Lecture - 37
Sustainable Education (Contd.)

Welcome viewers. Welcome back to this course on ESD. So, we were discussing about the Sustainable Education and the frame model. So, to continue with that we will discuss right now.

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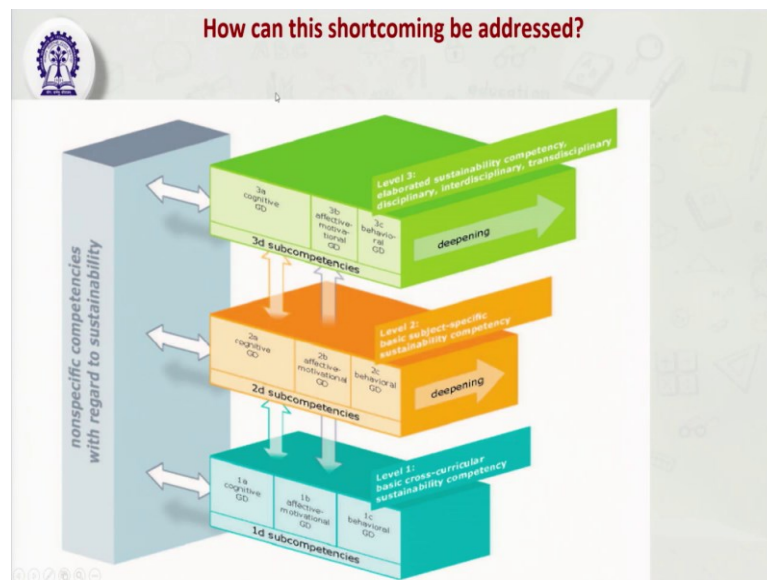
Now, this is that; that means, there are certain we were discussing that there are certain deficits in operational models. So, now how these deficits how these shortcomings can be addressed? So, this has the this is the framework given by the UNESCO organizations and the researchers those who are working in the UNESCO portal.

So, now they have developed a model like this as you can see as you can see this is these are the some of the non-specific competencies so with regard to sustainability because sustainability in order to achieve the sustainability in our lifestyle, in our education, in our consumption and in our even to make our societies more sustainable so we need to develop certain competences ok.

So, these are they have elaborated how they have elaborated this competencies according to the different levels. So, as you can see these are the non-specific competencies with regard to sustainability. So, these non-specific competencies like you can say, at the lower level you can say it is a cognitive competences cognitive fast sub competencies that is the cognitive competencies, effective and motivational competencies and the behavioral.

Cognitive definitely related to thinking our you know cognition our thinking our intellectual ability, ability to analyze the whole thing, then rationalize all the things cognitive abilities and effective; that means, how do we feel emotionally attached to these kind of goals in our life sustainable development goals. How much dedicated we are, how much motivated we are to develop such consistence such competencies.

So, that is the that is effective that is the emotional and based on our positive feelings and motivational that is we are interested we are motivated to learn these competencies. And the behavioral; that means, when we manifest in our behavior in our performance in our interactions with the environment with people with other things in the environment so that is a behavioral outcome. So, these are the things.

So, these are the first level of so first level of competency. So, here we can say level 1 is that how these competencies can be incorporated that is the basic cross curricular sustainability competencies. How this can be incorporated into the cross curricular co curricular activities cross curricular curriculums you can say we can add these sustainability competencies the first level.

Then the second level of competencies again the cognitive competencies effective and motivational competencies and the behavioral competencies that the second level of sub competencies, which are little relatively which are relatively deeper in its sense and meaning and applications. So, that is called the level 2.

So, level 2 competencies the sustainability competencies can be incorporated in the subject specific area subjects. Like maybe in environmental science in the biology that is the biodiversity can be included, then geography this climate change can be included. So, the level 2 sustainability competencies can be incorporated in the subject specific areas.
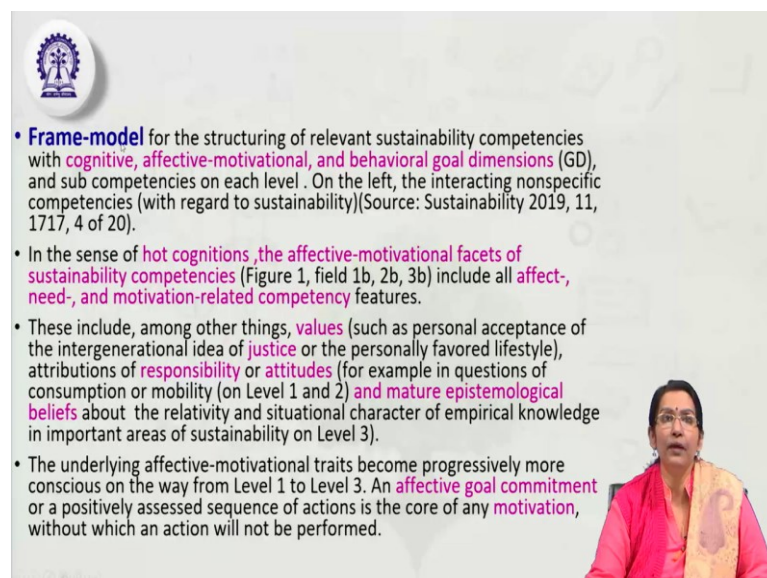
Then the third level of third level of sub competencies again in the category of cognitive; that means, a little bit higher order thinking skills, cognitive, affective, motivational and behavioral. So, which are considered as the level 3 competencies which are to be elaborated the as the sustainability competencies and disciplinaries more related to disciplinary interdisciplinary and trans disciplinary

So, here in the level 3 it was more of subject specific but in the level 3 it is more of interdisciplinary, the disciplinary with not only within the discipline interdisciplinary and trans disciplinary that is across the disciplines. So, these are to be developed. So, how these different levels, how these sustainability competencies can be incorporated?

Incorporated starting from the basic level of cross curricular activities to the subject discipline, subject specific discipline to transdisciplinary interdisciplinary disciplinary and transdisciplinary interdisciplinary domains into subject domains.

So, this is the kind of the framework they have given that how can the short shortcomings in our operationalization of model sustainability ESD model can be compensated through this developing this model; that means, how we can guide our learning and teaching according to this framework

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So, now to let us; that means, the frame model for example, as we have already discussed that is this is based on the cognitive, affective, motivational, behavioral goals, behavioral development goals and sub competencies under these are things.

So, in the in the sense of hot cognition that is level 2 and level 3. So, can say level 2 level 3; that means, hot cognitions that is the higher order thinking cognitions. That means, at the level of you know thinking at the global level thinking at the you know international levels hot cognitions that is higher order thinking cognitions.

Similar the effective motivational aspects of facets of sustainability competencies also and that include the affect need affective need emotional that means emotional need that also we would we should be emotionally passionate about now we need to achieve these things. So, affect that is called the affect need means as an emotional need motivation related to the competencies features. So, we are we must be highly motivated intrinsically motivated to develop these competencies.

So, that kind of thing that is the second level of and the high level of competencies. And this also include it also includes our values, our own ethics, our morality, our justice, our you know responsibility sense of responsibility and a kind of positive attitude. Not only to think of ourselves or our country or like, but to think about the global people global context because we are the global citizens so.

So, not only with regard to these you know to this the climates, the environment and the etcetera but also towards the peoples well being conjunction style production style. So, that is a mature kind of epistemological beliefs and value system should be incorporated about the relativity how we are related to each other being a being the citizen of the 21th century globalized world.

So, how we are related to each other? How the situational characteristics also has a real link with empirical knowledge? And how what are the important areas of sustainabilities at the level 3. Like across the countries, across the culture, across the countries. Like that at the international level at the global 21th century global context we have to empirically analyze all these things.

So, it also includes the values, justice, the sense of responsibility, positive attitude, resilience and developing positive characteristic strengths, strong beliefs, value system,

empathy, compassion. So, all kinds of the characteristic strength should be developed at the level 3 because we are not just thinking about ourselves our country our people, but across the globe. So, this being the global citizens it is our responsibility.

Here we can say so the affective goal commitment or we can say positively assess sequence of actions is the core of any motivation without which an action will not be performed. So, cognition is that at the analytical part thinking part higher order thinking part analytical if it is ok. But first in order to implement in order to apply this cognitive analysis on cognitive strategies and planning strategies etcetera we need to be motivated deeply motivated.

And for that motivation is being strengthened by our effective or our feeling on emotion so that is affective goal of commitment. So, we are dedicated to, we are dedicated to we are committed to achieve those things. So, that affective or emotional that emotional attachment or effective goal commitment; that means, we are committed to our to goal that is a sustainable development goals.

So, that affective emotional empathetic goal as goals and the commitment that mobilizes our motivation, that is the core, that is the core we can say energy of you can say energy of you know analyzing the plan of action and executing it. Because that is the whole that is the whole sequence of, that is the whole sequence of action that can help us that can motivate us to implement it.
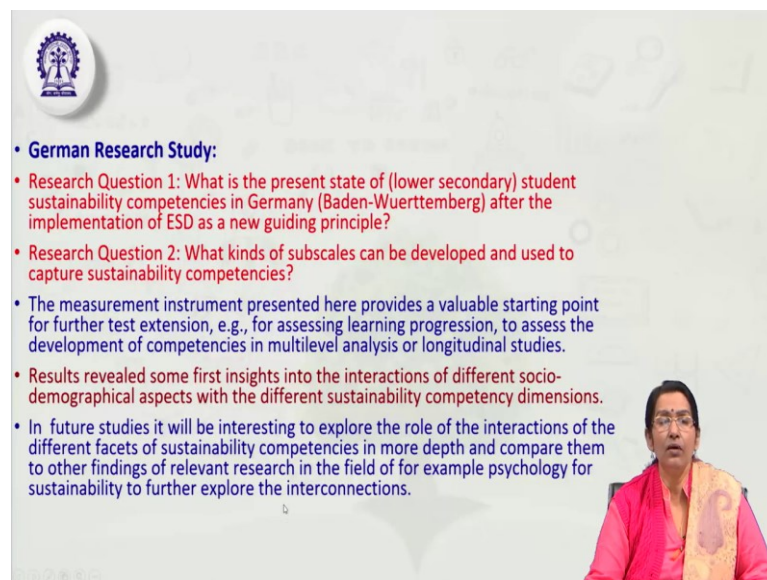
So, affective cognitive analysis at the global level taking into consideration all the values, ethics, morals, responsibilities, attitudes, developing the sustainability competencies like you know optimism resilience all kinds of thing higher order thinking process etcetera. Then transforming it to the affective goal commitment; that means, we should be passionate of we should be committed to our SDG goals.

And that will mobilize our not only the resources plans of plan of actions and strategies and etcetera, but also motivation. So, that cognitive analysis with affective goal commitment will mobilize our motivation and energy so that we can achieve the actions. So, the so that the behavioral outcomes learning outcomes performance outcomes will come up.

So, this is the frame model how the sustainability competencies can be incorporated from the basic level to the higher level that is higher order thinking level at the 3rd level in terms of transdisciplinary, interdisciplinary. Here we are not very much confined to our own domain subject etcetera, but it is that is at part; that means, all the disciplines are at part in terms of interdisciplinary research transdisciplinary research.

A mechanical engineer can also do the do in collaboration with the social scientist with the collaboration with sociologist and the all kinds all across the domain. So, transdisciplinary, interdisciplinary in research, in academics, in program execution, in course development, in you know all kinds of academic and research activities.

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So, now there is a there is a German study research study there, so where the two questions are very important. So, in that study the research question 1 is that what is the present state ok. Present state that is the lower secondary student's sustainability competencies in German so after the implementation of ESD as a new guiding principle.

So, they wanted to examine what is the state of a secondary level lower secondary level student in their education framework after it has ESD has been introduced. Second question is that what kind of subscales can be developed and used to capture the sustainability competencies. Yes, just including the sustainability topics and ESD topics and topics and chapters in the books is not enough, so is not enough.

So, actually it we have to we have to learn it understand it think it feel it act upon it and we have to make it a part of our consciousness; that means, all the time we are it is there in our consciousness. So, whatever we do we perform we feel we taste we work whatever automatically it comes to our mind so that to put it into the consciousness.

So, they wanted to examine at a lower secondary level students, what is the sustainability competencies that they have developed after this ESD word has been introduced. Now, second question is that how to measure it, how to assess it. Like yes we have incorporated from different aspects from different sources etcetera, but what is the, what is there any measurement tool is there any scale and the tools to map it.

So, how to map it? So, this is here the 2nd question is that how to develop what kind of subscales can be developed to and use to capture and to capture the sustainability competencies or we can say we to map it that yes we have learned and it has a so and so impact on our behavior in society.

So, the measurements of instruments you know these are going on so these are going on and to assessing the learning progression in terms of competencies multilevel. So, many longitudinal and sequences studies are going on. So, results reveal that from their studies results revealed that, first insight into the interaction of different socio-demographical aspects with different sustainability competencies dimension.

So, here their results their study of their results reveal that the first insight comes from the interaction of different socio demographic aspects different people from different sections different geographical areas different cultural background. So, when they interact with each other so they are develop kind of you know sustainability competencies may be related to more towards our social skills, social intelligence and the cultural competencies cross cultural competencies.

So, and that can be; that means [FL] competencies in more depth and compare them to the other findings of relevant research then the future studies are focusing more on exploring all these kinds of cross cultural interactions to map to to assist to evaluate the sustainability competencies and to compare with other kinds of other kinds of research that is going on in psychology or sustainability related areas.

Table 1. Samples for each dimension of the questionnaire.

	Questionnaire Dimension	Sample	Item Type
1.	Socio-demographic	Age, gender, chosen subject specification	Mixed
2.	Basic cross-curricular and subject-specific sustainability related knowledge	If someone wants to live sustainably, she/he* should... Please mark only one response option (the most appropriate). □... always donate money for aid and conservation projects in poorer countries. □... if possible, eat local farming products, invest money profitably and fight for worldwide peace. □... eat as vegan as much as possible to protect local animal species, to create a fairer life for animals and humans. □... respect nature, advocate for justice, and make sure everyone has enough to live on.	Single-choice items with four response options (one right answer, three distractors) [1]
3.	Affective-motivational beliefs towards sustainability	When I hear of cars that consume a lot of fuel, I get angry.	Ordinal scale (4-point Likert, from Strongly disagree to Strongly agree)
4.	Self-reported sustainability-related behavior intentions	When I buy chocolate with my pocket money, I buy organic or fair-trade chocolate.	Ordinal scale (4-point Likert, from Strongly disagree to Strongly agree)
5.	Intentional subject-specific sustainability knowledge applied class 5-6 (age group 9-14) class 7-8 (age group 11-16)	recycling, smart phone production/use, decline in insect numbers sustainable products labels/consumption, organic agriculture, renewable energy	Single-choice items with different response formats (true/false –fast response items)
6.	Dilemma situations	Imagine the following situation: You are the boss of a big company and you can make all decisions for this company. Your company has earned a lot of money this year. You decide: (Please mark only one response option.) □ I install a new solar system and an electric power charging station for my employees' e-cars. □ I build a new sports area so that my staff will feel well and stay healthy. □ I hire a consultant who helps me with future decisions to make the production more environmentally friendly and improve the working conditions for the employees, and I implement this program. □ I pay myself a big salary so I have money to go on holidays with my family.	Single-choice items with four response options on an ordinal ranking [2]

[1] Correct answer is marked; [2] The answer with the highest score covers three sustainability dimensions and is marked.

So, the this is you can say a framework that sample for each dimension of the question. So, they have probably they have developed a kind of questionnaire. Here you can say in the questionnaire the dimensions are like one dimension is that socio-demographic dimension.

So, socio-demographic dimension related to age, gender, gender chosen, subject specification, etcetera. 2nd is that basic cross curricular and the subject specific sustainability related knowledge how these are being provided. So, these are being so in the questionnaire they put this kind of items this kind of items so I mean simple items.

Then 3rd is that affective and motivational belief to our sustainability; that means, like for example, the example like when I hear the cars that consume a lot of fuel I get angry. Or similarly we can say the when that means, we are talking to somebody in the on the road then we should switch off our vehicle, switch of our without wasting the energy and as well as the creating the pollutions.

So, these kind of statements they have incorporated in the framework to measure to assist the awareness sustainable awareness. Then 4th category they have in the self reported sustainability related things behavioral intervention. Self reported means like for example, when I buy a chocolate with my pocket money I buy organic and fair trade chocolate.

Again putting the you know the covers in the dustbins and taking care of the waste materials like in the plastic bottles and packaging packages etcetera, how do we dispose it how these are going to we dispose properly in sustainable way. So, then again another category is that intentional subject specific sustainability that is intentional subject specific sustainable.

Like for example, recycling, waste management, smart phone production, smart phone productions and use decline in the insect numbers. Lying how these our technological you know equipments gadgets are being recycled waste management all these are intentional specific intentional.

So, here we can say. So, another is the dilemma situations another is the dilemma situations a confusion. So, here we can say 1, 2, 3, 4, 5 domain 5 dimensions 5 dimension questions cover the 5 dimensions and the 6 dimension is the dilemma situation, there is a confusion. So, here you can say items are kind of you know socio-demographic item kind of mixed kind of item, across the gender, age etcetera.

Then the basic curricular subject domain so subject specific, sustainability and knowledge is that single choice items with four response options like rating scale or question answer 1 right answer for the and MCQ's type distracters will be there MCQ type etcetera.

Then the so the item types are of the mixed sometimes rating scale, sometime MCQs, sometimes a kind of mixed interpretation and sometimes is the ordinal scale that 4 point Likert scale. Again another intentional activities, again single choice item single choice item; that means, true false.

So, the questions questions are prepared and following this mixed method ok. And the let us show the dilemmas. Dilemmas like for example, you have given an example. magine the following situation. You are the boss of the big company and you can make all the decisions of this company, your company has earned a lot of money this year.

So, you decide like for example, whether to install a new solar system on and an electric power charging system e-cars or I build up a new sport area a sport area for my staff or I have the consultant who will help in the future decision to make this production more environment eco-friendly or I pay myself with big salary I have to go to the holidays.

So, out of these four options you have to select one. So, single choice items with the four response options. So, in this way so the correct answer is marked and the answer with the highest score offers the three sustainability dimension and is marked. Three sustainability dimension that is all these cognitive affective, affective emotional, affective motivational and the behavioral aspects.

So, these are the three. So this is the type of you know some questionnaire sample they have used for that study.

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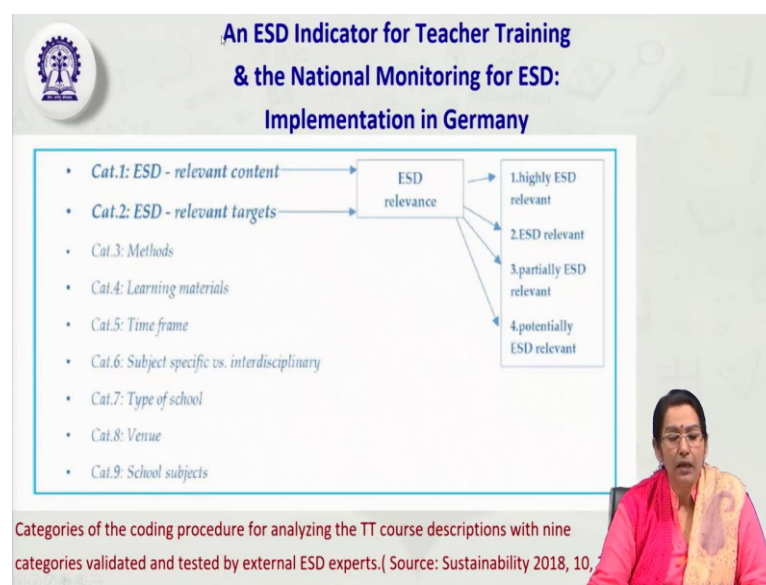
So, now an ESD indicator for again how an ESD indicator for the teacher training? And national monitoring for an ESD in Germany implementation in that has been implemented in Germany. So, first thing is that ESD indicator for teacher training. The first is category 1 that is ESD which is relevant ESD relevant content. There ESD relevant content for teacher training, 2nd category also relevant targets ok.

1st is the relevant content and 2nd is the relevant targets to achieve. So, here relevance in terms of now there is again ESD contents and the targets are again being categorised highly ESD relevant, ESD relevant, partially ESD relevant and potentially ESD relevant in these four categories the things are categorized.

Then yes methods are also teacher turning methods, learning materials, time frame, subject specific versus interdisciplinary and transdisciplinary things, and type of the

schools, venues, school subjects these all these factors are also other factors. So, these categories of the coding procedure for analysing the teacher training course descriptions with 9 categories these are the 9 categories validated and tested by the external exports.

So, this so they have developed this kind of teacher training model which has been again verified by the ESD external ESD experts. So, they have tried to put it into the framework.

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So, similar it is a kind this is a thematic indicator framework that is for education 2030 framework for action co action course and UNESCO has given it. So, UNESCO has elaborated on it like goal is ensure inclusive and equitable quality education and prompt lifelong learning opportunities for all that comes under SDG 4.

So, then how what are the thematic indicators? Yes first is that here first indicator you can say as is the first indicator is like equity. So, these are the equity, sex and then the location, then the wealth and then available coverage these are the concepts these are the concepts.

Then the learning components by 2030 ensure we have to ensure that all the girls and boys equitable they must complete the free equitable and quality primary education primary secondary education. This leading to relevant and affective learning outcomes, this is the 4.1 target ok.

So, 4.1 target there is learning then the comes the learning domain. Here in these categories the equity, sex, location, etcetera, how many of them are actually enrolling? So, percentage of children of young people at the end of the primary at the end of the thing. So, that is the kinds of mapping sees then efforts to generate the global measures will focus on the common concepts of minimum proficiency drawings like the national regional and the.

Then here in the outcome variable in the objectives we have to we have to decide we have to standardize; that means, a basic standardized that the at the minimum level of proficiency at the national level, regional level and the international level for the international students assessment.

Second is that administration of the national representative learning assessment tools, if at all they are using at the primary secondary level or not how then what is the duration available for which area and standardized standards to be needed to be developed for all kinds of assessment then again a criteria standardized standard should be there.

So, the observations of the learning outcomes will track the national, regional and the international assessments. Similarly, completion that is gross intake into the enrolment and then completion rate up to the primary secondary and upper secondary. So, what is the enrolment rate and then what is the completion rate?

So, these indicators are actually currently available as per the as per the common methodology end up UNESCO framework. So, the rate is calculated for the young people is it 3 to 5 years and for the above and above the official ending is for the given education. So, what is the statistics what is the data actually?

So, this; that means, when the learning content and administration is coming how these are been standardized as per there is national, regional and the international standard. And then the completion of the completion of this primary education secondary, primary and secondary education that is the gross intake level and the completion level.

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So, here again teacher education for sustain development in Germany. How in Germany they have adopted this kind of model like learning objectives for teachers to promote the ESD ok. Like for example, the teacher must know about the sustainable development, what are the different SDGs and how these are related to different topics and challenges etcetera.

So, they must also understand you know discourse on and the practice of ESD not just in terms of content, but in terms of practice both at the local level national level and the global context. And how to learn about SDG's and ESD and how to practise it then third is that issues the emerging issues emerging issues and challenges of sustainable development, both in the front of social ecological and economic and the cultural dimensions as well.

So, like maybe that we can say the you know pollution is a thing overpopulation is a thing then chaos and the you know pandemics then your you can say unemployment then cultural you know cultural aspects cultural dimensions may be cultural adaptation acculturation and cross cultural dimensions these are the things.

So, how these are to be taken as the intergenerational perspective for the global justice again? So, social, ecological, environmental, economic and cultural dimensions from the different perspectives of principles and the values of sustainable development. So,
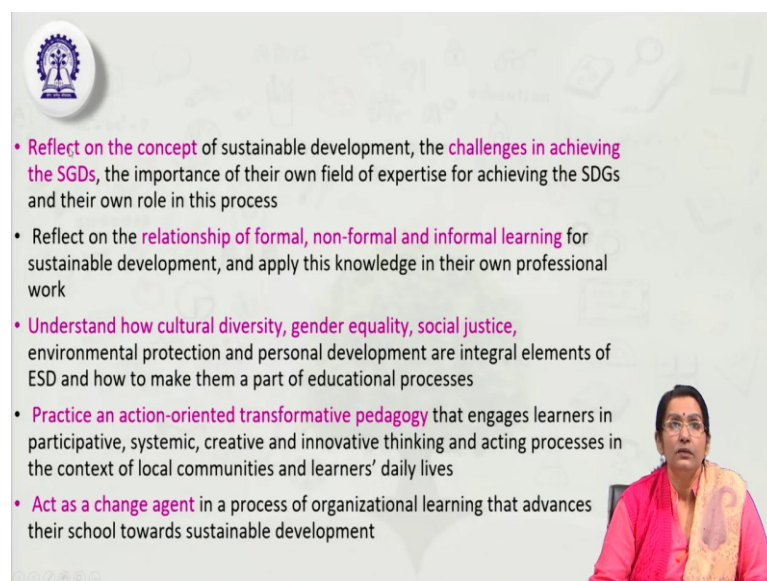
including that of intergenerational and global justice. So, these are to be analyzed under the learning objectives of the teacher training development.

So, they have taken into account these things. Then again disciplinary things interdisciplinary transdisciplinary perspectives of also on the global change and the global change and local manifestation in terms of climate change, in terms of you know natural disasters, disaster preparedness, then you can say agriculture, then the export and import, then you can say export and import food security and then the health and the energy level also sustainable and clean energy.

And then in infrastructure then jobs also relevant employment whether the jobs are decent or not equality parity and equality in the wages, job policies all kinds of things. Then again your you know you can say the global citizenship, global partnership the life below water life on earth. So, all kind of issues both in terms of interdisciplinary transdisciplinary perspectives should be discussed should be dealt with and should put into the learning objectives or along with the local manifestations

And depending on the local people's needs local needs and the geographical context also we have to look into the local perspectives also. So, these are the learning objectives for the teachers to promote the ESD through these kind of you know objectives and the strategies.

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- Reflect on the concept of sustainable development, the challenges in achieving the SGDs, the importance of their own field of expertise for achieving the SDGs and their own role in this process
- Reflect on the relationship of formal, non-formal and informal learning for sustainable development, and apply this knowledge in their own professional work
- Understand how cultural diversity, gender equality, social justice, environmental protection and personal development are integral elements of ESD and how to make them a part of educational processes
- Practice an action-oriented transformative pedagogy that engages learners in participative, systemic, creative and innovative thinking and acting processes in the context of local communities and learners' daily lives
- Act as a change agent in a process of organizational learning that advances their school towards sustainable development

So, then again the reflect on the concept of sustainable development there is the challenges that is in achieving; that means, for example, when it comes to the dilemma when it comes to the inter driver dilemma, the confusions, conflict. So, there are the definitely different and emerging challenges are coming up. So, how these challenges to achieve these challenges to be mitigated challenges to be resolved ok?

So, that is why reflect on the concept of sustainable development the challenges in achieving the challenges in achieving this SDG's and the and we need to develop that kind of expertise; expertise to play a different role play our individual role in this process.

So, what would be our contribution in the process of facing the challenges mitigating the challenges and proceeding towards SDG achievements? So, similarly reflect on the relationship of the formal, non-formal, informal learning. Again ESD it not just to be confined into books training books or the book materials and learning materials, but also it has to be incorporated in terms of our interpersonal behavior, social behavior, formal, informal and non-formal.

For all the kinds of the you know application of that knowledge both in our personal life, in the professional life, in the workplace, in the in our community activities, everywhere. So, along with that understanding how cultural diversity, gender equality, social justice, you know and social justice and the you know international laws, policies.

And then you can say UNESCO's role in you know in dealing with the in helping out the different countries on the developing countries or poor countries under developed countries. So, environmental protection so all these things would be incorporated as a part of ESD part of educational process as the element of ESD.

So, the practice again practice and action oriented transformative pedagogy. Here we need to develop a kind of not just theoretical content based trans disciplinary or interdisciplinary research based, but also practice based on action research oriented transformative pedagogy.

Here we have to update our pedagogy not only just in theoretical analysis and training etcetera, but in cross cultural, interdisciplinary, transdisciplinary, research for and again

hands on practices ascent research so that we have to modify it into a transformative pedagogy.

Transformative pedagogy which can bring 300 degree transformation not just in our thought process, in our actions, in our you know in our the impact on society and achieving that achieving the targets. So, where all the learners engagement so, learners that this transformative pedagogy will boost will motivate will encourage the learners. In participating all this participating the sustainability process itself.

So, engage the learners in participating systemic and systemic creative and innovative thinking and acting processes in the context of local communities and the learner's daily life. So, this practice oriented, practice and practice and action oriented transformative pedagogy it mobilizes it encourages the learners to engage them in different kinds of activities, in collaborative projects in social projects in community activities to.

So, in a very systematic way in a creative way in an innovative way not just focusing on the local community activities, but learners individual life daily life and is an at same time in the global context also so both the local needs and the global requirements. So, they so that is so, both the teachers and the teachers and the students and the teachers and the stakeholders teachers along with other stakeholders they should act as a change agent.

Because a change agent in the process of that organizational learning that advances in their school towards sustainable development. So, it is not the responsibility of the principal or the headmaster or all the only the teachers or the students is not. It is a community responsibility is the common responsibility just shared responsibility, it is a collective responsibility. So, when all the people will be actively engaged so they can act as a change agent.

So, let we can start with a village we can start with a particular community school we can start with a neighbourhood school, but here all the stakeholders both direct and non-direct and they will be engaged actively in a participatory method, in a creative and innovative way, in an they will be engaged with the effective need and motivation of bringing that change transformation in their society in their in their lifestyle in their living daily living.

So, then only it can be possible so then only it can be possible. So, we can take an example of a community or the locality or a particular villages, but we have to mobilize or from mobilize at all levels contain level, school level, action level, formal, informal, non-formal level, cultural level. So, again you know the in the cultural diversity and issues like the social justice equality accessibility all these issues.

So, that we can all of us we can act as a change as in to bring that transformation not only in our school not only in our organization not only in our institution, but in the society we can move towards the transformation transformative society. So, then only the sustainable development can be possible.

So, by using ESD as a tool developing a transformative pedagogy action research, action based programs formal, informal, non-formal, engagement involvement dedication, high motivation with all kinds of activities and engagements and you know sharing the values and commitment towards sustainable achieving the sustainable development.

Then only we can develop build up a organizational platform learning platform to claim our organization or to claim our institution or the school as a eco-friendly sustainable organization ok. So, now I am just completing here, now in the next class we will continue with other topic.

Thank you.