

## **Psychology of Learning**

**Dr. Atasi Mohanty**

**Humanities and Social Sciences**

**IIT Kharagpur**

**Lecture – 50**

### **Effective Learning: Assessment and Feedback (Contd.)**

Hello viewers. So, welcome back to this NPTEL course on Psychology of Learning. So, we were discussing about effective learning and in the last class we were discussing about the feedback, the relevance of feedback, the purpose of feedback and the effectiveness of the feedback. So, to continue with that feedback you know creates a kind of you know learning responsive how to create how to prepare the learners to be very responsive, very responsible and very self regulated learners. So, that is the basic purpose this is goal of you know through feedback not just the learners enhances these learning and performances, but it also enhances the teacher's teaching also.

So, the key processes that underpin the teaching and learning is that learners what is the learners' current state of learning is there, what is their goal in which way they have to move ahead, what needs to be done, what needs to be done. And when the students are appropriately informed about all these thing in that the progress they are making, the difficulties they are facing all these kinds. So, they are better able to identify their next step for making a learning progress. So, that is the basic purpose goal of objective of feedback.

So, then accordingly we can prioritize the formative strategies of assessment, summative strategies of assessment, how to give the feedback, what type of feedback, when to give the feedback, what should be the what should be the timing, what should be the content, what should be the feedback to be given on the basis of what. So, all these kinds of the logistics to be discussed by the to be decided by the learner and the learners' needs and the teachers' efficiency and skills. So, here we can say so, first the basic purpose of why now basic purpose of the feedback is that why, how feedback can be useful, can be beneficial for teaching learning process in the multiple ways. First thing is that creating the responsive learner. So, feedback is not just you know apprising the learner about their progress, but also in this process because there are different types of feedback, varieties of feedback, diversity is there in giving the feedback.

So, ultimate goal is that to create the learners to make the learners more responsive. So, creating the responsive learner is one of the basic goal and objective that is to actively process the information in such a way that the as soon as the feedback is received the students they become very mindful, very alert and they can leverage their effort and abilities etcetera to gain the to achieve the maximum gain in the performance. So, and moreover it is also primarily focuses on the student centered learning. So, to enhance the effective pedagogical implications and how to make it make the student centered learning more vibrant, more successful, more fruitful, more futuristic that is another thing aspects and then feedback is also important for making the learners more responsive in the sense that they are who can learn better self regulation, they can produce better internal feedback because you know from the getting the external feedback from the peers and the from the teachers and at the simultaneously by

practicing it again the student the learner himself can also come up with the internal feedback no I am not doing well this is my job or this is I have to do etcetera. So, this kind of internal mechanism can also be developed as a part of the reflective thinking, reflective learning and so, that can also help him to better achieve better able to to make him better able to achieve the whole learning goals.

And at the same time the students are to develop the students' mindset, mindset like you know growth mindset how to develop the open mindedness, positive attitude, growth mindset, collaborative attitude to collaborate to learn, share, share and disseminate the information to solve the problem collectively all kinds of things. So, this can influence the effectiveness of the feedback. So, feedback has multiple purposes benefits and and the using feedback use of feedback as the basic some basic few valuable purposes and objective one of which is the creating the responsible learner. How can we make the learners responsive, responsible, self regulated and independent learner or self reliant learners? So, then again teachers enhancing the teachers teaching again it has also an implication for the teaching pedagogical implication, innovative pedagogy, teachers you know enhancing teachers self efficacy, teachers skills, teachers competency, where to focus in teaching, how to improvise the thing, how to engage the learners and how to engage, how to motivate the learners, how to enhance their skills and competencies all kinds of things it is also it has equal relevance for the teachers teaching.

So, again at the same time teaching and learning as you know teaching and learning are complementary to each other that is these are the two sides of the same coin. Hence teaching and learning is reciprocal it also feedback also enhances, strengthens this reciprocal relationship between the teaching and learning. So, teachers to be critically engaged with research again to enhance this strengthen this reciprocal relationship the teacher has to be teachers has to be very much engaged in research in latest research in the innovative research that is to critically engage himself in the research, research activities and research literature he himself has to be engaged in different kinds of research. So, so that he can be continue to be he can continue to be reflective practitioner, reflective practitioner to come up with the new ideas to enjoy the teaching process, teaching and by teaching the students in an innovative way and being a reflective practitioners the teachers skills also develops he himself also professionally grows. So, that is the teachers focus that is why the feedback will help the students to learn at the same times enables the students to learn more and at the same times makes the learn makes the teacher professionally make the teachers or help the teachers in professionally growing in their career.

So, there are 7 principles of good feedback practices as you can see. First thing is that it is the way of self assessment it is it focuses on the reflection, reflection in the learning. Second it encourages the teacher and peer dialogue and the around the learning because the teacher student interaction, discussion, dialogue in around the related to the learning content etcetera it also it also increases and enhances. Again to clarify what the good performance is because by demonstrating, by exhibiting, by giving the examples, by setting the certain criteria or setting the certain standards. So, the students learners will be able to know that what exactly the good performance is or how can I secure high grades, what is that it is know what is the what is the you can say ideal answers of this high performance for the high performance grades all these things can be can be discussed.

So, provide the opportunity to close the gap between the current and desired performance as we know in the expected learning outcome and actual learning outcome. So, so the desired that is the expected learning outcome is the desired performance and the current performance

is actually the what the students have achieved. So, what is the gap area in order to in order to that means, minimize that gap to close that gap. So, feedback is the effective tool. So, deliver the high quality of information to the students through about the learning the again not just about the knowledge of their progress and progress and immediate result, but also in which way they can improvise how they can self reflect on their own learning, how they can extensively use some innovative methods, how can they maximize their own potentials these kind of guidance can also be given to the learners.

So, here also it also encourages the positive motivational belief system, self esteem etcetera it provides the information to teachers as well to shape the teaching to modify to revise the thinking teaching to update the content to be very updated in research effective research which can be applied in the teaching learning process. So, so giving the assessment feedback even the assessment feedback it has certain objectives. So, as all of us we have already discussed to benefit the students learning as well as to improvise the teachers teachers performance and the teaching also. So, feedback however, there are different types of feedback. Feedback needs to be one is the constructive feedback.

Constructive feedback is there that means, it highlights the strengths and weaknesses of a given piece of work, but it is where the focus is how the student can improve the work. So, that it has the positive outcome of constructing students' performance that is student can by this constructive feedback the students can improve the work. Another type of is the timely feedback give the feedback timely. So, that feedback while assessed the work is still fresh in the students mind. So, timely feedback would be given before the student moves on to the next task or forgets the task.

So, just after the test just after the assignment so, timely feedbacks would be given because the teacher the content is still fresh in the students' mind and he can better understand the its implications. Then the meaningful feedback feedbacks would be meaningful in the sense that it should target the individual needs and it should be linked to the specific assessment criteria, it should it should explain the specific you know performance of the narrations or the specific answer the student has given and where he is lacking how he can improvise it etcetera. So, meaningful interpretation of meaning of the feedback and explanation with the implication. Now, the constructive feedback should be timely and meaningful feedback to so, that it can help the learners to think critically more about their work, new strategy of learning in the new ways and promote the dialogue between the staff and students. It can also promote the dialogue between seniors within the staff, students, teacher and the as well as it can be communicated to the parents.

The effective feedback also guides the students to adapt and adjust the better learning strategies and guide the teachers to adapt and adjust the teaching to accommodate the students' learning needs. So, stimulate it stimulates the reflection both in case of learners as well as the teacher, it enhances the interaction, it enhances the dialogue, it enhances the brainstorming in the environment. So, constructive feedback is always encouraged and very much motivated to engage the students and it can be applied to all stages of you know stages of planning, conducting, evaluating the instruction at any stage it can be done. So, feedback again evaluation process can be designed from a teachers' perspective. For example, when if the teacher design the evaluation process how he can establish the purpose of evaluation.

So, suppose for example, how the teacher before designing any evaluation process how what are the things that the teacher goes through. So, the stages like first he has to think the

purpose of evaluation, assigning the task to the evaluation these are the stages of evaluation. So, then the setting the criteria of students performance, setting the standard of students performance, sampling the information and student performance, apprising the student performance and providing the feedback on student performance and they are monitoring the outcomes and evaluation of the student. So, these are the different set different set of activities that the student the teacher has to engage. So, here that this formative assessment cycle given by thing the what in which like this is also another example how the formative assessment cycle can also take place formative assessment starting from this you know starting from this first establishing the purpose of evaluation to assigning the all these things can also be can be done by the teacher.

So, in the stage in the stage wise in the stage in the phases through the different phases of the purposes well through different phases of the evaluation. So, with every stage as you can see every stage it has a specific objective, it has to be clarified, it has to be very clear and that means, explicit to the teacher before formulating an evaluation process. So, this is also a model of the feedback how it can enhance the enhance the learning process you can go through it is the again research outcome of authors. So, that is the source is that university that means, this David Nicol and his associates in the university of Glasgow there you can also go through it and the good again this good feedback we have already discussed about the principle. However, these are some of the feedback good feedback principles like for example, it promotes the dialogues and conversation it emphasizes on the instruction aspects, it improvises the instructional aspects, it also feed forward it also provide the feed forward that indicate how the students need to think about the task then specify the goals engage the students engage the students in conversation design the feedback comments to invite self evaluation.

So, how it can promote self reflection, self evaluation and future self learning management. So, so, enlarge the range of participant in the feedback conversation incorporate the self and peer feedback. So, how the from the formative evaluation to slowly the learner can move towards peer feedback, self feedback, voluntary feedback all kinds of thing. So, feedback can be feedback. So, feedback can be provided can be provided by the various external resources also the externals feedback strategies can be designed in many ways like in some case of in self check exercises are there you know some self checks some online formats are there online evaluation tools are there interactive tutoring feedback models are also there. So, in the process of interaction it also gives the feedback.

So, ITFL Interactive Tutoring Feedback Model is such a model propounded by Narciss (2007) this model suggests that feedback is considered as a multidimensional instructional activity. So, feedback is not just mapping the progress, but it has the various instructional implications that aims to contribute to the regulation of a learning process. Regulation: how to regulate the learning process not just performance whole learning process and how to in such a way that the learners acquire the knowledge and also competencies master of learning task regulating their own learning at as well as it facilitates and enhances the teaching processes teaching processes of the instructional processes and the pedagogical applications also. So, this is also such a model that is the Narcis model given here given here you can go through it. So, and this is also how stood this is a model of formative assessment how here feedback can also can like for example, how the external feedback can initiate the internal feedback like for example, so, this is suppose the teacher the set the task goals etcetera this is an external event.

So, here it relates to the domain knowledge that the subject knowledge that the strategy knowledge like in which way the teaching strategies learning strategies the it is also related to teaching strategies and in the motivational beliefs of the learners. So, the teachers when say set the task and the goals it relates to all these three things one and teaching learning strategy domain knowledge and the motivational belief of the learners. So, in this way it moves on. So, it might relates to students goals, how it then students goals and how the tactics how it is related to tactics and strategies that are being used and how and students along with this by using this tactics and strategies then it moves towards the learning outcomes. However, the student as an independent agent here in the teaching learning process student as an independent agent can also be engaged in self assessment for example, so, here the student is an independent agent how it can be self initiated also.

So, the student after going through so, it is related to this and he has suppose the student is an agent important agent. So, he how he monitors his own progress. So, here the it is the path of internal feedback. So, these process from time to time the learner himself also receives the feedback which is internal feedback which is his personal feedback. So, from these student goals from these things from these different stages how from the assessment goes in these stages one by one.

So, from each stage the learner himself monitors his own learning process accepts as a self engage in self assessment and also gets the feedback. So, this is called the path of the internal feedback. So, from again from the external source external feedback is that from the peers from the employers from the teachers from the seniors etcetera the simultaneously the learner is also engaged in different dialogue having the conversation discussion with the external agents external feed agents like the teacher can be an agent peers can be a as seniors can be an agent or any sibling elder sibling can be thing. So, he also simultaneously is also receiving the external feedback. So, here both the external feedback and the internal feedback that he receives from these processes formative evaluation processes all these things he put together and work on all the feedbacks or both the internal and external feedback then work upon and that will be directed towards his performance.

So, here even though these stages it this formative evaluation follows these stages, but in case of effective learning processes the performance of the ultimate performance of the learner or the student is being affected by is being influenced by these internal feedback pathway and the external feedback pathway. So, this is a model of form formative assessment feedback it is an effective model how it is both the external processes and the internal processes or mechanism of self feedback helps in enhancing the performance.

So, similarly this is also the dialogic feedback how the feedback takes place in the dialogic way task like the guidance about the task analysis guidance about the task completion then feedback and performance how this cycle goes on in a cyclic way the like the learning cycle. So, this is called the dialogic feedback cycle. So, again explanation discussion examples etcetera all these things are required. So, guided in task phase also it is also the results can be feedback feed forward. So, thing another is the feed forward like a feedback can also work like a guided in task guided task master like for example, the result from guided that means, from explanation discussion etcetera the feedback has been received the result from this phase can be served as the feed forward. That means, this feedback can help us in future learning for the completion of the task for the completion of the whole process from the completion of the rest of the learning or academic task. So, a guided in task phase also in the second phase which they offered the practice opportunity should also be scaffolded that means, it can be scaffolded

by the generic feedback by the demonstration by the peer assessment tips by the lab component etcetera. Then the final feedback takes place final feedback phase in which the students will be provided with the formative written feedback that refers to the clearly the criteria and the standards that are that has been kept and prompted to reflect on the and discuss it.

So, for example, suppose people are giving UPSC exams again and again or some entrance examinations initially they use they first attempt it to know its criteria. Second time they prepare and then again try to self check their own abilities and strengths and weaknesses and the third attempt they try to they want to achieve it. So, at different stages the different kind. So, this is a kind of self feedback they are getting through different attempts. So, feedback is actually the central integral and continuous process of students assessment.

So, it is a kind also we of you know it is a kind of self check exercises self improvement exercises. So, by repeated attempt we cannot just learners they not just learn about the criteria of, but the difficulty level of the level of preparation accordingly they plan they prepare and then achieve. So, assessment feedback guidance assessment feedback guidance is very much explicit it has the greater emphasis on the feed forward that means, how this feedback at the moment how it can carry forward or how it can help the learner to carry forward or complete the task in the after in afterwards in the later times. So, students are also encouraged in and with the with the processes here the students are also encouraged to be engaged actively engaged. So, it has the multiple applications and implications.

So, the technicalities of feedback are attended in order to support the learning processes it is the model that you can go through training and assessment feedback feedback feed forward and forward is an integral part of this assessment in this table it has been explained. You can go through it thoroughly. These are some of the details given here. So, similarly the you know for example, the different conditions that the feed the under different conditions the feedback receiver is there like prior knowledge is representation the under different condition feedback is being given. Then the what are the condition instructional context how the in the different instructional context what type of feedback there is being received. Then the conditions of the external feedback source what could be the external feedback sources how and how the external internal assessment and the external assessment how this combined put come are being combined that is feedback content feedback presentation feedback functions at the cognitive level metacognitive level motivational level. So, the feedback how it has been analyzed as a construct itself as an attribute itself as a skill itself which can be extensively used scientifically used objectively used to enhance the performance both for the teaching as well as for the learning.

So, here you can see how feedback content can be the can be in different types then the feedback presentation can be in different way feedback perception feedback processing and feedback uptake there out there output. So, feedback effects feedback effects can be at the cognitive level can be metacognitive level can be motivational level and regarding the time management and the duration and of the performance. So, this heuristic research model eliciting the design and research issues of the formative feedback for an instructional context. It has been extensively discussed here.

So, now the summary of the research findings is that empowering the students to self-assess and generate the internal feedback how the students the learners can be motivated can be prompted can be promoted towards to be capable of or empowering them for self-assessment and giving the internal feedback and empowering the students to peer assess and

generate the peer feedback also how they voluntarily then can assess the peer and as well as the generate the peer feedback empowering the students to be feedback literate empowering the teachers to be feedback literate empowering the students to be feedback literate empowering the teachers to be feedback literate exploiting and investigating the potentials of the modern information technology how technology can be extensively used for the feedback purpose for the for getting the maximum benefit of feedback. So, here I can say there are three stages of the feedback feed up feed up is that before the feedback can be given students need to know the learning intentions like the objectives criteria and purpose etcetera.

The feed up clarifies for the students where I am going what are the goals this information sets the context of the feedback that is the feed up that means, before the actual feedback and the feedback itself focuses on monitoring and assessing the learning progression. So, now in relation to the learning intention or task etcetera it is about how I am doing now what is my current state of progress what progress is being made towards the goal etcetera that is at present this is the this is before the feedback this is the actual feedback at the moment then the feed forward this relates to the next step required for the improvement of the specific task or learning intention. So, it is all about what next how to prepare in a better way how to undertake more progress better progress how to prepare for the future exams how to prepare for the future goals future academic goals future courses how to deal with the challenging task challenging learning task and all these are feed forward means on the basis of that feedback it gives the future tips for the future learning ok. So, effective feedback is when the teachers and the students address all the three questions all the three all these questions at the all the three stages all they have to address all the three set of questions. So, the level of feedback yes feedback can be at the task level the feedback is at the task level on the product like it is related to more of you know content is more students performance are on the task.

Then process level feedback how you have done it how what would have been the better way of explaining the so, process of understanding it primarily focuses on the process of understanding that is the student has completed the task and how he has done the task. And another is that the person level at the at the personal level that the personal level that means, on the basis on the personal level of the learner. So, understanding about the self his abilities and his task related information set focused feedback this as these days focused on the personal level that is directed towards the level and the contents a little task related. So, it is more about the learner's abilities learner's potentialities learner's performances that he has done and his all strengths and weaknesses that is the personal level feedback maybe he is lacking in lacking in remembering the relevant information maybe he is lacking in analytical skills maybe he is lacking in language skills. So, it is these are all personal feedback of the learner.

So, feedback and the students perception feedback and students perceptions of the feedback and the students self efficacy feedback and feedback and the students motivation these are all examples of the personal level feedback. So, that is the feedback is designed to move the students from the task and you know and underlying processes or the understanding them to self regulate is most effective how to regulate the individual learner. So, for example, feedback based on the task performance can build the student's confidence if it is related to the task content preparation etcetera it builds the confidence and helps the learner to feel more able to improve and experiment with the new strategy. So, then the questioning and the feedback can focus on learning strategies metacognitive skills which can eventually help the students for better self regulate to become the self regulated learner. So, that means, they can not not by developing the metacognitive skills self assessment skill reflective thinking skills analytical skills and you extensively utilizing the internal feedback mechanism how extent

how strategically use the internal feedback internal feedback and how extensively using the external feedback how perfectly blending all the feedback how can again with more effort more strategic learning strategic learning techniques or a better you know better learning resources and with the help of technology with the help of educational learning tools etcetera with elements all these things how can they improve the performance.

So, this is the selection right assessment method on our own course like for example, suppose we design a course and how can we assess evaluate our own course first thing is the engagement with the task engagement with the learner's belief about the significance of the task engagement with the learner's self conception about achieving the desired learning goals and avoid that risks involved in handling the challenging assignments and minimize the efforts to reach the desired learning outcome. So, selection of the right assessment method for our own course if you are going to design a course then we have to take into account these you know these you can say criteria these the answers to these questions and evaluate after evaluating these things we can map the efficacy of and effectiveness of our courses. Now then the key what are the key features of effective evaluation one is alignment validity reliability and transparency for any test when we are preparing it should be aligned with the teacher with the content with the learning out with the realistic learning outcomes with the learning content etcetera. So, it must have the four features validity, reliability and transparency. So, alignment is that it should be alignment between clear and realistic learning outcomes, learning opportunities to achieve the learning outcomes and evaluation methods and tasks related to the learning outcomes and method of teaching.

So, whatever the test evaluation task or the test we are formulating it should align with the expected learning outcome and the course content. Validity is that actually what is the basic intention of measurement. So, what we intend to measure actually the test measures that. So, evaluation should measure what it sets out to measure. Suppose we have developed a test and so and we have developed a test to measure the students' progress in mathematics in mathematics or physics.

So, the test must measure exactly what we intend to measure that is their knowledge in physics and mathematics nothing else. So, validity that is the what the test intends to measure and not whether it actually measures it or not validity then. Then reliability and transparency reliability is that it evaluation should be consistent like over and over the period of even if we repeat the same test again and again it gives us reliable and consistent result. So, evaluation process is consistent and fair and it is a good assessor of the reliability administered that means, irrespective of the timing irrespective of the situations that the test predicts what it intends to predict and the results the there is a consistency in the results.

Transparency is that there is no hidden agenda it is to be clearly aligned with the learning objective or the specific learning outcomes and the and it should be clearly explicit about the formative and summative aspects. So, the transparency these four criteria should be fulfilled before designing a scientific test and formative and summative evaluations we all of we know it. And all of us we have already discussed summative evaluation is the final end and the formative evaluation is the in between. So, educators should in incorporate both the types of evaluation in the program of development and this is the summit that the at the end of the day that is the student skills knowledge abilities are best measured through assessment and with well defined standards quality and fairness. And formative and summative assessments need to be evaluated for both the reliability and validity and transparency and you know transparency should also be transparency and alignment should also be assessed before

actually

administering

the

test.

And effective teaching requires the instructor to accurately interpret the test results like through analytics data collection data analytics and clearly communicate the results to the students. And the students they can use what they learn about testing and statistics to evaluate the various assessments given in the class for reliability and validity they can practice it they can you know that is the practice it rigorously. And the discussions of the descriptive statistics and also more meaningful when the students they examine their own assessment they can analyze their own performance if they know though if they have been taught the descriptive statistics and inferential statistics. So, teaching the learners about the data analysis and the learning analytics and statistics can also be helpful in the self check exercise and in the self analysis and understanding its implications. So, now how to learn effectively these are some of the tips that all of you we can go through it.

How to learn effectively at the individual level like using the mnemonic devices, testing our self all the tips are simple tips that can which any learner can adopt and apply visualizing the things and relating the new information to the existing knowledge all these things. Now, this is all about effective learning and strategies. Now I am just closing the session right now. Thank you very much.