time it can be mapped it

can be measured not just simply in terms of a process of growth, but it can be captured it can be measured it can be evaluated it can be assessed through proper through proper tools. So, it is a product when we quantify it when we measure it when we you know we describe it as a result of like behavioral changes behavioral changes behavioral outcomes as a result of the product as a result of the learning behavior then we will be measure map that product map that behavior map that changes which is primarily is a progressive changes positive changes then we can say learning is a product.

Similarly, learning can also be process learning can be process also like when we are undergoing the different changes when our brain our mind is engage in different kinds of analysis in different kinds of processing information processing whatever we have already learn. So, even also cognitive processes affective processes and when we learn new skills etcetera. So, these are all learning as a process.

So, in this context bloom bloom's taxonomy we have even though we have already discussed it. So, bloom Benjamin Bloom's taxonomy of educational objectives categorically bloom has defined different types of instructional objectives which can be incorporated integrated when integrated in the curriculum when we design specific curriculum courses for different categories of learners students stakeholders etcetera.

So, primarily these are the cognitive skills which are the mental skills related to knowledge knowledge information processing all these things and affective processing affective skills are like you know growth in the feeling emotional areas like the we talked about discuss about emotional intelligence this is also aspect of the emotional information processing. Then the psychomotor skills psychomotor skills in terms of either manual and the physical skills which gets manifested through our performance through our behavior through our action etcetera. So, Bloom's taxonomy has primarily categorized these kinds of educational objectives or the instructional objectives that has to be incorporated into the course and curricula. Now, here how can we define learning as a process how that means, learning as a process because when we are engaged in solving certain kind of problem or conducting some kind of programs or you know solving or engaging in some kind of you know examination on some kind of product. That means, retrieval of our memory and producing it in terms of question answer in terms of writing in terms of delivery in terms of presentation whatever.

So, in this process how do we how do we retrieve it how do we conceptualize how do we understand it how do we interpret it. So, all these mechanisms are learning as a process. So, David Kolb David Kolb. He again psychologist he explore he has explored the experiential learning like starting again. So, David Kolb has given a learning cycle stage like from the from the you know from the onset of the stimulus the moment we receive we attend to something and we receive the information then thereafter how we process how we analyze how we think how we experiment all these things going on in a circular way in a continuous way then at the end we end up in getting a result. So, Kolb has already developed a kind of learning cycle and he is he is learning definition theory is primarily known as the experiential learning theory.

Like let us start with let us start what are the stages these are all the stages are the learning cycle. First is the concrete experience with the concrete experience we get the stimulus from the environment whatever may be the situation the from the concrete through our sensory organs through our concrete experiments through our sensory organs we receive the information from the different kinds of stimulus environmental stimulus from the environment etcetera that is the concrete experience we we sense it we capture it we perceive it we receive

it through our sensory organs. Then thereafter we start observing that thing observing and reflecting on that process like whatever concrete experiences that we have gathered from there we try to interpret it try to observe certain things try to reflect certain things try to try to perceive it and interpret it. So, that is the second stage. Third stage is that to the form of the abstract concept on the basis of a its observation analysis reflection our perception etcetera then we form certain concepts which may be schema which may be abstract concept like oh this may be the that means, when we interpret it and make it more concise and form an abstract concept we say that is the third stage like we perceive it as this. That is our idea about that stimulus that is event whatever. So, that is at the third stage then we form certain abstract concept about about the stimulus about the experiences that we have received.

Then thereafter we try to validate it whether it is true or false whether it can be relevant or not can be authentic or not then we try experimenting or testing it in the new situation. So, here we can say whatever we have understood and captured we try to experiment it in the new situation to validate its authentication. So, as you can see these are the hierarchies of you know hierarchies of learning hierarchy hierarchies of the learning Bloom's taxonomy in the cognitive affective and psychomotor. This is the old it is the old cognitive you know taxonomy, but the revised one is revised one is that the highest level is the creative thinking creativity. And so, here it is after analysis then evaluation then creativity ok.

So, it is the older one. So, affective hierarchy is the same these are the affective how slowly we proceed move on first receiving to responding to valuing then organizing then characterizing. Then actually that means, it gets blended it gets integrated in our behavior in our value system that is the that is called the characterization. That means, we have adopted it and we behave it we use it we utilize it. It has become a part of our system. Then similarly in the psychomotor also the reflex activities then basic fundamental movement then perceptual then physical activity physical activities that we learn then the skill movement then comes your non discursive communication.

Like when after the skill after the skill when we blend some intellectual thoughts intellectual like our cognitive components more detail interpretation our original innovation and interpretation of that matter. Then when with the skill movement skill performance when we blend the cognition our interpretation higher level of understanding and it not only it becomes autonomous, but also it becomes more competent. So, there from the skill to competence we need to add more cognitive interpretation ok. So, in this way the psychomotor objectives instructional objectives in instructional objectives vary as per the nature of the course if for example, we are designing in engineering course or designing in engineering course: what kind of things will be more important more loaded? Like cognitive component will be more loaded and the psychomotor component will be loaded. May be the lower some smaller percentage of affective domain effective content will be there, but it depends again, but it depends on the nature of the subject.

Suppose we are talking about the English literature or you know any kind of artistic concept then and then it may be loaded with the cognition and the emotion and less may be on the psychomotor. So, depending on the nature of the subject the educational objectives instructional objectives will vary. So, similarly John Dewey. John Dewey is also another educationist psychologist. He has a reflection learning and education model. He has defined how reflection can be important part in the learning process and education. So, returning to the again experience that is to say that recalling or detailing the salient events.

So, when we reflect on the actual event. So, that we reinterpret we reanalyze our experiences then we detail it out. So, attending or connecting with the feelings this has two aspects when we attend and connect to connecting with the feelings attending to stimulus and connect to the feeling it has two aspects one is the using the helpful feelings and removing the obstructive one. Thing is that when we attend the feeling component affective component first thing is that we try to use whatever helpful for us that is the positive things we use the helpful feelings that we experience we try to practice it more and remove the obstructive ones the negative ones the you know unused or unrequired things. So, removing the obstructive ones then we again evaluating the experience then after that we evaluate our own experience involving the reexamining the experience in the light of one's intent and existing knowledge etcetera.

So, when we evaluate our experience we compare it we analyze it in the context of in the context of our previous experience and knowledge existing knowledge and experience and our intention our purpose our goal and purpose then it is also involves the integrating this new knowledge into our one's conceptual framework. Again it is a flow of learning cycle learning as a process starting from starting from reflection that is it experience analyzing the experiences reflective learning to you know to attend to the positive things taking up the positive feelings then evaluating this experience in the context of our knowledge existing knowledge and our purpose and goal and intention then we integrate in our system.

So, again it is here is also a learning as a process as you can see reflecting reflecting then reflecting on the then experiences from the experiences whatever we have received we reflect on that then we then we frame it frame it analyze it frame it and then we act it again these are the processes. So, in this way we learning is learning is a process and how to understand it when we are engage self engaged in the process we need to analyze our self and when we like here again meta cognition meta learning that when we if we try to understand our own learning process then we can better understand how do we learn what are our learning mechanism our learning styles and in which way we learn better all these you know reflections meta learning takes place. So, there are again so, when we talk about the learning how it is related to instruction is primarily related to teaching, but teaching is the normal word layman's word, but when we put it in the formal language then it becomes instruction is, but it is equivalent to teaching will teaching normally we say that it is teaching, but in the formal set up it is called as the instruction, but these are same meaning meanings are same.

So, with regard to learning and instruction there are primarily we have already discussed about the different theories of learning information person etcetera. So, their approach all these different schools they have different approaches towards the learning how to learn how to teach how to put the how to design the instruction. So, they have the different schools of thoughts they have the different orientation towards the learning. So, primarily these are the primary schools of schools of learning theories which has which have the significant contribution towards the instruction or behavioristic orientation towards learning cognitive orientation towards learning humanistic orientation social and situational orientation and then constructive social constructive orientations. So, now let us discuss you can see these are the primary the primary these 5 schools of thoughts are important and they have significant contribution towards the learning and instruction.

So, behavioristic what is let us see what is the behavioristic orientation. So, there are key assumptions as we have already discussed a lot of a little bit about the behavioristic approach towards learning towards the information processing towards the human behavior etcetera. So, observable behaviors you know they are they are theory stimulus response you know stimulus

response response connectivity. So, when this S and R stimulus response connectivity gets strengthened then it then we say that yes some changes has taken place hence it is the changes hence learning. So, we can say that learning has taken places because it has resulted in some changes.

So, here observable behavior rather than the internal thought. So, they primarily believe on because human behavior changes be it learning be it whatever if any changes modification of behavior has to happen in our in case of human beings or individual then that has to be observed that can be captured that can be observed that can be measured. So, anything which is going on internally whatever he is thinking or that internal affairs are not under the purview of the behavioristic orientation. So, observable behaviors is the focus of study ok. So, when we talk about the instructions instruction example means it must have that objective instructional objective that which primarily which primarily focuses on what are the observable changes in the behavior of the learner.

So, that is the primary focus of the study. So, observable behavior is the major focus of the study of learning and instruction. In particular when learning is manifested by a change in behavior what kind of behavioral changes has taken place that whether that can be observed and captured and measured or not again because you know they were using this reinforcement as a mechanism to shape the behavior to bring it down to the correct behavior accurate behavior. So, manifested by the change in the behavior which can be observed and measured ok. So, environmentalists they are they are primarily the environmentalist.

So, they say that environment primarily saves one's behavior and here educational environment is very important in shaping the behavior because environment primarily primarily solely primarily and solely responsible for bringing that positive changes in the learners behavior. So, that is the environment saves ones behavior and what one learns is determined by the elements of the environment. So, it is so not by the individual learner the individual learner may may be may may have may may come up to the school or to the college to education institute their individual diversities etcetera that is not an issue, but if you can provide the enrich environment good classroom good method of teaching good resources then then positive changes can take place ok. So, but the things so environment primarily responsible for setting the behavior then principles of contiguity.

Contiguity is that repeatedly if something is happened again and again repeatedly. So, then that can bring the changes and provided these kind of continuous processes are being reinforced. So, contiguity is that how close in time the two events must be for the bond to be formed. So, when these kind of stimulus be a response connection behavior kind of kind of behavior is getting repeated. So, that they get closer that means, that they have become related and reinforcement also by means of increasing the likelihood that that event will be repeated. Like suppose the child is doing adopting some kind of behavior repeatedly again and again, but and for that behavior he is also reinforced.

Then there is more likelihood that the child will repeat that kind of behavior. So, here reinforcement and the principle of contiguity how closely these two events happen together ok. So, these principle of contiguity and reinforcement these are the primary factors that explains the learning process. So, learning as a process these are the significant factors. Then the cognitive let us say cognitive orientation.

So, what is what are their principles? So, they say that cognitive is that instruction should be

well organized ok. Instruction should be well organized learning material should be well organized. So, that can be it not only becomes easier for the learner to learn in, but can be remembered better ok. So, instruction should be clearly structured like in an inductive way in an hierarchical way from the simple to complex. So, that means, the subject matter that must be you know this is kind of you know sequence in inductive order and the inherent structures are there how they are being related logical relationship should be there key ideas should be and concepts should be focused again and again would be highlighted would be you know would be arranged in a separate way.

So, that the learner gives more attention that these are important factors key factors it has to be strengthened it has to be remembered in a better way. So, all these thing cognitive that means, learning components the concepts all these should be properly structured properly related in a logical manner in the sequential manner primarily from simple to complex in a and key ideas and concepts should be highlighted. And here the perceptual features of the task are also important learners attend selectively and different aspects of the environment. Again here perceptual features like for example, in order to attain to a stimulus it must have some characteristics some visible characteristics some auditory characteristics etcetera. So, how do the learners perceive it? So, how do the learners perceive it? So, that is that kind of that perceptual features of the task is important if how can this component especially in case of children in case of children why do we teach them through pictures through music through paintings to drink because you know what actually attracts the attention which component of the learning which content which component which aspect of the learning content actually attracts draws or draws their attention.

So, that is why it is more of color more of picture more of visuals. So, that perception which can capture the attention. So, this perceptual feature of the task are more important are more important in case of the in case of the learner because the learners attend selectively to the these different aspects of the environment and then understand the inherent meaning of it. So, the way is the way a problem is displayed is important and if the learner to be understand. So, we have to demonstrate it the teacher has to demonstrate it how the problem is being solved.

So, in a sequential here in a in a very practical and the real life context. So, then the learner can understand it better. So, prior knowledge is definitely is a background existing learn less prior knowledge is very important because whatever the new learning in case of the new learning whatever the learner new encounters faces or encounters are get exposed to that new learning he always try to interpret it understand it on the with reference to his backup knowledge or background knowledge. It is the automatic process. So, the more a past learning experiences your mental your mental readiness education readiness or entry behavior will be there then it will be easier for the learner to quickly grasp the subject. So, again difference between individuals are important here again they give more importance to individual differences they like every individual is different and all the individuals are different with respect to their not just to their traits their abilities their capacities, but related to their you know learning style their preferences their cognitive style all these.

So, individual difference is a inevitable phenomenon in cognitive theory. So, how to address these address these individual differences. So, again cognitive feedback gives information to the learners like after that means, after few few after some time only very often we need to give some kind of feedback because feedback is a kind of information which gives the learner which gives the idea to the learner how successful he has been where is the failure what could be the causes of causes of failure etcetera. That means, feedback is that is the knowledge of

the result here in case of learner it is the knowledge of the knowledge of the result or knowledge of his the knowledge of the result of his progress he is making.

So, their success and failure. So, quick feedback cognitive feedback intellectual feedback about the feedback regarding their understanding their way problem solving their perception their you know learning style all these kind of cognitive feedbacks are very important. And reinforcement can come through giving information that is knowledge of result this feedback is also acts as a reinforcement rather than simply the simply a reward it also acts as a reinforcement. So, knowledge of the result or the feedback it also acts as a reinforcement in the cognitive orientation. And in humanistic orientation of the learning the significant learning elements takes place. It has been propagated by the Carl Rogers. Rogers is the humanistic orientation to learning is that it gives more importance to the quality of the personal environment.

So, individual learners involvement engagement in the whole learning process. So, the whole person is both the feeling as well as the cognitive aspects in the learning environment are important here. It is not just about the cognitive understanding cognitive effort cognitive analysis etcetera, but both feeling and cognition. That is a here whatever the learner not only understands learns is a important, but also whatever he is he feels how much involved he is there in the learning process how much engaged he is there. So, he how much he likes or dislikes the learning event.

So, all these both the feeling aspect and the cognitive aspects are important. And it is self initiated. Often it is self initiated because suppose the learner likes the event likes the subject likes the process likes the classroom activity then he initiates himself he volunteers. So, the essence of a discovers of reaching out. So, and of grasping comprehending comes from within. So, all kinds of then when he becomes interested self he has taken the self initiated effort.

So, then the here the whenever he gets any stimulus from the outside then he try to explore it try to discover it try to reach it out and try to grasp it comprehended and come. So, all these kinds of feelings activities and efforts are it comes from within because it is self initiated he has taken himself the initiative. Then again it is pervasive. It is always it all pervasive it makes a difference in the behavior in attitudes and even the personality of the learner. So, thing is that whenever the learner is learner likes something feels better likes to like something. So, he initiated she/he initiate he has taken some initiative self initiative to understand it to know further to discover to comprehend analyze.

So, it also it is all it is always happening it is all pervasive it is always happening and in this process it brings differences not just in the knowledge domain, but also in the attitude, but also in the behavior in the personality of the learner because it is self initiated and as it combines both the feeling aspect and the cognitive aspects. So, it brings changes some sort of changes, holistic changes in the individual behavior like changes in the mindset in the attitude changes in the feeling changes in the personality changes in the knowledge domain. So, it is then again the it also it is also evaluated by the learner. So, learner himself also from time to time evaluates all these processes.

So, she knows it whether it is meeting. So, in this process of evaluation he also maps it whether he actually requires it or not whether it matches with his interest with his need or not whether it leads towards the towards what he actually wants to know. So, whether it illuminates the

dark area of ignorance that she is experiencing whether he that means, whether it is actually giving him some information some enlightenment in terms of acquiring new knowledge and satisfying his intellectual needs etcetera. So, he learner is engaged in evaluating and verifying whether he is actually getting it or not whether he is learning something which is substantially helpful for him or not all kinds of things. So, here the locus of evaluation locus of evaluation is that which decides definitely in the locus of evaluation is like for example, locus of control locus of locus of control is that when we attribute certain something for certain reason for something. So, here locus of evaluation when he is engaged in the process of evaluating the authenticity the usability the validity of that information that he is exploring day by day.

So, he also he also evaluates from time to time. So, the evaluation locus of evaluation stays within the learner only because he is the individual who explores everything. So, he self checks it he explores it see. So, locus of evaluation it definitely resides within the learner. So, then the essence is meaning ultimately its essence is meaning which the learner learning when the learning takes place the elements of meaning is that the to the learner is built into the whole experience. So, here whatever he is experiencing he is feeling he is getting the meaning he is comprehending and grasping and understanding.

So, ultimately he the learner will summarize it summarize it into a wholesome experiences and whether it has been very valuable meaningful valuable or not that he has also evaluated. So, everything is the humanistic orientation that is individual's own orientation towards knowledge learning cognition. So, it is not just about only cognition, but cognition and feeling and affection and it is self initiated and the it is locus of evaluation. That means, learner is the it is more of individual centric learner centric learner himself takes initiative to to explore further to learn and to and to evaluate from time to time whether it actually satisfied his own academic curiosity or needs or not. And whether it informs us or improves his understanding or not or give him more you can wholesome experience or not that is up to again up to the learner.

So, it is more of learner centered more of individual centric. So, humanistic orientation of learning. So, that is more of individual centric. So, and individual that is what the learner requires his needs his assessments and his self initiative for taking up or learning these things. So, it is primarily individual centric learner centric. Now, we will continue with other schools in the next class. We will discuss it. Thank you.