Sociology of Science
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Lecture – 04
Locating Humanities & Social sciences in Institute of Technology- Part 1 Ravinder Kaur

Dear students, today we shall be discussing an article by professor Ravinder Kaur. Who is based at Delhi IIT. The title of the article is positioning or locating humanities and social sciences in institutes of technology.

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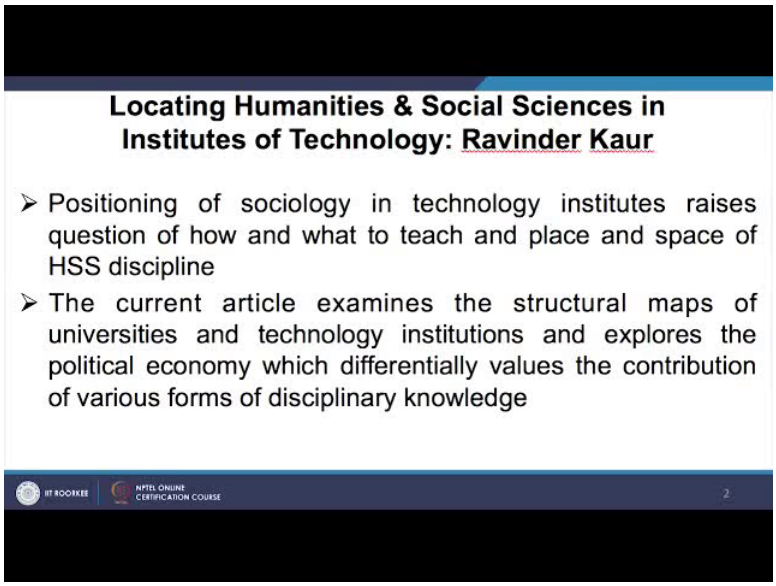

When you look at a article title like this the first question that springs to mind is why do we position humanities and social sciences in institutes of technology like IIT's, NIT's or any engineering colleges? The answer lies in the very question itself. That there is a need a felt need for teaching social sciences and humanities and technology institutes. Now why are we doing this article in this course? Because the very course title suggests that it is a course on science technology and society. Hence, the course intends to establish a relationship between science, technology and the society the scientific development, technological advances and it is impact on society or vice versa.

Now, this is a subject which is the which is considered as a sub branch of sociology. Science technology and society can be considered as synonymous with sociology of

science which is a sub branch of sociology. Hence, a course which is being floated from sociology is been taught. Let us say in engineering institutes to B.tech students to M.tech students to engineering students in general.

Why do we have to teach a course of sociology to engineering students? What is the position of social sciences in general in technology institutes? Since, we are doing a course on science technology and society I felt, that we must discuss this issue in some details and hence the inclusion of this article by Ravinder Kaur which is titled locating humanities and social sciences and institutes of technology.

The question that the article examines is the structural map of the universities as well as technology institutes and explores the political economy which differentially values the contribution of various forms of disciplinary knowledge. Various forms of disciplinary knowledge social sciences, humanities, psychology, sociology, economics, metallurgy, electronics, mathematics, chemistry, these are different of various forms of disciplinary knowledge, but it is a market economy it is a political economy which differentially values the contribution.

The contribution of each of these disciplines are differentially rated. Thanks to the political economy political economy, you can look at the market economy. Market sometimes gives importance to certain subject's certain disciplines and the knowledge that a magnet from such disciplines for instance management. Management has become a very hot topic of discussion not only in academics, but also in industry. Industry values that industry values a management graduate or a MBA professional or somebody who has taken a degree from Indian institute of management. Any of the IAMS. Hence, their importance has increased.

Hence the a management professional who has taken a degree from IAM gets a high salary gets a liquidity position. Similarly, sometimes the political current political ideology which is being propounded by the government at the centre or the state at the level of state. They decide which discipline should be given more importance which discipline should be emphasized upon. Whether it can be a subject like Sanskrit or a subject like value education or a subject like economics. Those subjects start getting more priority, get starts getting more funding, starts getting more importance, in the academic setup.

Hence, this is what Ravinder Kaur suggesting once she says that the political economy differentially traits differentially ranks, differentially values the disciplinary different forms of disciplinary knowledge and in this context, we are looking at the importance of the value of social sciences in technology institutes. In particular and the role of social sciences in society in general.

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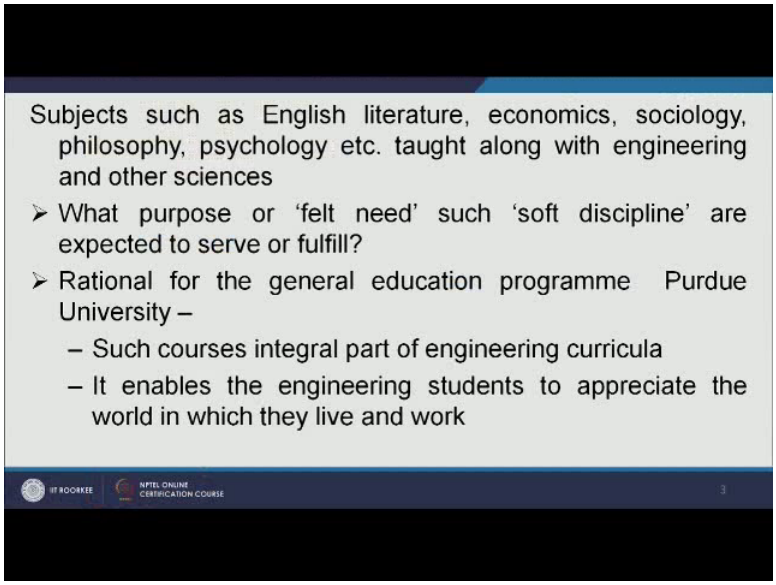

Now, she says the subjects like English, literature, economics, psychology, sociology, philosophy, they are all taught along with engineering disciplines at technology institutes, but why the why they are there in the first place? Because the students of engineering are not there to get a degree in social sciences. The students are there to get a degree in engineering. It is their engineering background and it is their understanding of engineering knowledge that is going to take them far in their carrier prospects. Why isn't it a wastage of time to con to have subjects like social sciences?

Isn't it a wastage of time to have subjects like a humanities and engineering institutes? No, subjects like soc sociology or psychology though it is a well-established subject for the last 200 years, but when it comes to the positioning institutes of technology, their validity or their value, their importance, is not self-evident it has to be proved. Such proof has come from initially the university structures of the modelling of universities at America.

For instance, the rational for general education program at Purdue university is given as the such courses are integral part of engineering curriculum. The rational provided for general education program at Purdue university argues that such programs, such disciplines, such subjects, are integral part of engineering education engineering curricula. It enables the engineering students the understanding of subjects in social sciences. Enables helps the students of engineering to appreciate the world in which they leave and work.

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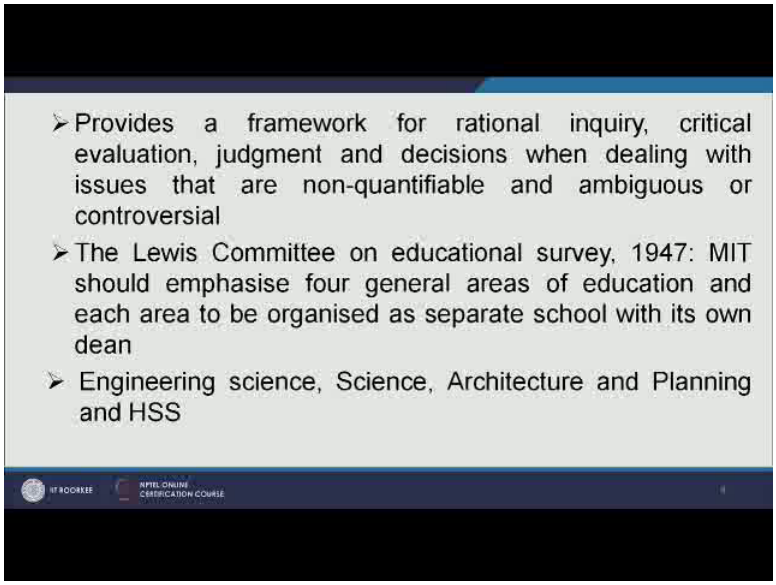

It provides a framework for rational inquiry, critical evaluation, judgment and decisions when dealing with issues that are non-quantifiable and ambiguous or controversial. Now social sciences have that distinct age over engineering sciences or natural sciences. It provides a framework to understand the very society we live in. To appreciate the different cultural diversity, different societal norms values. It helps us to appreciate and understand that not everything is quantifiable the many things which cannot be put in black or white terms. It cannot be put in either autumns there are certain grey zones.

Which one has to stand within the framework of social science disciplines or humanities disciplines. It enables us to have rational understanding of human behavior to understand human behavior through logic and reasoning social. Sciences enables the engineering students to undertake such a rational inquiry.

It enhances the ability of engineering students to study things, study societal norms, values, in non-quantifiable majors. That is qualitative stuff. Things that cannot be put in numbers, but it has to be understood anyway and that framework comes from social sciences and humanities. Things can be ambiguous things can be controversial. For example, a building of dam. It is not a straightforward question for civil engineers maybe it is about how to build a dam, but building a dam also involves displacement, it involves relocation of millions of people, thousands of villages, uprooting of villages from their ancestral land, relocating them somewhere else, it involves disturbing the human settlements, it is not an easy thing the very dam building process may be easy, but the things that are involved and dam building such as relocation, resettlement, this issues can be controversial, can affect human lives. Such issues can be best understood within the framework of social sciences or humanities.

Now, Lewis committee on educational survey of 1947 stated that, MIT should emphasize 4 general areas of education and each area is to be organized as a separate school with it is own dean. Hence, those emphasis given to 4 general areas of education and they are engineering sciences, natural sciences, architecture planning and humanities and social sciences.

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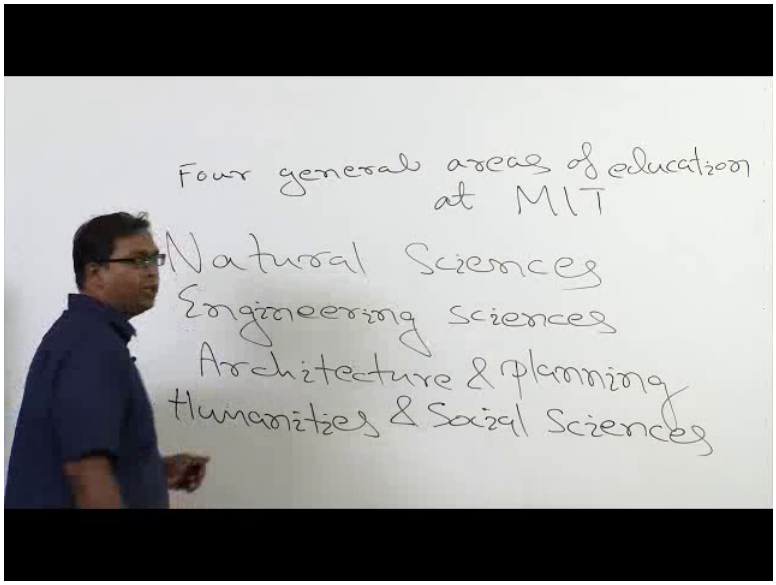

Now, these are the 4 major areas of education that MIT emphasizes on that is MIT is Massachusetts Institute of Technology. It emphasizes on education and 4 this 4 of this general areas of education.

Now, the ordering in which I have written on the blackboard is not the order or not the ranking given to different subjects. It means that humanities and social sciences are written at the end, it does not mean that it occupies a lower rank in terms of overall hierarchy of different disciplines. It is just that I wrote it that way, that is the idea that there has to be equal emphasis given to all these areas of education. There is no ranking 1 subject cannot be considered as superior to the other. This is the idea and hence the MIT for instance is known both for it is engineers as well as social scientists if you know.

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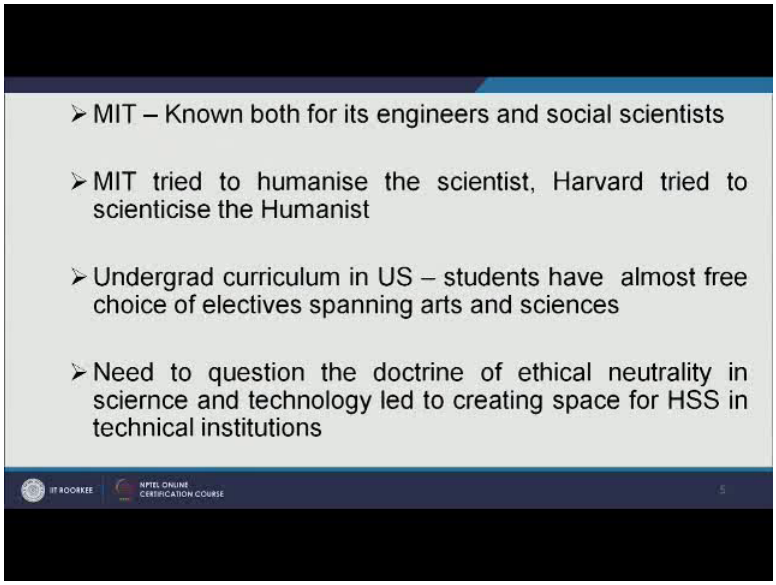

Noam Chomsky is one of the foremost intellectuals of the world he is a great linguist. Otto mccune great historian of science, he also spent a lot of time at MIT. There so many other names who happened to have made tremendous contribution in the field of history, linguistics, psychology, sociology, they found a place in a premier technology institute like MIT hence the importance of social sciences and humanities is without any question in engineering education.

Now, while MIT try to humanize the scientist Harvard which was from the beginning trying to scienticise the humanist. That is how Ravinder Kaur the article author puts it. That Harvard has always led emphasis on technologists. On scientific knowledge

production and importance given to education delivery in scientific subject's scientific disciplines. Now in in undergraduate curriculum in united states.

For instance, the students have a almost free choice of electives, spanning arts and sciences. Undergraduate students have a free choice in American universities. In terms of choice of electives and this choice of electives can be from humanities, from social sciences, from engineering sciences, from natural sciences, from architecture, now that idea is that to give students at overall understanding of different aspects of society. That when they graduate they have developed a solid framework to understand and appreciate the world the leave, the world in which they work.

Now, why such importance given to humanities and social sciences and American universities? Ravinder Kaur says that it is primarily. Because, that controversy regarding the American intervention in Vietnam. In the Vietnam war that America was engaged in it led to questioning the ethical neutrality of the scientists working in our in universities. The scientist said that whatever is happening in campuses outside the campus outside the university, does not concern us we are concerned in concerned, with hard core research. We are concerned with find finding new scientific technologies, but it is for whom it is for the very society that the scientists are working on.

The need to respond to the political situation, political upheavals, political conflict, that are happening in the country during that time. The scientist, the technologists, academicians, in general cannot stay neutral. They must respond react to the social political economic upheavals that are happening around them. One cannot remain ethically neutral, one cannot remain value neutral, to such issues. That was the argument which gained momentum at the height of Vietnam war in US and that led to lot of subjects in engineering institutes particularly which gave emphasis to humanities and social sciences for instance the very.

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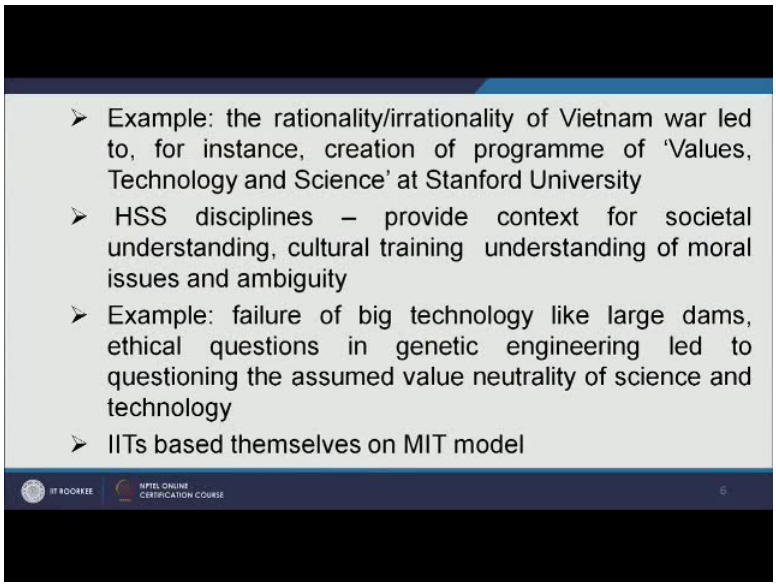

Rationality or irrationality of this war Vietnam war it led to creation of program such as values technology and science at Stanford university. They developed formulated this course values technology and science, at Stanford university, as a reaction to such growing discontent amongst the general populace as well as amongst academicians regarding the supposed position of academicians and particularly scientist in in any country.

Now, HSS disciplines for instance, it provide context for societal understanding, cultural training, it provides us understanding of moral issues and ambiguities as I told you things that are non-quantifiable, things that are controversial, things that are ambiguous, which is laden with ambiguity, only social science and humanities can put it into perb par into perspective and can provide an understanding of that.

Subjects like social sciences they provide cultural training. Students understand and appreciate cultural diversity they appreciate, the very fact that differences exist idea is not to eliminate the differences, idea is not to homogenize the cultural practices, idea is to respect such difference, respect such diversity, but this is a very important issue all over the world. That ability to appreciate and understand cultural differences, the cultural training, cultural sensitivity, social sciences and humanities through their subjects they help the students understand that better.

Now, as I told you earlier the failure of big technology like large dams, ethical questions in genetic engineering all this led to questioning the assumed value neutrality of science and technology. The so many controversial issues, so many debates, that is rising within genetic engineering regarding cloning, regarding human cloning, regarding genetically modified crops, the issues regarding the construction of the big dams and the technology.

That is involved and the human cost, environmental cost, economic cost of such a big dams and all these things, led to more and more appreciation of the role of humanities and social sciences in academics, in general and their positioning in technology institutes in particular.

Now, IITs have based themselves on the MIT model the IITs came up.

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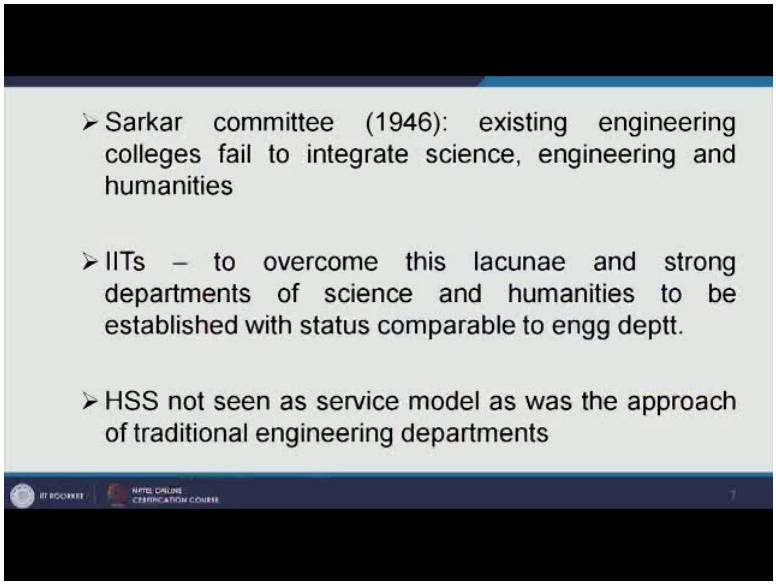

Thanks to the Sarkar committee which was formed in 1946 and this committee felt that the existing engineering colleges, it failed to integrate science, engineering and humanities. Sarkar committee way back in 1946 felt the need for inclusion of humanities and social sciences in the proposed IITs. The IITs was we are supposed to overcome this lacunae hence there was a strong recommendation for establishment of departments of humanities and sciences, in upcoming technology institute that is IIT.

That was a Sarkar committee report, but over a period of time, we have seen that the kind of subjects that is chosen by the social sciences or by the subjects that is emphasise upon

in IITs. It leads us to think that 2 models are at work, in the IITs. Simultaneously and in fact, the 2 models of social science and humanities in general the service model and the core model. Now Ravinder Kaur argues that there are certain issues or problems with the service model of humanities and social sciences in any university and particularly in technology institutes.

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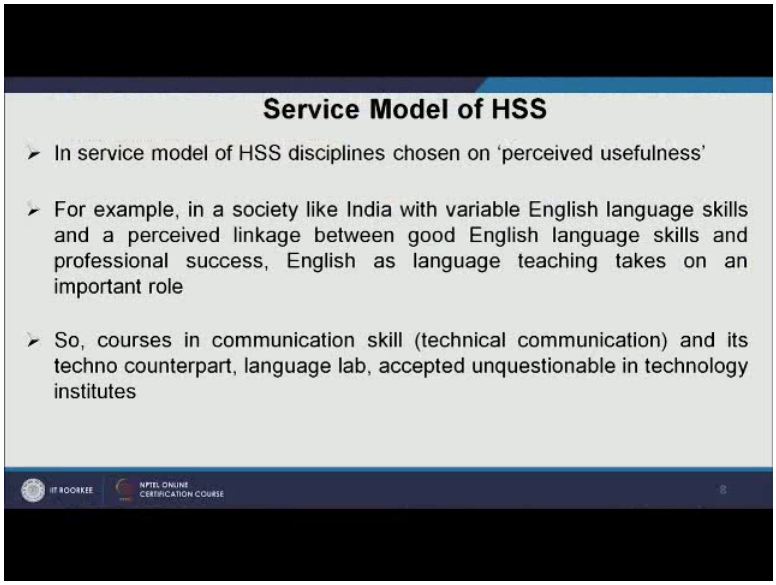

Now, what are the issues that are involved with service model of humanities and social sciences. Service model essentially emphasizes upon lays emphasis on gives importance to perceived usefulness. A subject is there in the institute because of it is perceived usefulness. For example, in a society like India with variable English language skills, that is in general Indians are weak in English, in communicating in English, in writing in English, right?

Particularly the engineering students are found to have in general, weaker in English, English communication, English grammar, English writing, but English is also considered to be very important ingredient. For success in respective carriers. If you have understanding of good understanding of English grammar, if you can communicate well, then you stand a very good chance of getting a lucrative position in the industry. In multinational companies in computer forms now this is a foregone conclusion in Indian society for the last 30 40 years.

How do we solve this problem how do we solve the problem of improving campus placement of engineering graduates who are coming from IIT's? Let us establish language labs in the IITs, let us start courses on technical communication or the engineering students would be trained in English drama, will be trained to speak English well, in in in language labs and that would allow them to get better jobs and campus placements or outside.

Hence in within the service model, professor Ravinder Kaur she argues that IIT started establishing the communication labs, the language labs. More updated more advanced the language lab better it is better importance it has, better it has potential, to take students from a unpolished state to state of sophistication in English. That will allow them to compete in the global market. Now psychology lab also to a lesser extent soft that purpose. Hence impo emphasis is given in IITs to psychology lab to English language labs and courses and communication.

This courses are considered as very important for the general improvement of engineering students to increase their marketability. Within social sciences economics have been holding a very important position because, of it is closeness to natural sciences and engineering sciences. The closeness lies in the fact that it makes use of statistics and mathematics to a large extent.

Hence, it is considered to be important by the IIT's and also the very fact the economics has played a very significant role in the policy making of the government. They are given a lot of importance for instance PV indiresan the former director of IIT madras and NC nigam former vice chancellor of Roorkee university.

They co-authored an article talking about the fact that the what is the position of technology institutes like IIT's? Why excellence is in peril? And they are did discuss the fact that economists have always been given importance in the planning commission. They have never been engineers who have found a place as members of the planning commission, but economists have always got a place though engineers are responsible for 80 percent of planned expenditure.

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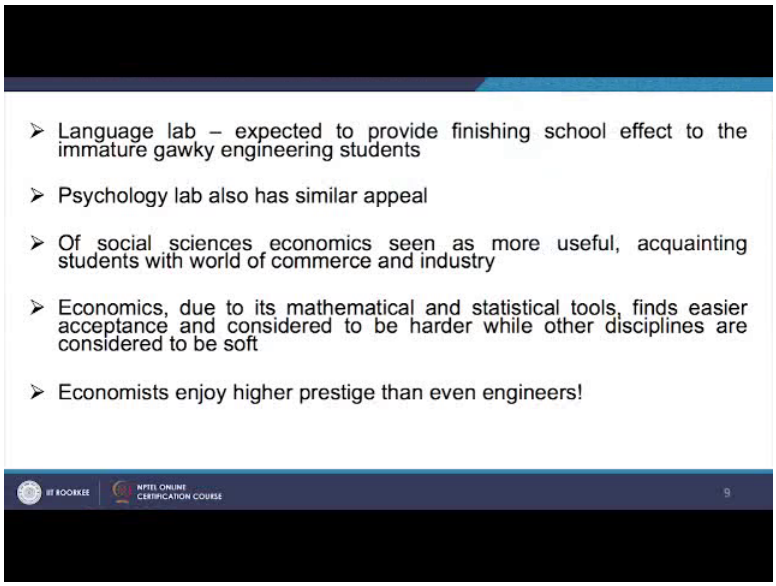

But it is economists who are given lot of importance in policymaking of the government. Even in the industry the climbed to the top is through finance or through marketing not through the engineering ladder. They themselves the 2 engineers, 2 great engineers of India. When they wrote an article talking about why engineering institutes are in a state of decay, the article was written in earlier 90s they also acknowledge the fact that economists are given sometimes more importance than the engineers and I have already told you that economics because of it is quantitative nature.

Because of it is proximity to mathematics and statistics enjoys higher status amongst the social science subjects, but again economics is not taught in it is entirety. But the students of IIT's or NIT's want course on accounting, course on commerce, that would allow them to enter the industry. There is no appreciation of classical economic theories rather they just look at one aspect, one dimension, of economics which they think is more useful which provides a soft certain purpose.

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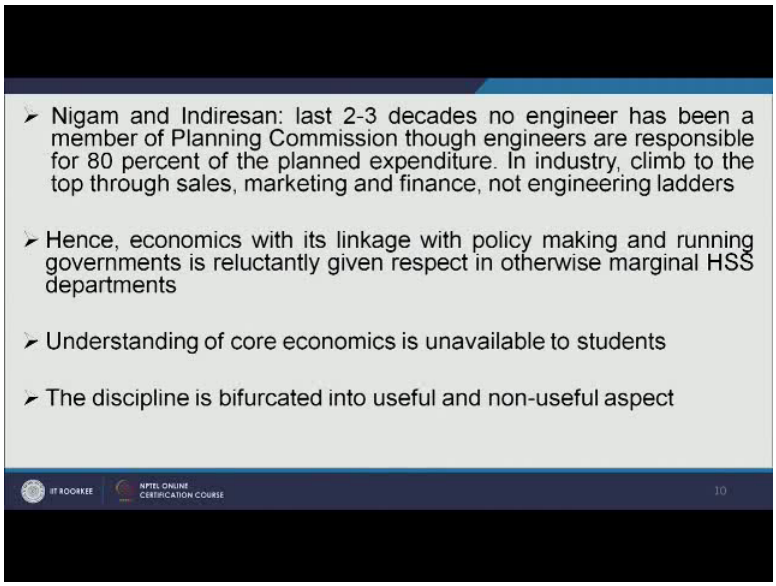

The understanding the core economics is unavail unavailable to the students. The discipline then becomes automatically bifurcated to useful and non-usefulness. Now the useful aspect is considered or perceived to contribute to skill development.

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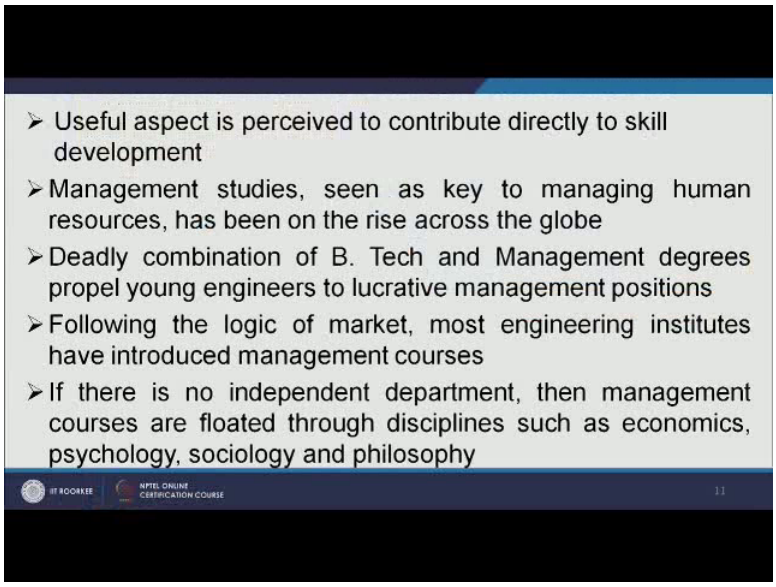

For instance, if you look at the rise of management departments and IITs and in in universities, all over the country, one can see the market demand for management graduates. All over the world and in India, the management the growth of management institutes, has been phenomenal, since post economic liberalisation of India. That is since

1991 so many management institutes have been established, all over the country. Management as a department separate department has been established in IIT's. If we do not create a separate department for management in the technology institutes.

Let us have courses related to management and those courses related to management can be taught by humanities and social sciences. Traditionally, psychology, sociology, economics, even philosophy in technology institutes like at IITs and n IITs have been told to frame their courses formulate their courses. Which would be of some use to the engineering students and which would have some management component.

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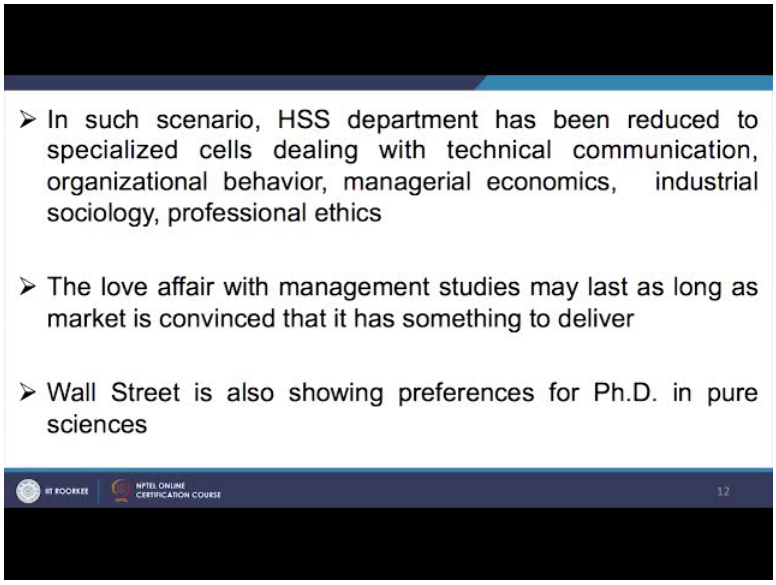

Let us say courses like industrial sociology, courses like professional ethics, which is floated from philosophy, courses like organizational behaviour, courses like group dynamics, courses like managerial economics, all these things all these courses attest to the fact that there is a service model in operation in IIT's or in technology institutes in general and there is something wrong with that.

That is how professor Ravinder Kaur argues, in such scenarios HSS department has been reduced to specialized cells dealing with technical communication or organizational behavior or industrial sociology as I told you, but such love affair with a management can end as soon as there is a change in market demand. Like for instance, she says now wall street now is looking for students having a PHD degree in core sciences or pure

sciences for instance instead of a degree in management they prefer a student having a degree in mathematics or a degree in physics.

Hence the importance giving to management according to her depends upon the market if there is a change in market demand there will be change in perception regarding certain subjects. Service model of humanities and social sciences has had a hard time.

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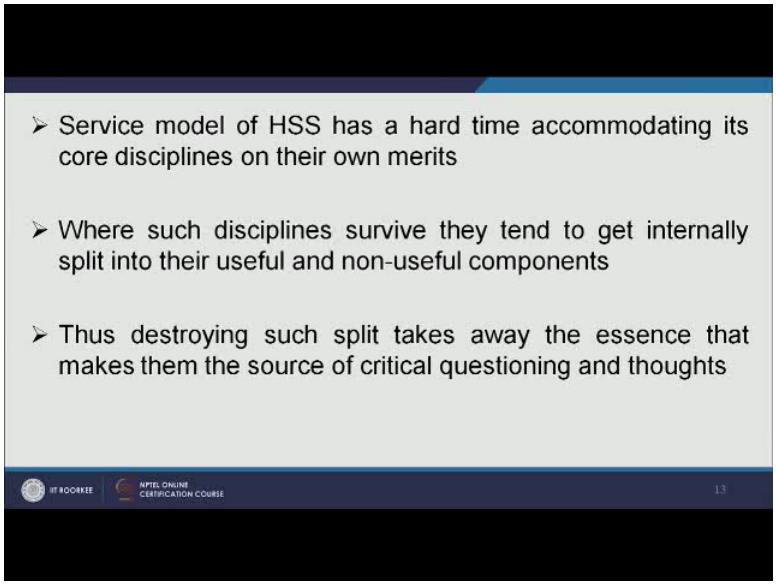

Accommodating the core discipline on their own merits. When we teach in IIT's what we do not teach is the core aspect. We teach subjects such as industrial sociology or subjects like science technology and society or technical communication or managerial economics or organizational behavior. The core subjects likes for instance in sociology or backward classes, switch the subject on Indian society classical sociological theory or modern sociological theory or a subject on political sociology, all these things get ignored, sidelined and if such subjects do figure in technology institutes. Then it gets internally split into their usefulness and non-useful components.

There is always an emphasis on only teaching the useful component of social sciences to the engineering students. That destroys the very essence of social sciences or humanities. Which makes them a source of critical questioning and thoughts. Now here I will I will end my lecture till now, I have discussed the justification for social sciences in in in technology institutes and the surface model of humanities and social sciences as discussed by Ravinder Kaur. In the next lecture I will continue the discussion forward

and talk about the core model and the difference in university model as well as IIT model.

Thank you.