Psychology of Learning

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Lecture – 10

Major Theories of Learning (Contd.)

Hello viewers, welcome back to this NPTEL course on the Psychology of Learning. Now, in the last class, we have discussed brain-based learning. So, we will move on to another important theory of intelligence. So, we will discuss cognitive processing theories, information processing theories approach and its relevance. So, Guilford's model of the structure of intellect. Intellect theory. So, at a time in the past, there was a debate on whether intelligence is one ability, multiple ability, seven ability, nine ability. So, many researchers were coming up with their own theories of one factor, two factor, multi factor theories etcetera lin this context in this era during 1955. So, Guilford has rather come up with a three- dimensional model of our brain, of our intellect, intelligence. And he proposed that neither we have one, two, three, seven, nine types of intelligence, rather we have hundred and eighty different intellectual abilities. So, he developed this model that is called the structure of intellect model and he developed a three dimensional model.

As you can see there is one dimension when we receive the contents in different modes: visual content, auditory content in this. So, content is one dimension then how do we process, what do we do with that content that is the operations that is the processes that is another dimension and within these interaction what is the product, what is the output. Hence these theories are known as the three dimensional theory and structure of intellect theory. So, we can say this is the most exhaustive and elaborated approach to how the brain functions. So, for example, here we can say when we receive the content, we receive the content in terms of environmental stimuli through the input process.

So, the content can be either some visual content, some auditory content, some symbolic (also in some symbol signs also we receive different content), semantic (meaning something related to meaning that is also a content) and behavioral content. So, whenever we receive the content input data it can be of any type of these. You know here five types of content can be available. Similarly, when we process the information or we memorize it, we analyze it whatever we do with that content. So, operations are actually the brain functions processing. So, either we know it just for the information section, the information section we just know it there is cognition, we acknowledge it, we know it.

Then we try to remember it, that means memories also. Then divergent production like for example, we then whatever we know we learn we try to diverse it, diversify or think of multiple applications, multiple implications, diverse ideas out of it out of thing. So, divergent thinking this is a divergent production. So, divergent means multiple ways and means of that product that analyzes that product. Then or else convergent production maybe after too much analysis then we have to converge into one category, one term, one that is convergent production and thereafter evaluation.

So, there can be any type any of these five operations can happen to the content. And whatever would be the ultimate output that is the product that is either we produce, maybe whenever we are asked in different work places in the examination in our day to day problem solving situations, projects etcetera. The products can be either we produce some term sometimes in terms of units, in terms of classes or categories, in terms of relations maybe that will be asked to find out the underlying mechanisms of it is integration etcetera formulas etcetera relation. Or we need to develop some systems of functioning systems, systems thinking systems, design systems, operations etcetera or maybe that we are required to transform from one stage one phase to another phase or one condition to another condition. So, maybe that the output may be the transformation, transformatory the transformation and maybe that implication when we think of it is applications and implication in social context, in different educational context, in different financial context, in workplace content.

So, in this combination, the here we can see. So, 5 into 3 is a 5 into 5 into 6 these are the 6, 5 into 5 into 6 that is that total 180 factors that means, these are all in 180 abilities actually intellectual abilities. Suppose for example, we have picked up visual content then operation suppose visual content we suppose engage in diversion thinking, diversion production and maybe that and the product may be required that is a system. So, visual content with diversion functioning, diversion operation with the product as a system then that means, these 3 combinations these 3 combinations these 3 types of intellectual abilities are required. How to process the visual content, how to process it in a diversion way and how to come up with a product like the system building the system.

So, in this way we see how active the brain is and how it functions: it operates in the 3 dimensions. So, that is the basic model of the structure of intellect model that is Guilford's model and it has also given a new vision that the brain is not a kind of 2 dimensional, but rather the brain is 3 dimensional. And initially it was you know one input and output and these and one way and the outcome learning and outcome something like that, but now Guilford was the first person to give a 3 dimensional perspective of brain functions. So, to continue with that only so, Guilford's that is known his theory that is known as the structure of intellect theory and there are 6 kind of operation as we have already discussed 6 kind of products, 6 kind of products, 6 kinds of operations yes 6 kinds of operation, 5 kinds of content in total that 180 different components of intelligence. So, with the combinations 100 and 80 different components of intelligence can be there.

Hence the diverse and so, now, later on the divergent production operations identifies the number of different types. So, now, diverse divergent thinking later on actually Guilford's major work was in creativity and innovation innovative thinking. So, when he translates his theory into the creative thinking aspects. So, they are divergent production, divergent operations and divergent productions were analyzed as the divergent thinking and convergent thinking. Diversion thinking is that whenever we think of multiple choices, multiple solutions, multiple hypotheses, multiple applications of a particular product that is diversified.

We diversify our thinking process. Convergent thinking is that when we have diverse ideas, but automatically we have to converge all these things into one potential thing then the convergent thing emerges. So, that will be further discussed in the creativity aspect. So, here it has immense applications, it has immense applications. However, this model functions on the basis of the 3 principles, 3 different principle reasoning and problem solving.

Convergent and divergent thinking are very much relevant in case of problem solving when we try to develop some develop some hypothesis, some strategies for solving a problem, problem solving skills, reasoning skills. So, in case of the memory operations, memory operations also this principles of memory operations also 6 products and 5 contents it can be divided into 30 different kinds of skills which can be relevant in case of the memory. Decision making skills also. In decision making skills when the evaluation operation is involved, so, it can be subdivided into 30 distinct abilities that are the 60 products and the 5 contents. Similarly, language related skills and cognitive operations are very important.

So, there also it can be brought into 30 like 6 product and 5 content to 30. So, in this way intelligence is not the one just 2, 1, 2, 7, 9 etcetera, but rather 100 and 180 in totality and 30 and multiple that is double digit operations are also required. So, this as you can see in this model, this model the same thing has been elaborated. So, there can be any combination of anything provided we will see what type of stimuli, what type of the content is an input. So, here the Ganesha's then after thereafter is Robert Gani is there Gani's theory is it has got Robert Gani theory has measure implication for the education and instruction.

So, Gani's conditions of learning he says that how to create the conditions of learning and how to strategize strategize or divide it divide this divide this whole conditions of learning into different events different as per the instructional hierarchy as per the instructional requirements. So, he is as you can see Gani's Gani's the 9 steps of instruction is involved. So, when for example, in a classroom situation when any lesson is being taught by the teacher it involves separate different conditions different events and if you can organize this event sequentially logically then it can make the instruction very successful. So, the these conditions are the outline of a sequence of events that enhance the learning process and promote the effective instructions. So, when it comes to effective learning and effective instruction.

So, then we have to strategize these events of instruction in a hierarchical way. So, his theory is known as the theory of learning and instruction because it has an immense relevance for the education teaching learning situation and how the teachers should manage the individual lessons. So, in the individual lessons like for example, nowadays in education on pedagogy also like all the teachers are supposed to design prepare a lesson plan and how to design that lesson plan what should be the component etcetera that is also a science behind it that is the science of pedagogy is there.

So, similarly Gani's theory. Gani has actually proposed that teachers should design a lesson and a framework of the learning sessions. So, these 9 events actually provide a framework for designing and delivering the instruction in a very structured and systematic manner.

So, what are these 9 steps let us see what are these 9 steps. So, this is called the 9 Gani's 9 events of learning and instruction. First step you can say is getting the attention of the students and how to draw attention. Second, inform the students about the objectives like when we introduce a lesson, introduce a topic, etc. It must have some instructional objectives. Now, we can find out in all our curriculum books etcetera everywhere the learning objective instructional objective. So, what we intend to achieve intend to teach actually these are all objectives.

So, the students should be well apprised of these objectives. So, described in the required performance either in terms of skills performance etcetera. So, describe these objectives should

be elaborated in terms of describing the required performances they are supposed to do describe the criteria and standard of performance level quality of performance and learner establishes a criteria for standard of performance. So, if all these objectives should be translated. That is given in a structured way. Then teachers stimulate to recall their prior learning.

So, that is called the recapitulating the old things whether this new lesson new topic is related to some past learning experience or previous learning experiences that is to stimulate of stimulate the recapitulation or the recall of the prior learning. So, that they can remember they can recollect retry when they can use then thereafter introduce the content that is the present content presentation of the new topic. Then provide the learning guidance tips then elicit the performance or the practice then after elaborating after narrating after expressing the ideas etcetera. Then give them some time for the practice then in practice in between then in between thereafter they you provide the feedback that knowledge of the progress knowledge of the result how far they have progress they have improved they have made the progress they have acquired the knowledge. So, that is the feedback actually your feedback is also relevant here also we need to we also used to conduct this for a formative assessment it is a type of feedback also.

Then assessment of the performance after the even within the classroom the feedback can be given and thereafter the performance can be assessed. Then that enhance the retention and transfer of the job then at the end completely at the end then thereafter how to retain how to transfer this learning experiences to the next level. So, all these have been actually you know at a elaborated here in gaining attention mean capturing the learners attention engage them motivate them draw them towards the learning. Informing the learning about learners about the objectives means learning learners needs are there specific learning objectives whether that means, at the entry behavior learners needs entry behavior needs entry behavior what are the strengths and put you know strengths and weaknesses he has got and how much he has learned in past experience and further needs further learning needs. So, and the basis of that specific learning objectives the goals have to be have to be proposed formulated.

Then the clear communication should be there to focus their attention and motivate them towards the learning towards the content towards the learning. Then stimulate the recall with the prior knowledge of the prior knowledge by activating the students learning prior knowledge by giving some cues and maybe that in storytelling method maybe that by asking some few questions connecting the new information to the old work explain existing framework. Then reviewing the relevant concepts of the experiences experiences that can also be built upon what they already know. So, thereafter then introduce the content the content is to be presented in a very structured and organized way and also it should be logically sequenced it should be appropriate it should adopt also appropriate instructional strategies to present it either by using multimedia through you know visual through game way through storytelling method through narration through lectures through you know different kinds of activities demonstration all these things. So, this is the scientific aspects of you know presentation in a instructional strategy.

Then the provide the guidance that is how to acquire the new knowledge of the skills then thereafter the event of the clear explanation narration then demonstration then you know the even classroom discussion question answer assisting the learners in grasping the content and encouraging them to raise the question or discussion in a dialogue mode all kinds of the you know strategies instructional strategies that we can use. Then elicit the performance

elicit the performance giving them the opportunity to practice to self check to self assess etcetera. Then active participation in the even in the group and the group set up also regarding the knowledge and skills then the give them the feedback then the correction if required the correction is also required. So, all these things all these intellectual skills cognitive strategy verbal information attitude motor skills all these things can be organized in a very structured way. So, in a structured way in instructional platform that is learning and learning and instruction.

So, the strategic presentation structured presentation or the structure structured planning for instruction learning and instruction. So, providing feedback also assessing their progress reinforcing their correct responses assessing the performance through self check self exercises through quizzes through informative evaluation through how to assess the intellectual skills and informal skills how to assess their other kinds of psychomotor skills all these different assessment methods to be proposed evaluate their progress and enhance the retention and the transfer of learning especially retention in the long term role long term retention transfer of the learning materials to the future situation or in the novel situation. And at the end how this strategy such as providing the opportunities to review them review the applications different situations and how you know how it how this how this knowledge and skills can be employed and employed in relevant other situation to solidify to consolidate that learning process consolidate the learning and knowledge construction. So, that is our now is the master another learning model is the master learning model it is that has been proposed with the Blooms and Carroll Blooms taxonomy is there we will discuss about it. So, master learning primarily focuses in the last class that is sometimes some sometime in between first unit introductory classes we have discussed about student learning.

So, learning will be enhanced in case of if the learner focused more on master learning than the performance learning. So, performance learning just to complete it perform it complete the task, but master learning is to acquire the expertise in that particular domain. So, here master learning again master learning now it is the framework it is master learning you can say both the cognitive entry behavior and affective entry behavior. Cognitive entry behavior is that in terms of knowledge and the skills whether the learner is ready or not and affective thing affective means emotionally is emotionally is you know competent now emotionally is ready is the emotionally ready and mentally ready physical and then is the even emotions like the you know they are keen, they are eager, they are happy, they are prepared better emotionally also they are prepared. So, this cognitive entry behavior is in terms of knowledge and skills and effective entry characteristics in terms of emotion motivation and willingness to learn.

So, then the learning unit comes thereafter different types of learning and learning again learning takes this at the different level different level and the surface level then and the in depth level or the superficial level at what level the learning is happening, what type of learning is happening, what is the speed of learning speed of learning then again affective outcomes affective outcomes are how much engage the learners are in the learning process. So, how much committed they are. So, here this is the that means, this is the cognitive and a with the cognitive and an and affective entry characteristics and behavior learning when the learning takes place the outcome can be these these types. But wherever the quality of instruction if we provide the quality of instruction strong instruction then then definitely mastery learning can be achieved. The quality of instruction means in the beginning is cues giving the cues some kind of cues some clues kind of thing just to ignite their thought process that is the that can also be possible.

Participation let them allow to participate in some group activity, group project, group discussion that is also another way of instruction to strengthen the mastery learning. Then reinforcing giving the positive feedback reinforcing them to enhance their motivation that is another way of then feedback and correction. Feedback is that knowledge of the result from time to time give them the feedback. So, that they can get the knowledge of their own progress so, feedback and the correction if it is required the correction corrective measures. So, these are you can say if the in the quality of instruction if these components will be added then the then the mastery learning can be possible.

So, these are kind of you know this kind of the these are we can stimulants you can the stimulant strategic applications. So, if with the quality of instruction with the support of the quality of instruction then the mastery learning can be achieved can be can be attained can be the learning can be enhanced. So, here again the same thing the same thing has been given your mastery learning how does the mastery learning works. So, again learning we have already discussed the learning is you know all is a cyclic process is the ongoing process ongoing process. So, before suppose the suppose for example, before going to the next lesson suppose that enrichment activities are there for.

So, here with the pre assessment and the group based instruction is happening then formative assessment feedback is given then corrective instruction the tutorials we used to have the tutorial classes now tutorial classes for giving them the corrective measures. If any student is facing any kind of problem then corrective instructions can be given then again after corrective instruction parallel assessment can also be can also be taken of like the you know supplementary or kind of kind of things examination supplementary assessment etcetera. So, and in one side this corrective instruction and parallel assessment and other way other kind other ways the enrichment activities those who are already smart enough or competent enough after the formative assessment. So, we can provide them some enrichment activities. So, in this way they can come to the next all those all these groups they can come to the next level of achievement next session.

So, similarly this is the finding of a data this is the finding of a data as you can see the you know and the graphical manner it has been given it is given how the effects of the mastery learning on the students like when they have adopted some mastery learning pedagogy what how it has impacted on the students this is the graph some finding of some research study. So, now the same thing has been elaborated at COGS. So, here cognitive entry behaviors means language ability and the reading comprehension ability of the things like language ability to understand it reading ability and comprehension ability to understand the content and effective entry things is that their interest their attitude positive attitude where the learning readiness preparedness liking willingness all these things are required. So, now, those elements of the mastery learning that we have already discussed that is pre assessment the prior knowledge students progress students attention all these are the pre assessment it happens in the pre assessment era students interest etcetera all the cognitive and the effective entry behaviors. Then group based initial instruction can be given in the like for example, in multifaceted way in the context in different context adopted adopted context adopted ways student oriented way either individually as a group based etcetera regular formative assessment in terms of quiz in terms of skill test in terms of you know different kind of assignments different kinds of presentation different kinds of things.

So, to so to improvise their performance assessment. As you can see instruction has an important role then practice of course. Rigorous practice homework practice the practice

students practice in case of learners and then assessment these things should be ongoing and complemented to each other then only we can achieve the master continuous after the continuous practice of all these three components then mastery. That means, the expertise achieving the expertise knowledge expertise in the particular domain. So, corrective instruction is that high quality corrective instruction is required in case there is any deficiency any there is any any problem there is any lacking then is lacking in the understanding and etcetera intelligence levels of learning style modalities. So, if in case there is any lacking is there in case of any any problem any difficulty then it can be compensated with corrective instruction parallel formative assessments with for the to determine the effectiveness of these corrective measures in terms of other kinds of formative assessments parallel formative assessments and enriching activities to explore more greater in depth related topic things.

Like for example, after learning a lesson line we used to we used to say that advice suggest that we this is the like this is the textbook material, but besides that you go through other reference materials that is the you know enrichment activity or you can go through the other enriching references of the reference materials. So, that you can enrich your knowledge enrich your skill enrich your you know domain knowledge and expertise and even in even in case of the research also interdisciplinary research. So, however, master learning advocates for two three things like for example, the quality of instruction it has it has to be like the supporting factor supporting factor that is in terms of the quality instruction quality instruction should be there learning outcomes learning outcomes learning level learning speed effective outcome this should be also be an important factor and the positive side of the master learning is the students learning his own capacity and speed and in this process the self regulation the self academic self regulation self regulatory behavior of the learner enhance increase. So, gradually he becomes more independent self learner independent learner that is the positive outcome and another is that in increases achievement on effective and cognitive level. So, the more independent the learner becomes and the more self academic self regulatory behavior develops now he himself can map his strengths and weaknesses and he becomes more self motivated towards making a progress and and his achievement need also increases and he becomes more effective he can also very successful in controlling his regulating his effective domain effective and cognitive contributes also in this way.

So, you can see the mastery demonstrated the first is the maximum the best level of excellent level of performance should be demonstrated through enrichment activities and thereafter instruction and in terms of quiz etcetera then thereafter the how to move from the non mastery non expertise level to the mastery level it should be demonstrated should be exhibited then it should be they can be encouraged to practice it and then it can be then feedback should be given then feedback along with the feedback corrective measures should be given then again reevaluation assessment should be done and in this process with rigorous practice and quality instruction it can be achieved. So, these are some of the links that you can go through now. Next we will go to the constructivism again another part of intelligence information processing theory intelligence and learning is also constructivism. So, constructivism actually you can say that it is a it has emerged out of cognitivism cognitivism it is a again it is a long period of and so many cognitive theories they have developed their own learning theories in either adopting information processing approach or neuroscience approach. So, and cognitivism emerged out of that now sorry constructivism emerged out of that what is the constructivism and your cognitivism is how to enhance the cognition and understanding all these things. Now, constructivism says that it advocates that it is not just enough to learn and understand and comprehend, but rather how to critically evaluate unlearn certain things construct and

reconstruct.

So, from there constructivism means constructivism means every learner can construct his or her own learning content. So, there are many theories also, but we will go through only the important theories of Jane Piase's theory and Lev Rigorski's theory. So, let us discuss briefly what are these theories are. So, constructivism is an approach to learning where the people actively construct and make their own knowledge. So, when earlier like for example, unlike the knowledge is prescriptive whatever it has been given in the books and books and lessons it is you have to mug it up or you have to remember it and deliver it produce it is not like that.

But constructivism every learner is independent to go through all learning material, but at the end of the day he can construct his own learning content his own knowledge as per his understanding as per his interpretation. That is every learner is independent to construct and reconstruct his own knowledge and content. There is no hard and difficult rule and the pressure to you know to stick to it. So, constructivism actually the way this actually the way all the students learn every again as we have already discussed every individual learner is independent is a different is separate. So, individual difference is there every brain is unique every learning style of the learner is different.

So, the way the thing is the constructivism is a major is a approach the how the students learn the way they learn how every student each and every student learn differently. So, how the what is the range of diversity how to give them the freedom so that every student can learn in their own way and achieve the best. So, students bring their own unique experiences in classroom to the classrooms every day. Like for example, suppose in a classroom of 40 students 40 children. So, all of the 40 children are different and they are coming when they are coming to the classroom means they are having the different background different experience different learning styles different personality attributes different socio economic factors.

So, each and each of the 40 students are unique. So, the previous knowledge impacts how they are able to learn. Because whenever we learn whatever new thing we learn we knowingly or unknowingly refer back to our past experience. So, with the 40 children having the different past experiences, previous knowledge etcetera etcetera. So, they will learn in a different way. So, here comes our for example, the students here comes the like the for example, the difference between like the rural child rural child rural children coming from the rural background and the you know most sophisticated urban child or the you know techno savvy and sophisticated and urban child coming to the same class.

So, as because their backgrounds are different their exposures are different their experiences are different definitely they are going to learn the same thing in the different ways. So, but again so, constructivism says that yes, but primarily there are three types of constructivism three types of constructivism one is the constructivism which primarily focuses on developmental perspective. So, Jane Piaget theory because he has proposed from propounded this theory of intellectual development how intelligence develops how intellectual development takes place in the process of starting from the childhood to the adulthood. So, that is the his theory is known as the cognitive intellectual development intellectual development. So, his perspective approach constructive approach is the more of the cognitive aspects more of the developmental.

And another is the social constructivism that is the social constructions the

constructivism focuses on how the knowledge develops from how the people interact with each other. That means, knowledge acquisition knowledge is socially situated that means, Lev Vyogorsky is the propagator is the advocate of this he says that without that means, without social interaction without social participation knowledge cannot take place. So, his perspective is social constructivism that means, knowledge takes place in the socially situated interaction social context and with the interactions. So, that is why cognitive construction primarily take primarily focuses on learning should be related to learner stage of development whenever we are preparing and delivering a content it should be optimum it should be suitable for suitable as per the developmental stage of the learner at what stage because Piaget has developed an intellectual theory of development cognitive development. And looking into that whenever the content the questions the lessons are being prepared it should take into consideration the developmental stage of the learner.

Second social constructivism is that knowledge develops from how the people interact with each other. So, knowledge is socially situated knowledge construction takes place in the social context when the children the students the learners they interact with each other ok. And societies and peer influence has a significant role in knowledge construction. So, learner and the knowledge they construct all tellers like again another type of constructivism is that the radical constructivism. Radical constructivism is very much individualistic in nature it focuses on the individual learners own experiences his own knowledge his past experience and how he construct his own learning his own own construct his own knowledge and interpret at the knowledge and in his own way that is the radical constructivism.

So, here the thing is that learner and the knowledge they construct tell us nothing real only helps nothing nothing tells us nothing real, but helps us in functioning in our environment. That each individual learner each individual as per his social exposure as per his past experience his own ability and skill he constructs and reconstructs his own knowledge and skills and strategies as which is suitable to him in his particular environment. So, it is radical that is it is unique it is individualistic. So, this theory has been developed by the Glaser Felt in 1974. So, primarily we will be dealing with this cognitive and social constructivism approach.

So, now, the constructivism as you can see it is divided into different categories social constructivism by John Deway is also a founder and John Deway Vigorsky and individual constructivism by the Piaze's individual cognitive constructivism by Piaze from their radical constructivism emerge. And from the social constructivism and then two again from the Deway and Vigorsky then there are two things one is the cultural constructivism and critical constructivism, but we are not going into that we will be discussing only the cognitive and the social constructivism part. So, Piaze's theory again Piaze's theory has as because he has given us theory of cognitive development. So, he has the different developmental stages and as for the developmental stages what are the cognitive development takes place he has elaborated. And he has also introduced some of the key terms key terminologies key terminologies like schema what is schema some of the thing specific terminologies he has used in his theory one is the schema then simulation and accommodation these are the things that we will be discussing.

So, we create our own knowledge from our experience and interactions that is constructivism learning theory learning is a dynamic process is a social process learners build on their prior knowledge as well as when they collaborate with others it is socially learned and it is socially situated takes place in socially situated discussion and interactions. And it also constructivism also encourages learners to be active to be creative to be reflective and to be critical thinkers

as well. This is the basic approach of learning constructive. Now these are the basic concept of the constructivism that is human learning is constructed constructive learning is transferable it can be replicated transport to another situation. And in constructivism the actually the ownership lies with the learners because he is the key component he is the main stakeholder he is the major stakeholder that means, who decides who decides who unlearns who relearns who constructs reconstructs his own content.

So, he is the primary stakeholder in this process. And so, constructive students in the constructive classroom play primary they learn to question the thing. So, here asking by learning by asking the questions by having the dialogue having the discussion having the critical appraisal all these things are being promoted in encourage because it is the it gives a critical kind of you know feedback a critical appraisal this kind actually it makes the learner more independent and more rational thinker. So, it again it also advocates for promoting the social and communication skills by different discussion dialogue interactions all these things. So, cognitive construction constructivism by Jen Piase that is called principles constructivism is knowledge to be shared teachers role. And whenever we applied in the field of education so, teachers and students shall share the authorities no it is not teacher prescribed or teacher dominated, but rather it is equal partnership they will share the authorship authority and the knowledge is to be shared knowledge teachers role is as a facilitator as a guide as a mentor.

And groups will consist of small number of heterogeneous students because as because it is it is socially situated because knowledge takes place constructs knowledge construction takes place in the social situated in a socially situated way manners that means, group interactions are there required in peer interactions are required. So, that is why the group learning team learning group learning peer learning are also being encouraged. So, why the heterogeneous group because we have already discussed the diverse different types of students they can come up with the different backgrounds and knowledge and they have different perspectives. And heterogeneous groups learning outcome becomes more successful more effective and more fruitful and enduring say in terms of in comparison to only homogeneous. Then embed the learning in the and social in social experience that is why how to embed the socialization social interaction in the in the school learning in the in the learning situation by embedding the learning in the social experience like by promoting projects really the practical projects, realistic projects, surveys, collaborative learning, group projects, team learnings that is the main the way how we can embed the learning learning experiences in the socially situated way.

Then encourage the awareness that is knowledge construction and processes reflection how to that means, when the learners will be given the freedom to construct and reconstruct his own knowledge then he has to reflect he has to practice all these thing reflective thinking, meta cognition, then analytical skill all these kind of unless and until he utilize exercise the higher cognitive skills and competencies how can he ensure how can you he be sure about then whatever knowledge I have created it is most authentic. So, for the higher level of and knowledge creation and higher level of thinking and creativity and innovation yes they need to practice this kind of things skills and they should be exposed given opportunity to practice this higher cognitive skills in terms of assessment mode in terms of giving giving them different kinds of assignments and the projects. So, learning is all these things again learning is individual as well as social process learning is based on personal experience learning is based on individual interpretation learning is a it can be enhanced through meaningful context. Again language plays an important role is motivation plays an important role emotional intelligence is also important these are the you can say these are the preconditions of learning. Now, the Jane Piase has elaborated learning and cognitive development knowledge is actively

constructed children they adhere to their experiences like when the child grows up he has only hardly few experiences.

So, suppose for example, if he a very young child may be 1 year or 1 and half year old child etcetera when he first time sees an aeroplane in the in the sky he says oh it is a big bird. That is the basic example of Piase theory when the first time the child sees an aeroplane in the sky it he will interpret the child will interpret oh it is a big bird probably it is a big bird because the idea of the bird is only there in their repository they can understand only the bird. So, as it appears the aeroplane appears like a bird it is a big bird. So, this process is called a simulation like with the existing experience when the child tries to interpret the new experience new content new or novel stimulus etcetera he try to relate it that is called as a simulation process it is a mental mechanism that is that is called the simulation. But the moment he realizes like for example, for example, he will call it the child will call all the quadrupent animals as the doggy because he knows the doggy.

So, the doggy has the four legs and all the quadrupent animals like the may be horse or may be cow or whatever all of them initial stages he will call them everybody is a doggy because they have the four legs. So, that is the assimilate assimilation process, but the moment they realize that no this is this dog is not the same this animal is even though he has the four legs is not same as the my dog doggy they could realize that yes there is a difference this is different. So, they try to so, existing schemas are with the doggies. So, they try to change the schema schema is nothing, but an idea basic idea concept about a stimulus about an event about a thing etcetera. So, when they realize that actually this is not the doggy because it is something different as they grow up in the developmental stage they realize now they realize that no it is not doggy it is something different even though it has the four legs what is something.

So, then they try to modify the schema revise the concept and idea about the thing then you then they learn the new concept like it is a horse, it is a cow, it is an elephant, it is a tiger, it is a it is a something else animal etcetera. And they then gradually slowly they learn the different types of concepts, schemas having the different class, different categories, different species, different colors that is why we used to send the children to the preschools, nurseries etcetera to explore that concept of colors, shapes, size etcetera. So, here that is came development of the schemas that means, new concept new ideas develop. So, learning and cognitive development occurs with the processing of a simulation and accommodation these are the things assimilate when he tries to assimilate it and interpret it accordingly. The moment he realizes that this is not the same then he tries to modify the schema revise the schema and develop a new concept that is called the accommodation.

So, knowledge is subjective because the people are you know people construct it regularly, subjective because every individual learner, every individual child, every individual student will interpret as per his or her own own not only experience, but you know his own understanding level of understanding, his own perception, his own realization so many things. It is very much subjective and cognitive development takes place step by step and Piazza has proposed the four stages Piazza and Piazza actually he has observed his own children and has developed. And he has developed a theory of cognitive development is, but four stages permanent stages the sensory motor stage, pre operational stage, concrete operational stage and the formal operational stage. How the since the birth how the child's cognitive development takes place and he has categorized it into four stages. Now, as you can see these are the stages of first sensory motor stage birth to 2 years, Piazza is called then second then pre operational stage 2 to 7 years what are the development that takes place,

then the concrete operational stage that is 7 to 11 years when they are in the primary level of schools, then formal operational stage that is adolescence and the adulthood that is 11 11 years onward.

So, pre operational stages the primary you know the primary thing developments of the language, memory, imagination, intelligence, egocentric. Ego centric is the thing the child thinks that every everything is revolving around them. So, egocentric approach pre operational child that that is the child thinks that I am the I am the you know crux of this I am the I am the center of this whole wall I am the nucleus I am the around me the whole wall revolves. So, that is egocentric thought and intuitive thinking logical thinking slowly begins.

Concrete operational stage when there is at this primary elementary level of school. So, that is they started using the logical and logical and manipulation logic systematic manipulation of symbols. They they are thinking slowly becomes less egocentric as they socialize with their peers there are the other children in the classroom increase awareness of the external events when they play with others in the play school when they play the child plays with others then slowly and steadily he see this egocentrism slowly decreases become less and he thinks that like me many other children are there also there they are there they also can have this toys they are having the different choices they are having different class they are having different books are different choices different preferences they are tiffines. So, when they share with others then this egocentrism gradually slows down. So, they so, now, they become more slowly they are going away from egocentrism and become slowly moving towards socio centric in the thing that yes besides me there are many events in this society. Formal operational stage that they use the symbols related to abstract concept abstract you know mathematical concepts then hyper then you can say the philosophical concept and then hypothesis linking the hypothesis and formulating the plans thinking in the abstract way abstract relationship all these higher level abstract thinking takes place.

Then intellectual development is a lifelong process and thereafter gradually since adolescence then the intellectual development takes place. So, these are all all these things the connotations of these assimilation accommodation that you can go through these things. And the stages have been narrated this is all those the stages that we have discussed just now the different developments at the different stages of the pages stages of the cognitive development. Then constructivism yes constructive is the implication is that individuals and the learners are the they construct the new understand as per their new understanding and knowledge through the experience and social discourse dialogue etcetera they have construct the known knowledge that is why parents and the teachers role is to facilitate that learning environment give them the give them the many resources to explore giving them the and reached and reached environment. So, that they can construct then and in so, now, that is a during childhood the gaming game is a very best way of you know exercising the igniting stimulating our the child stimulating the children's brain.

So, educational implications is the learners are the active participants they are self regulated slowly and steadily whenever they are will they will be given freedom and freedom. So, slowly and steadily they regulate the start thinking about monitoring their own learning and become self regulated and in social interaction is also very much essential for making the learning more meaningful or having a social that holistic perspective social mutually beneficial perspective and how it can have a larger implication for the society. Now, Vigorsky the same thing, but he emphasizes more on the theory of the child's development from the role of social interaction from the collaborative learning, but yes he says that excluding social interaction

learning cannot takes place because majority major learning takes place in the social context. Hence Vigorsky's cognitive function actually it is the product he says that learning is the cognitive output product of is the product of the social negotiation social interactions and he has defined he has elaborated his theory named as the zone of proximal development. Zone of proximal development is that from the no ability no knowledge towards the skill skill skill person skill performance.

So, he completely rejected the idea that learning can be separated from its social context not at all say learning in a social constructivism shifts the responsibility of the knowledge acquisition from the teacher to the students that is from the peer learning from the collaborative learning from the classroom discussion etcetera. So, in so, learning is socially constructed learning is a learning is a learning primarily develops from social interactions. So, and the transform the students from the passive learner to active participants. Hence in Vigorsky's constructivism will all each and every learner should be encouraged should be should be encouraged should be induced to be an active participant. So, they how to engage them as an active participant by different mechanism by different strategies by giving them assigning them different group activity thereby allowing them the freedom to ask the questions by making them more inquisitive more curious.

So, to construct and co construct the knowledge and share the knowledge among the learners co learners. So, knowledge is primarily socially constructed. So, this is the cycle this is the cycle this is the Vigorsky's theory in the classroom practice how the classroom learning in the classroom is a social context how the learning can be should be should be initiated. So, social interaction leads to continuous step by step changes from the child in the children's behavior thought development depends on the interaction with other people. Three ways that a cultural tool three ways a cultural cultural tool can be passed from one individual to another that is three what are the three ways that is the imitative learning you know the imitative learning, instructed learning, instructed learning and is another is that cultural tools.

So, these are the three mechanism through ways how this social interaction can be initiated. So, as you can see these are the different stages stages how the learning can be constructed co constructed in the so in the classroom in the social context like through dialogue method through reflection then through peer to peer collaboration through what the student wants to construct learning the groups learning groups thought and language these are the different tools through which learning can be socially initiated socially socially constructed. So, culture as a tool also it can be thing. So, culture culture tools passed from one person to another person collaborative learning collaborating in the collaborative learning group not only that the the student the children they learn about the content and the knowledge and create the knowledge and content they all they are, but they also learn the specific skill specific skill social skill social emotional skills. So, these are the key points of the Vigorsky given here how this theory of zone of proximal development is very important. Now then he has also he has also proposed a different concepts like you know dialectical dialectical constructivism is the that his position is a form of dialectical constructivism in the sense that it emphasizes on the interaction between the persons and their environment and mediation is the key mechanism in the development of the learning and the key concept another key concept is zone of proximal development was zone of proximal development is the distance that is that is for example, that is from the no learning no expertise no experience no knowledge to the to the highest level of doing it independently.

So, the distance between the actual developmental level at the stage right now determined by

the independent problem solving to the level of maximum potential development as a as an adult guidance without adult guidance he can independently do it. That means, the initially the child begins with the help of a learner with the help of a tutor with the help of help of a adult or the parent then slowly and steadily how they become slowly independent zone that is called the zone of proximal development and at the end they will be independent learner. So, that is that has been given constructive learning model this is the learning model it has the four stage types of you know development takes place one is with the concrete experience another is the with observation reflection learning takes place another is the forming the abstract concepts and then again verifying the testing this new solutions all these are these are again these are learning cycle being proposed by the constructive learning constructive learning theorists. So, schooling is can say schooling is a important factor not because where the students are scaffolded. Being scaffoleded is that they are being exposed to different kinds of knowledge language and other kinds of scaffolding. So, because it allows them to develop the greater awareness, language exposure different knowledge about the social order social rules norms etcetera.

So, schooling is very important, but they are being if when the children were scaffolded with that means, they are exposed to this kind of thing. So, helping the students acquire the cognitive mediators what are the cognitive mediators like the signs symbols. So, their students gradually slowly understand this for what the signs and symbols the mean for. So, they act these things as act as a mediators mediators of social environment mediators of social rules mediators of social regulations. Then concept of instructional scaffolding which refers to the process of controlling a task controlling the task manner.

That means, when they are being exposed to they are being elaborated they are being explained about the different instructional component learning component. So, some of these are beyond the learners capabilities in the initial stage, but slowly and steadily they acquire this thing by observing the observing the teacher observing the mentor etcetera to focus on, master of those features of the task they can grasp weekly. So, instructional scaffolding may be some something that will be initially demonstrated by the teacher tutor. Then gradually slowly they will be explained they will be elaborated there be narrated like you in order to do it you need these specific skill how to acquire these skill, etc..

So, they will be guided. So, that is instructional scaffolding. That means, unfolding revealing them explaining them what are the inherent skills required for that content development or content mastery and then slowly they will be allowed they will be trained to grasp it quickly. Reciprocal teaching is that it involves the mutual training having an interactive dialogue between the teacher and the small groups or within the groups or the whole classroom that is interact reciprocal teaching. So, then peer collaboration is also very important peer collaboration and then apprenticeship it is the kind of practice that joint work related activities it is a kind of that means, novice learners. So, when they participate in the joint work related collaborative activities they it is a kind of apprenticeship it is a kind of training orientation.

So, many mental processes are required as required as acquired as a result of the social interactions. Then successful people definitely they are very they helped they helped let up with the successful people helped can let the students go through these difficult stages. Then highest level of cognitive development takes place after a after the significant effort of peer learning, social interaction etcetera. So, games are as an instrument games is a very good tool educational tool. So, games game activities actually to get them the into the adults world

successfully. So, role playing gaming these are also sometimes for example, when we when we discuss about observation learning we said that that that the children they usually copy observe their parents and the adults in the house and copy it and imitate it.

Sometimes they have the goal sometimes they do not have the goal just as a part of their gaming gaming process role playing they play the role playing games. So, that means, how this games role playing helps them because whenever they enter into the copying it they the copy it and imitate it and start begin to display it demonstrate it exhibit it practice they do it. So, they slowly and steadily they venture into the adults domain of learning that means, try to so enter into their source. So, in this process when there will be suppose encourage or they are very often encourage engage in this kind of gaming process.

So, that helps them in developing a kind of planning skill also. So, game is a very good instructional tool for successfully teaching successful learning of this planning skills among the children. So, now, these are the stages these are the stages that is yes zone of proximal development that theories of Vigorsky. So, first initially he cannot complete the child cannot complete the task by itself that means, he needs a help. So, thereafter with verbal help from skilled peer scaffolding then with the help of a peer skilled peer competent peer friend in the team member slowly and steadily he can unfold the skills required for that.

So, verbal help from the skilled peer scaffolding that is called the scaffolding he is explaining. Thereafter with guided assistance from the skilled peer then slowly and progressively he is moving upward. Now, from this basic skill, he gradually becomes skilled. He becomes better. He acquired better skills. Here the peer scaffolding takes place and with the guided instruction guided assistance he gradually becomes skilled. Now, in this process then in the highest level he internalizes, the child can internalize all the processes. How to do things by himself and he has acquired the skills. So, now, here the scaffolding that guidance scaffolding that was being provided by the peer or the tutor or the mentor has been removed now he becomes more independent now he is there.

So, now, he is an independent learner. So, that is called the internalization process. So, complete ignorance to internalization of the skills that is the whole process, whole steps are and have elaborated, that in the zone of proximal development was proposed by Vigorsky. So, now, we have already discussed all the major theories of learning starting from the behavioristic school to the basic cognitive learning theories. We have briefly discussed brain based learning. We have not gone into the depth, but information processing approaches are important theories of intelligence which are presently very relevant and thereafter the constructive approach. So, now, we will move on to another topic next week. Thank you very much. I hope you can understand better and some references are given and you can also explore many more resources given here and over the internet in Google.

So, you can further clarify with many more further videos available under the different concepts, but yes I have tried to give a kind of holistic picture. A structured way of understanding the subject. So, thank you very much.