Ergonomics for Beginners Industrial design Perspective
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Module No. #05
Behavior and perception
Lecture No. # 24
Psycho-social behavior aspects, behavior and stereotype

Welcome to the 24th session of ergonomics for beginners, the industrial design perspective; under module 5 - behavior and perception; the current session is the class number 24 that is, psycho-social behavior aspects that is behavior and stereotype.

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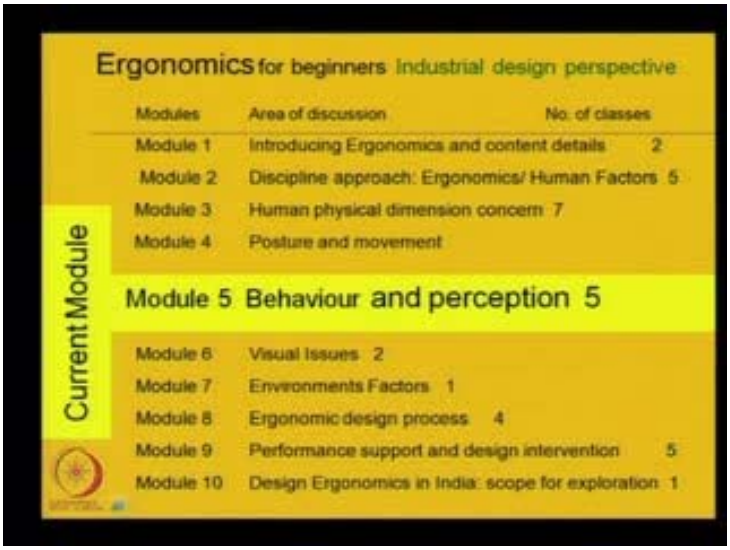

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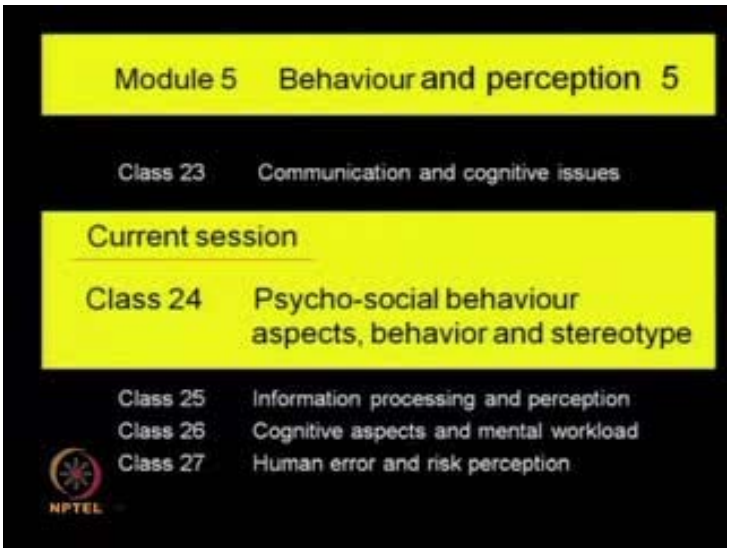

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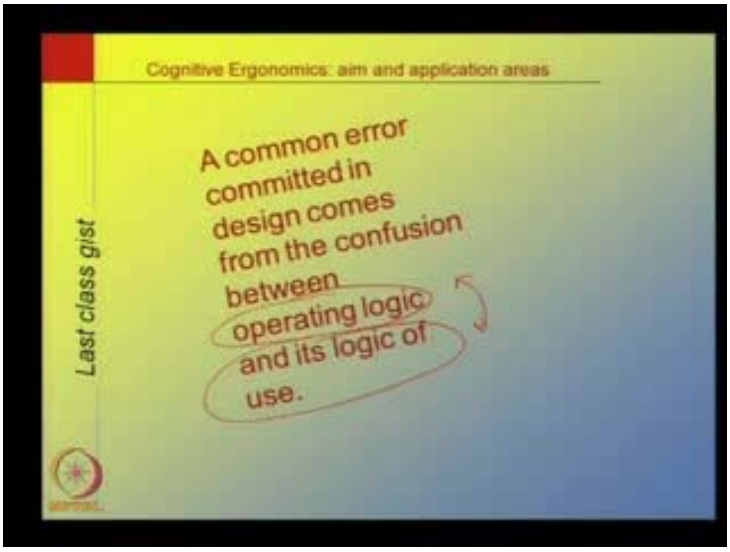

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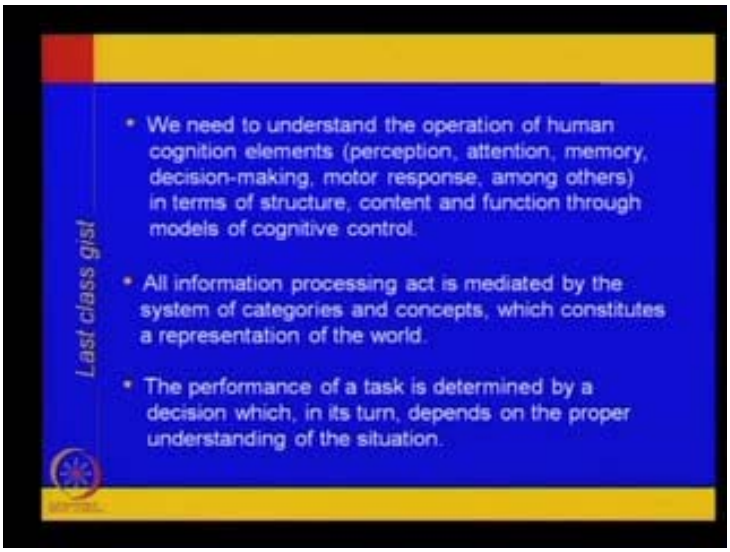

Now, the last class gist what we have discussed earlier under the cognitive ergonomics aim and application areas, we stressed upon a common error committed in design comes from the confusion between operating logic and its logic of use, if these two matches then the design success is there.

We need to understand the operation of human cognition elements that is, perception, attention, memory, decision-making, motor response, among others in terms of structure, content and function through models of cognitive control. We also have discussed that all information processing act is mediated by the system of categories and concepts, which constitutes a representation of the world.

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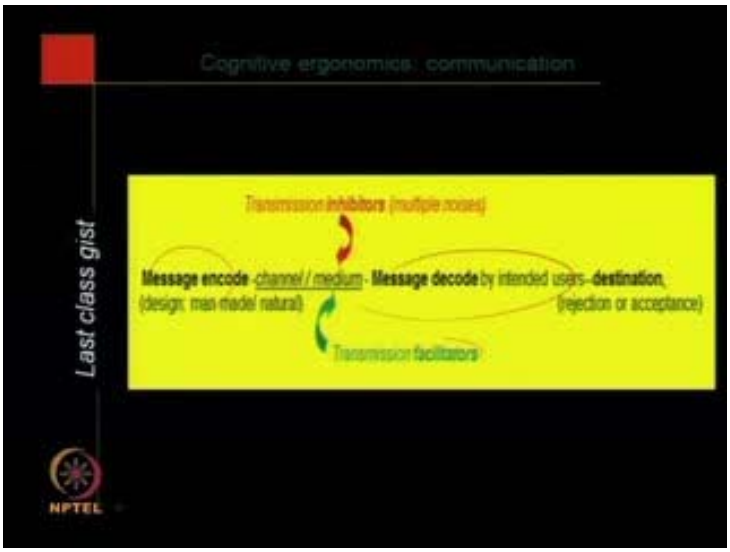

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The performance of a task is determined by a decision which in its turn, depends on the proper understanding of the situation. Development should be context specific; we have concluded last session with this communication model that man-made and natural object or article; so, message is encoded. This message has to be decoded by the intended users and while decoding, some transmission inhibitors and some transmission facilitators are there. So, their balance effect is necessary and if this transmission facilitates, then it goes to destination then we can either accept the product or reject it whatever.

Now, how best we can use this transmission facilitators? So, for that a set of human factors we need to recognize and understand its context specific application possibilities. Cognitive ergonomics - the today's session class number 24 - the psycho-social behavior aspects and stereotype.

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Now, under this the culture plays a great role. Culture and tradition; the changing culture, the earlier days and in modern times and the phases of transition, we need to consider in communication a continuous process. Man has to adopt updating or upgrading him though, we have assorted body sizes and limited mental capabilities but, our lifestyle enhancement, the new challenges are coming. We need to adapt to that and for that we need to update or upgrade our own facilities.

The behavior acceptance and satisfaction from the use of any product or system, depends on the ease of decoding of the encoded message in it and seeing if the mode of use, human behavior stereotype reactions, all these matches are there. The final product or design space would be usable and acceptable and would provide the users the facilities of using it freely safely and with satisfaction. If a product designed it is reliable for its function but, the user who is expected to use that product if, he is not able to use it freely always, an unsafe fear is there and if there is no satisfaction then, that product cannot be said a good design. So, what could be done for that?

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We require among the other factors like physical dimension match and etcetera, the physiologies, the psychological acceptance is a major role. The product or any component in any system and space thereby, should speak, should speak out its usefulness and mode of use to that intended user. Linking with users basic instincts and past knowledge, that is the semiotic application. How we can say a pen is a pen after seeing its appearance? First thing is that our body judgment is there; how to hold it and etcetera? Some specific information is presented in it; that tells how to use it. The semiotic application in a design means the product itself should say about its usefulness through its whole appearance, color texture and all other inbuilt information to its users that is the semiotic application and while decoding this message if less time less effort is there, then we can say the semiotic application is correctly applied.

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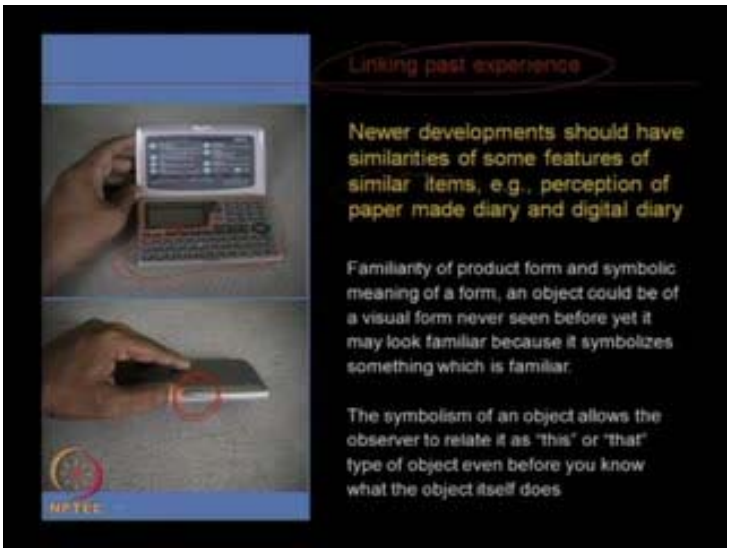

Some facts newer now linking with past experience, new development should link with past experience the completely new design. We may not find trust while using it. Newer developments should have similarities of some features, of similar items. As for example, the perception of paper made diary and digital diary, in the left hand side of this figure that some digital diary is presented here. When the digital diaries came in market few years ago, people started buying it but, after sometime it's utility value reduces.

It maybe due to some other new items availability and another thing is that the space for this typing and etcetera, this keyboard and the screen here, it is not proper. Why it is not proper? Why people do not feel it is very useful? It may be said that the space for, to see, the material is not very comfortable and to use this keyboard is also not comfortable. To open this thing, now, say this opening and closing is also not very easy though some trial is given here for that; so we can say that now the paper-made diary is still useful because, it can be said that we are tuned to see material in a written, in a horizontal manner. So, little aged people, they find this more; they find it comfortable to read from a book or a disk. Horizontal presentation is there; then a computer screen type of appearance that is, the vertical presentation; so, that is a problem. So, it says that your past experience past and if the development goes along with your existing skill, adaptability is the better.

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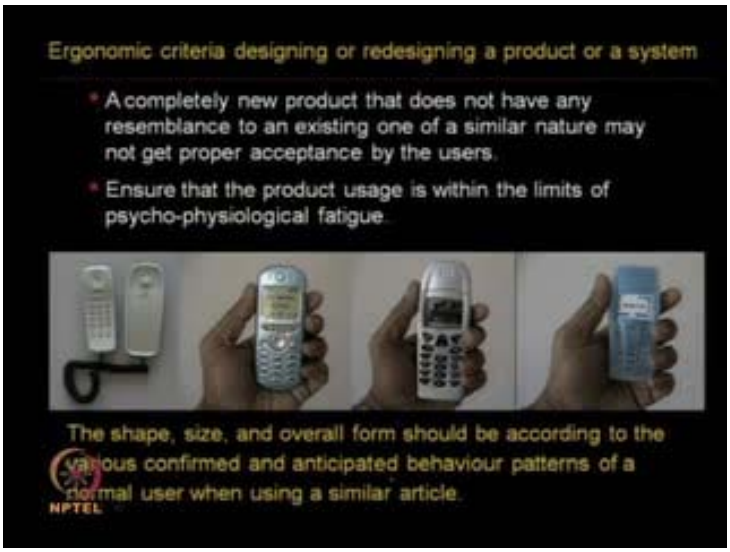

Familiarity of a product form and symbolic meaning of a form and object could be of a visual form. Never seen before yet, it may look familiar because it symbolizes something which is familiar. The symbolism of an object allows the observer to relate to it as this or that type of object even before you know what the object itself does.

Now, ergonomic criteria for designing or redesigning a product, or a system; a completely new product that does not have a resemblance to an existing one of a similar nature may not get proper acceptance by the users.

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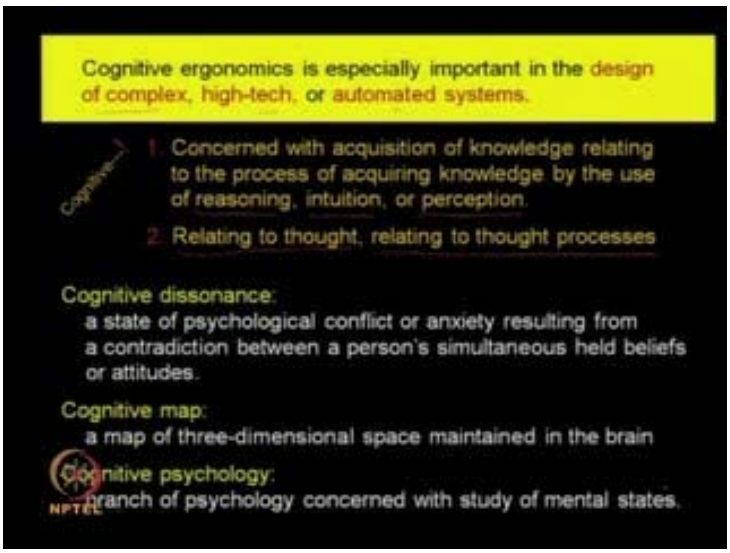

Ensure that the product usage is within the limits of psycho-physiological fatigue limits like this handset mobile telephones. The operate ability, etcetera, the shape, size and overall form, should be according to the various confirmed and anticipated behavior patterns of a normal user when using a similar article.

The cognitive ergonomics is especially important in the design of complex high-tech or automated system. Now, what is the cognitive - the cognitive application in design? What does it mean? The cognitive is concerned with acquisition of knowledge relating to the process of acquiring knowledge by the use of reasoning intuition or perception. Another way it can be said, relating to thought relating to thought process. When we see a product, the inputs from this product through various means of information system, sensory system, goes inside and then, what process is going inside? Then, motor reaction comes to use. it That is the cognitive aspect that is relating to thought process. Few terms are being used in this aspect; that is cognitive dissonance.

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It is a state of psychological conflict or anxiety resulting from a contradiction between a person's simultaneous held beliefs or attitudes. Then cognitive map: it is a map of 3 dimensional space maintained in the brain cognitive psychology; is a branch of psychology concerned with study of mental states. Now, one example that is stereotype and product semantics stereotype, is a common behavior pattern of a specific group of

people; like in our country, we use electrical switches, push button is the on and push up of that electrical switch is the off; but; in certain other population group it is different.

Now, semiotic application and this aspect sometimes also depends on culture; sometimes depends on a belief, faith of a group and the limitation. The limit of the population - it may vary - in a smaller group or a very larger group. Now, let us see an application that its utility limit is a large population; for that, incorporate cognitive requirements and product semantics in a design. The product must transmit its mode of use through inbuilt features in the appearance, acceptance; appearance; incorporate the common psychology of the users as well as population stereotypes, along with the preconceived knowledge of the use of similar articles.

As example, we would like if see these pens presented here. This pen: there are two types of pens presented here (Refer Slide Time: 18:50). Now, these two pens, how to open it? This is only a push system here or it is a spiral opening. How to know that? If we can have this type of markings here, then it will give you a good indication how to operate in this type of pens, where these two - cap and the main body opens, separates here. Whether it is a first turn and then pull or it is a spiral open, how to recognize that? If we can have a marking like this, it says that we have to rest, slide it and then pull. If we have a spiral, this type of marking then, it says that it has to be spiral open like here; it is the spiral opening and it gives a turn and then pull apart. So, these applications are more or less we can say universal. Even in the utensils or any like pressure cookers, handle piece, to cover, lid and the main body, there also these type of markings are there; how to use it?

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In machines, how to open a cap? These types of systems are useful. Now, though this aspect is universal but, its application has to be confirmed with the specific requirement. if it has varieties of openings, the application stress has to be specific. First impression about the design comes to mind when we see a product or design. What comes to my mind? Almost every product we use and come in contact, it's worth is justified in asking exactly what it is means; the identity of the product.

How it looks? Form and aesthetic relevance. What it does? Function: seeing it, it should tell what it does; like seeing this product. Though, this best dish cup is not fitted here still, we can recognize that what it is for and how it performs. Linking this with human compatibility and reliability, human compatibility in terms of human body dimension, match psychological behavioral capabilities and while using it there should not be any physiological problem; that is fatigue and etcetera.

Example we can say, this is the simple product design (Refer Slide Time: 22:42). That is, design of corn sheller. Corn sheller is like that, this, so just push and press it with a tilted manner with this product. So, what has happened? The corns are detached from the main body. So, after seeing this and if a corn is placed nearby this product, the association is there.

How best we can make this association success of a full design depends on that and the total trust. To give an importance of this product this water filter, the association is made

with mother and child love; means, total trust value. So, the association of the product and the product similarities, that thought aspect way it gives good linking; so these applications has to be maintained in design.

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Designing a product, a system, or jobs must give maximum comfort, efficiency and safety to its users, taking into account differences in human performance and limitations. The work, the environment and the tools are designed to improve efficiency, quality, satisfaction and more importantly, to eliminate human error. More important to human error and fatigue value, so these aspects we need to consider while conceiving the design idea.

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Now, the sensation and feeling: the product should provide human sensation and feeling as much as possible to recognize or to feel the product. Like, for functional point of view, when we open a jar - its lid, when we open it. If the lid there is no serration or no marks on the lid, it slips but, if the texture is there for functionality, it is a good way as well as, while touching it also we can feel which one is the main body and which one is the lid, if it is placed somewhere in upside down.

So, to recognize the product and its usefulness, that texture, that is the human sensation and feeling has to be appropriately applied. For instance, appropriate applications of surface, color and varied surface textures in the components and in the whole product, help to identify the relative functions and to act as indicators of cautioning against any faulty operations while using or operating. Example: the glass cup and etcetera; another very important observation is that in bathroom, hot water and cold water or normal water taps are there. Hot water tap - that knob is marked with a red color, normally it is seen.

Another one without any color or sometimes green, blue, that type of color patch is given to say that it is a normal water or cold water, whatever. Now, for the hot water there is no problem; we can recognize. Now, suppose in a system hot water, cold chilled water and normal water, three systems are there then, what would be color code? Hot – red, its association is already established. Now, for the chilled water and normal water what would be the color code?

How a person who does not know all these color codes, how he can feel about it? The location, placement; then the normal water knob will be center and hot will be in one side and other side will be the cold water, chilled water or hot and chilled center and normal water will be at the side. So, this requires to be studied properly and that requires context specific application. So, these types of studies are necessary and this type of accordingly, application has to be there.

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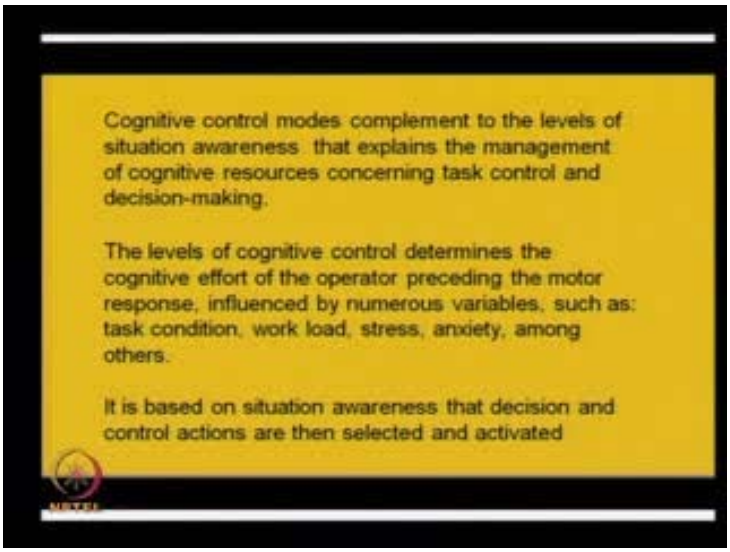

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Now, the cognitive control modes complement to the levels of situation awareness that explains the management of cognitive resources concerning task control and decision-making. The levels of cognitive control determines the cognitive effect of the operator preceding the motor response, influenced by numerous variables such as: task, condition, workload, stress, anxiety, among others. It is based on situation awareness that decision and control actions are then selected and activated. Now, design relevant aspects of information process capabilities: these are the aspects and design goal aspects are expectation, perception, memory, decision-making semantic memory.

Expectation is an aspect. Its design goal is the relationship between objects and responses is compatible with users' expectations. The perception is that meaningful stimuli are detectable; the memory reliance on short working and long term memory are minimized. Decision-making mitigate maintainer's tendency towards bias in decision-making. Semantic memory in a noisy location; if anybody writes something efficiency diminishes because of the difficulty of retrieving material from that part of long term memory concerned with the meaning of words, etcetera and may be produced by a shift in the confidence, with each type of material recalled these aspect is also considered as a selective memory and forgetting aspects.

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Some terms influences the communication vault, the semiotics, pragmatics, etcetera. Now, what is it the semiotics is that pertaining to science symbols a general theory of

science and symbolism usually divided into branches of pragmatics, semantics and syntactic.

The following may be cited as definitions; now just see what is the pragmatics. It can be defined as number 1: treating historical phenomenon with special reference to their causes conditions and results; number 2: character or conduct that emphasizes practicality, number 3: a philosophical movement or system having various forms but generally stressing practical consequences as constituting the essential criterion in determining meaning, truth or value and number 4: have or pertaining to the practical point of view or practical considerations relating with success or failure.

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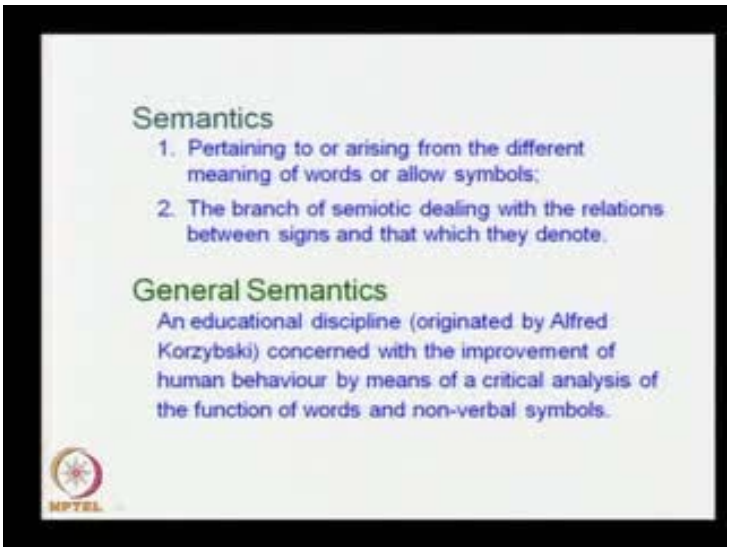

These are the pragmatics semantics number 1: it can be said that pertaining to or arising from the different meaning of words or allow symbols; number 2: the branch of semiotic dealing with the relations between science and that which they denote general semantics and educational discipline originated by Alfred Korzybski concerned with the improvement of human behavior by means of a critical analysis of the function of words and non verbal symbols this is general semantics

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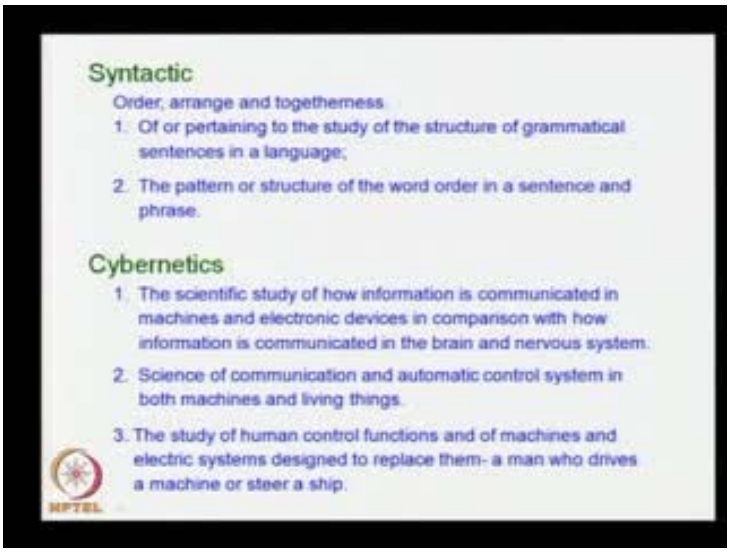

Now syntactic: order, arrange and togetherness. Number 1: we can define, of or pertaining to the study of the structure of grammatical sentences in a language; the pattern or structure of the word order in a sentence and phrase. This aspect when we apply in design, it will be relevant. The cybernetics, number 1: the scientific study of how information is communicated in machines and electronic devices in comparison with how information is communicated in the brain and nervous system. Number 2: science of communication and automatic control system, in both machines and living things; number 3: the study of human control functions and of machines and electric systems designed to replace them - a man who drives a machine or steer a ship, as per example.

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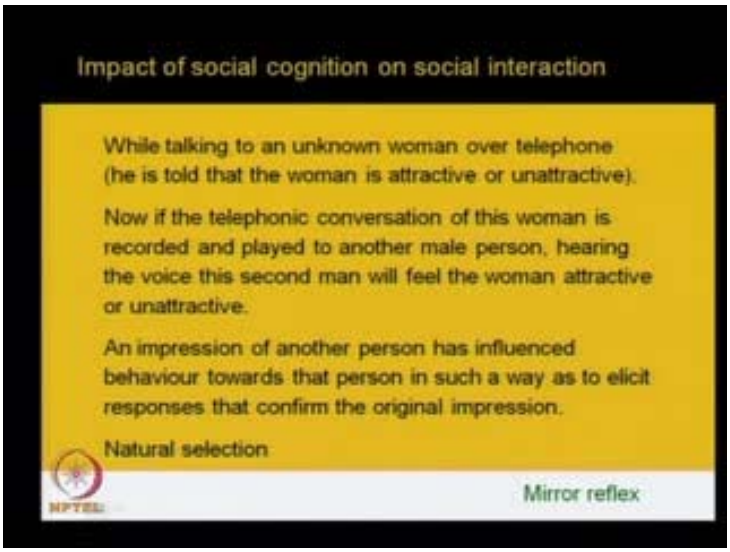

Now, impact of social cognition on social interaction: while talking to an unknown woman over telephone, suppose on a day in the early morning, suppose the telephone bell rings; telephone rings, so if we lift the receiver and a good voice comes from other end then, you may feel good. May be, a lady voice is coming; you may feel good, fine. When you go to office you meet with your friend and you just tell these incidents. Then, if that person tells something bad about that lady - she may not look nice or whatever like that way, next day or some other time if, the same lady rings you, your reaction will be different because your decision is influenced by some other's influence. That you did not meet that lady; all the conversation was over telephone but, that your friend's views - it reflects in your behavior.

So while talking to an unknown woman over telephone, he is told that the woman is attractive or unattractive like that. The reaction changes; now if, the telephone conversation of this woman is recorded and played to another male person hearing the voice, the second man will feel the woman attractive or unattractive and impression of another person has influenced behavior towards that person, in such a way as to elicit responses that confirm the original impression.

The natural selection and the influence by some other thought selection, there is two systems. Two are present while we select any product or how we see. A design, one aspect it may be relevant in this; that is a mirror reflex means, you are not directly doing

the task but when you are observing somebody is doing a task, whatever reaction he is doing, you may feel similar. As per example, when a mother feeds her child when the child also opens his mouth mother's mouth also gets opened but, mother is not eating; mother is feeding that child. Every time child also opens and closes mouth, mother's mouth also opens and closes. That is mirror reflex; here it may be that mother is training the child or it may be a reflex action.

Another thing; so then, this aspect, how it helps in a design selection? In a shop there are many items. are there If some people are buying something, a specific thing, as a new buyer my impression will be there. When they are buying probably, it is a good one. So, how this aspect can be utilized in our design practice? It needs to be on thought and considered and relevant information has to be collected and practiced. Another thing that symbolism - that is a abstract issue.

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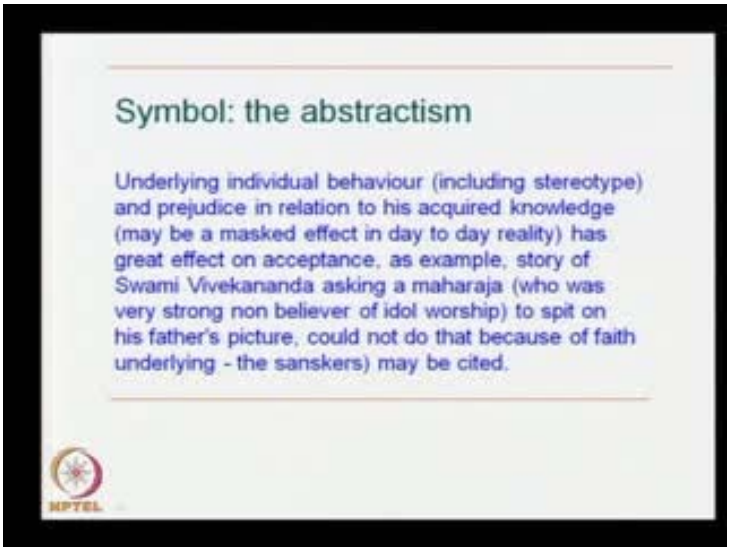

Something, whatever we feel to tell or whatever I practice I present it; may not be in inside. Just for an example, I can tell you, we can tell here that underlying individual behavior including stereotype and prejudice in relation to his acquired knowledge may be a masked effect. In day to day, reality has great effect on acceptance. As example, as example we can cite here a story of Swami Vivekananda. Swami Vivekananda was asking a maharaja who was very strong non-believer of idol worship to spit on his

father's picture. Father's picture is not his father actually but, he could not do that. Maharaja because of faith underlying the Sanskars may be cited.

So, when we design a garbage bin with a monkey or a bird opening his big means you throw garbage inside that bird or that animal's mouth. Our culture does not permit that; but it may be good if the bird is flying or about to fly and carries a basket on his back. A monkey is holding a bag or a garbage bin in hand means, its collecting and will release somewhere else; it may be good. So, while taking this design decision, these applications has to be considered.

Whatever faith we have, ethos we have, it should go along with it; should not go for end way. Even if we make an ashtray for cigarette, like an animal figure, that you are putting ash on that animal's opened mouth; that design people may not like.

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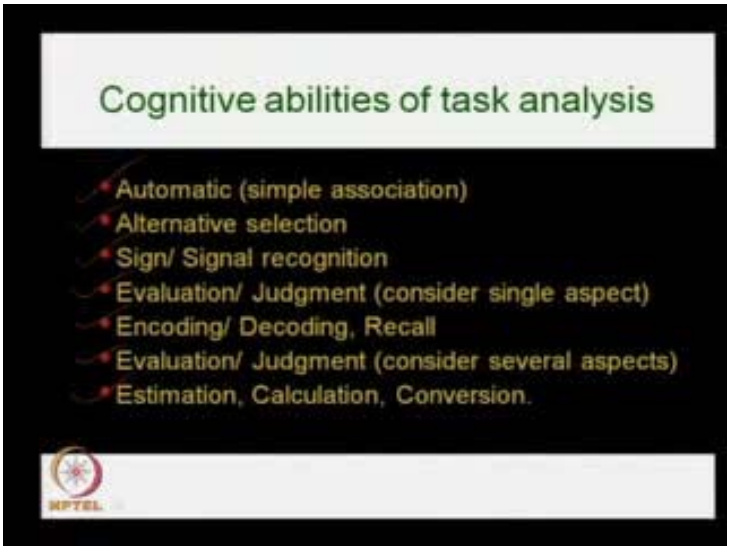

So while selecting these forms etcetera, we need to consider these aspects; cognitive abilities of task analysis, the aspects we need to consider that automatic that is simple association at alternative selection facilities should be there. Sign and signal recognition facilities, evaluation or judgment that is considered single aspect encoding and decoding of the information present in that object and recall, once you learn and next time when you want to use that whether those information we can recall for next time use. That easiness evaluation and judgment is considered. Several aspects estimation calculation

and conversion these cognitive abilities of task analysis to be done while conceiving a design.

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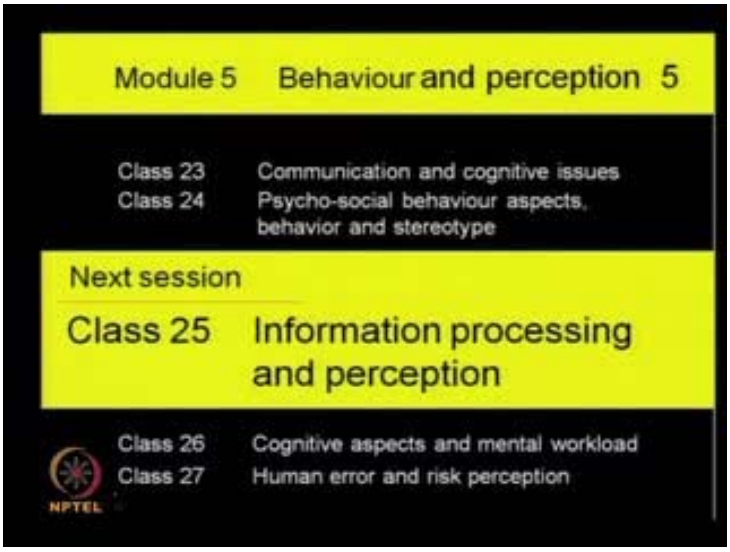

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Now with this we can conclude today's session that is, that psycho-social behavioral aspect and behavior stereotype. Now, next session will be the class 25 that is information processing and perception. While closing in this slide, we would like to tell that semiotic application; how far it is applicable, useful to like it, that is up to you but, this photograph was taken from West Bengal - a new seashore called Mandarmani. there

Rose valley, a hotel complex is there and inside that complex, a car parking that has a direct car figure as a structural element, car figure as a structural element; so that it says that it is a car parking like this.

So, how far these are useful, applicable? It is too much raw application of information or abstract information. One needs to consider and practice accordingly; so with this we are concluding today's session and see you next time thank you very much.