

Soft Skills Development
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Lecture - 26
Creativity: What Does It Mean

Hello friends. Today we are going to take up the topic Creativity. In the context of creativity we will be taking up 2 lectures and the first case we will theorize about creativity we will look at how it is defined what do we have to say about creativity and in the second lecture we will look at how we can actually use certain tools to encourage creative thinking for a variety of purposes. So We will look at first thing we will do is find out how creative you are and has I have shared with you all that the results are not to be taken very seriously. They are rough indicators about certain mind sets that you have, about certain ways you feel about things, about your interactions how your thought processes are interactions and they would be (Refer Time: 01:34) in unlocking in certain parts of your mind, as well as learning new habits and unlearning old habits of thought and thinking.

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Quiz: How creative are you?

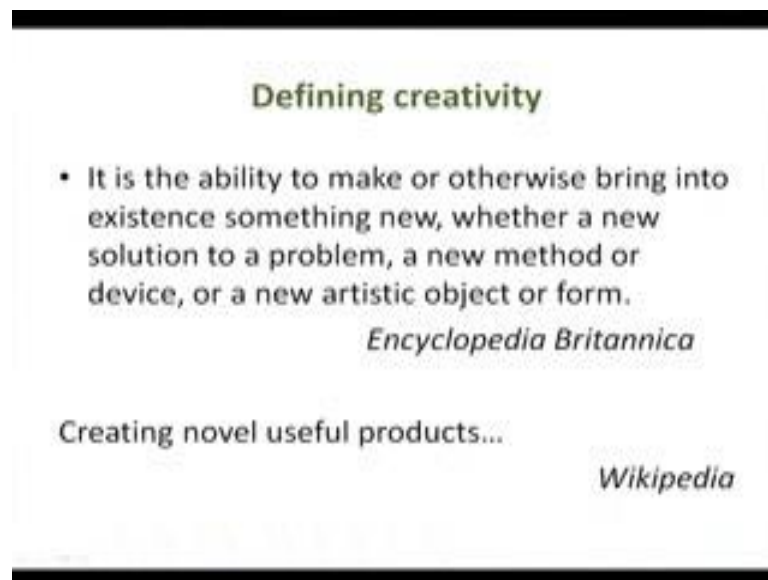
- How creative are you? (Mindtools)
<https://www.mindtools.com/pages/article/creativity-quiz.htm>

Please enter your self-assessment scores in the Discussion Forum Link provided so that we can know what is the general level of communication skills of this class.

Now, if we that the way that creativity has been defined, always brings an element of

something which is new, something which is innovative, something which is different and we will discuss that in greater detail as we proceed with this talk.

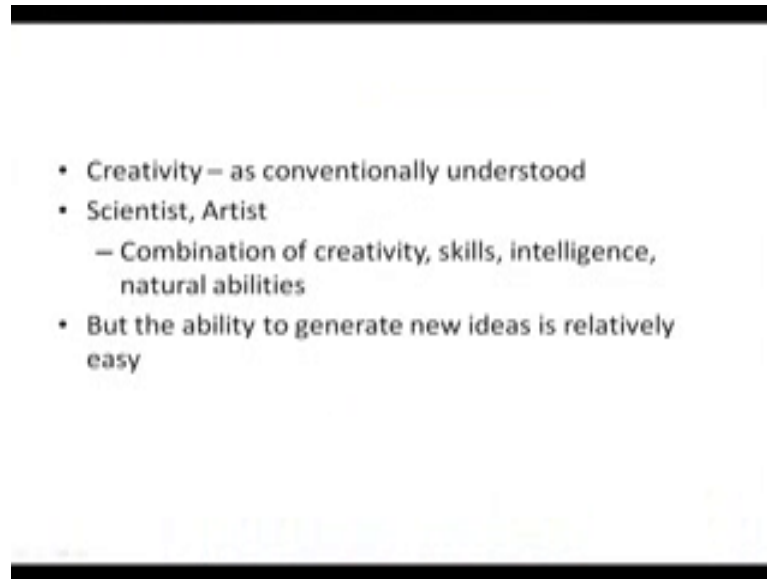
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We have told that it is a ability to make otherwise bring into existence something new. Whether a new solution to a problem, a new method, a device, a new artist or form. So, the element of new in a wide variety of fields, which are accepted or considered as significant, is what we consider generically as a significant creative controversy. However, there is a larger definition of creativity and a smaller definition of creativity. The larger definition of creativity is creativity that has creativity examples of creativity that has made history or have made significant contributions to science and technology visual arts, music, painting and culture studies methodologies to knowledge in general, but the smaller aspect of creativity which force will be the focus when we do the creative activities.

We will deal with creative thoughts of taking up small problems and being creative about it about them and we never know at some of point of time we might find that these may lead to still more refined more cogent more significant creative ideas.

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Now, the thing is that, this is the points that have been trying to make a little earlier as well, has its conventionally understood. You see that a artists were if you are looking at the traditional definition of creativity, considered creative and scientists because they use rationality, logic, analytical thinking and not creative considered creative now this kind of dichotomy did exist until a certain point of time where you see that I would say Methyl to late 20th century convergences again took place. I would like to point make a point about this, if you are looking at the history of western tradition because we are very strongly influenced by that, we find that in the renaissance there was an integration of science and technology with humanities art music and so on and so forth.

If we take as an example the case of it is a Da Vinci, then we find that Da Vinci was a scientist he was an anatomist he was also a visual artist, he was also person who explored optics the fundamentals of concept of perspective and so on and so forth. If you are looking at somebody like Michelangelo, we find that he was an architect, sculpture, painter he was also a poet. We find convergence of different qualities creative qualities and the dichotomy between science and a art humanities immersed from that point and then radically transformed the way we looked at things and we had scientific way of thinking and we had apparently creative way of thinking the way that artists thought and that hangover continues for a very long time. But today we realise that in different fields

creativity exists and as the definition clearly indicated we are not differentiating between the facts that is creativity can exist in almost all disciplines.

However, what is to be considered creative let us say in science and what is to be considered creative let us say in visual art or in music can be very different. Who is considered a genius let us say in field of science or in music or in painting can be very different. So, those differences do exist and we have to respect the fact that different fields, different facts are considered as significant and that determines how we look at the concept of creativity.

But whatever the nature it generate new ideas is in different fields, combination of creativity skills intelligence natural abilities. If you are looking at creative geniuses creativity as we understand something new coming up with the new idea is definitely there, but skills what degree of skills memory imagination combined let us say the draftmanship operates the Da Vinci the lines absolutely immaculate. The draftmanship is also which comes in. Creativity includes, creativity is combined with skills intelligence ability to analyse things, grasp things and the innate natural abilities biologically driven all these things combined to make creativity geniuses, but in ordinary life as I told you little earlier which is what we are going to focus in the next part of the talk we can all generate new interesting creative ideas and that is going to be our focus in later point of time.

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Models

Graham Wallas: *Art of Thought*, 1926

- (i) *preparation* (preparatory work on a problem that focuses the individual's mind on the problem and explores the problem's dimensions)
- (ii) *incubation* (where the problem is internalized into the unconscious mind and nothing appears externally to be happening)
- (iii) *intimation* (the creative person gets a "feeling" that a solution is on its way)
- (iv) *illumination* or insight (where the creative idea bursts forth from its preconscious processing into conscious awareness)
- (v) *verification* (where the idea is consciously verified, elaborated, and then applied).

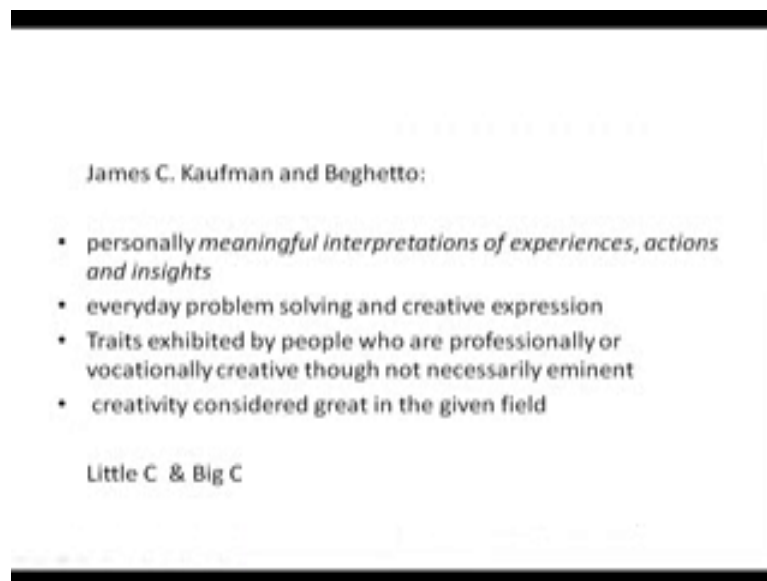
However right now, let us quickly look at various kinds of models you see that if you are looking at European tradition, we find that in the early part of the 20th centuries explorations start about the concept of creativity people think about they start thinking about it in a serious way and is divided into 4 or 5 categories like you have preparation and where you prepare to work on the problem, to focus your mind on this particular problem and explore problems dimensions incubation where it is internalized in the unconscious mind, things are happening, connections are being made, neural networks are being explored, but all this is happening when probably we are not even aware of it. It is happening in the unconscious of the subconscious mind. So, incubating is where nothing is visible outside to the surface intimation you get the feel that well may be the solution is there you have been got it illumination is or insight is where you suddenly feel that well you have got the solution.

Now, this is a very interesting thing that insight comes suddenly and has to be differentiated from trial and error learning where improvements take place gradually. Learning how to cycle, the improvement comes gradually it does not. So, happen that you learn cycle in a single day the learning is very gradual. So, on the other hand you are working on a mathematical problem and you have been struggling for many days the solution comes to you suddenly, now this is where you have an insight because it has

nothing to do apparently with a trial and error that was going on because the solution is very different from what you have been trying to do in the earlier instances; however, what has to be kept in mind is the fact that deep down within your mind some processes were going on and the only difference is that you are now aware of it, earlier you were not aware of it. It is like trying to break a piece of stone or rock by hitting it with a hammer and you find that you keep on hitting it 10, 5 times, 20 times, 30 times may be the 31 time there is a crack. That does not mean that the earlier 30 blows did not play significant role in creating the crack. The thing is that it will only become visible with the 31st one. At the surface level it becomes visible.

And then verification when you find out with how realistic how meaningful the idea is and check it out.

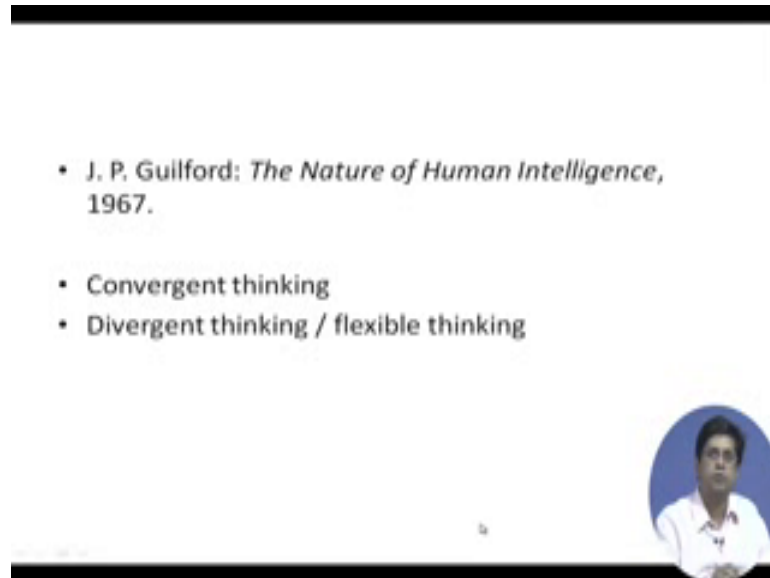
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Other models exist you have concept of personally meaningful interpretation of experience actions and insights, everyday problem solving and creative expressions traits exhibited by people who are professionally or vocationally creative though not necessarily, eminent creativity considered given great in the given field. You see that this thing and these concepts being in these are known as little C the second one and big C the third one these concepts being in of different approaches to creativity, different ways

of looking at creativity, as well and these are important because these further the way the scope of creativity is broadened.

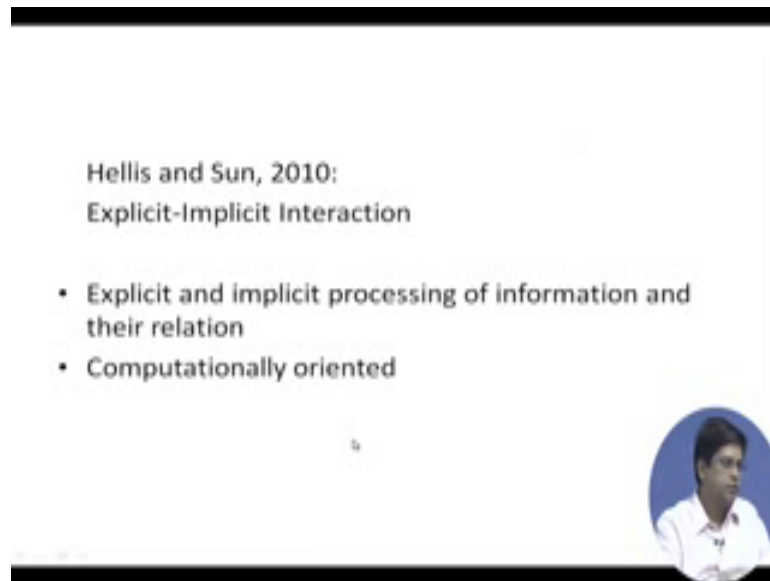
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Then you find that another concept which started making round in 1960s and 70s become very popular with Edward de Bonos that is the concept of convergent as oppose to divergent thinking. Convergent thinking is focused it is located or centred on a specific area and it is essentially a problem solving kind of a behaviour, thinking behaviour, divergent thinking, flexible thinking is where you flexible thinking is a little different will come to that but divergent thinking is where your thinking, is diffused, it is playful, it is trying to make radically, unreasonable in logical connections between various kinds of things and this playfulness very often can give rise to very interesting and new ideas.

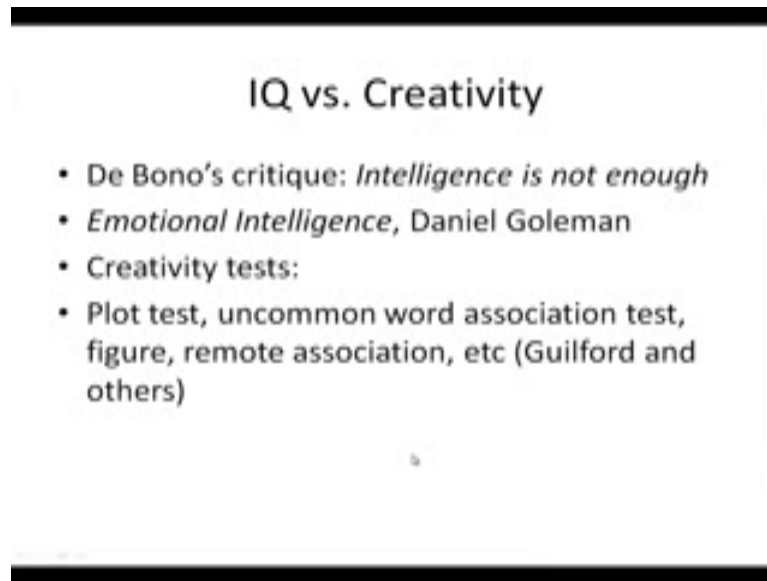
In fact, flexible thinking on the other hand is, the ability to change your way of thinking, the route of your thinking at a moment's notice. That also is relevant for creativity, but is not directly to be equated with divergent thinking.

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Then you see that you have new models, which explore computational approaches to creativity looking at the way that explicit and implicit processing, the way that the brain operates the brain the way that brain processes information and how the implicit processing is related to the explicit processing, their differences, their similarities, their coexistence, their interchange, their exchange of ideas, these are what are highlighted in this particular set of theories which are recent fairly recent theory. I am touching above on some of these you can look of different places on Google to find more information in these because they might be interesting for you.

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However right now I would just also point out that computers are a computer assessment of creativity also is something which is taken into consideration and that is what you found in the earlier slide.

As well as looking at the brain functions in order to understand how creativity takes place. Will come to that in a moment, but here are a few points which are highly debatable areas, we will not touch upon them if you are interested you can always explore relevant books and websites and papers and some of these will be given to you in the links and you can explore them on your own. Now De Bono Edward person, who became very popular in this field of creative thinking, starts by critiquing the conventional ideas about intelligence. Now I will discuss that a little later in detail. So, the concept of intelligence IQ all these things are challenged and the logic that is put forward is that if IQ is good enough why is that many people are not successful or unable to in making a mark or even being able to communicate so they are creativity. The second is Daniel Golman who popularised the concept of emotional intelligence and which gave rise to concepts like EQ and all that.


Now, this is the concept which differentiates intelligence from certain other attributes from analytical skills of the mind to other skills of the mind which are equally important.

Now in some of the other lectures we are doing emotional intelligence where the details of it will be discussed, but they can be pitted against the concept of creativity as well as intelligence and at in the 1960s and 70s again the lot of very interesting tests developed and these tests again give us insight as to what is exactly that people tried to explore and analysed under the construct of creativity. Now plot test were uncommon word association test or uncommon figure association test, remote association test. Now all these tests essentially tried to explore may be some of these features. That is fluency.

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Important features highlighted...

- **Fluency** – The total number of interpretable, meaningful and relevant ideas generated in response to the stimulus.
- **Originality** – The statistical rarity of the responses among the test subjects.
- **Elaboration** – The amount of detail in the responses.
- Visual, auditory, associative, etc...
- Eg: Cricket – googly, helicopter shot



The total number of interpretable meaningful relevant ideas generated in response to the stimuli or stimulus. How quickly, how effortlessly, how somebody is able to come up with new ideas, originality ideas, again which we talked about unusual these ideas are because usual ideas are ideas which everybody can generate unusual ideas can be generated by let us say creative people now some of them might be meaningfully creative and elaborations the amount of details these things have, so that you can actually evolve them into specific applications products or even theories.

You are coming up let us say with the theory of let us say theory of intelligences. Now you just saying that intelligences can be of different kinds is not good enough. If you are able to identify different categories of intelligences and differentiate between them and

tell how they operate then you are able to make a mark the way gardener does with his different kinds of different kinds of intelligences that he proposes. A conceptually content you can also do that in developing a product the details of innovation.

Even with a small product like a drinking bottle, where you say that you have various kinds of innovative measures which you will see to it that it does not leak, it gives a early warning of breakage, it has portability, it has compatibility, it has some kind of handle or small details which make it very meaningful even small products can these can have a lot of creative details. Then you see that visual auditory associative in all these cases you see that probably these fluency originality and elaboration are considered as important and can add to the element of a creativity whether we are talking about tests of creativity or actual application of creativity in large and small cases of everyday life.

If a looking at the example of let us say cricket I can think of 2, 1 which relates to Googly, where you see that it is definitely creative idea because deception is involved you, move your hand in a particular way and ball moves in the different direction from what is anticipation. So, it was a very creative idea and for instance the helicopter shot which again is awarely recent innovation has a lot of application applicability and efficiency and is a very radically different unclassical, un textbook kind of a sort. here is also an element of creativity somebody perfects it makes it happen and the unusualness and the unpredictability and the skill involved in actually executing it, all these going to making this successful creative products which other people take up on some making use of.

You see that right now if I very quickly go for what we have done so far, we have looked at the definition of creativity, the different models of creativity. We have talked about IQ versus creativity we talked about some of the important features which again and again have been taken off exploration either in the form of tests or whatever and as I told you a little earlier, computer and creativity a artificial intelligence creativity are been these concepts related to this area, are being explored in a systematic way. So, we talked about implicit and explicit processing.

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Brain and creativity

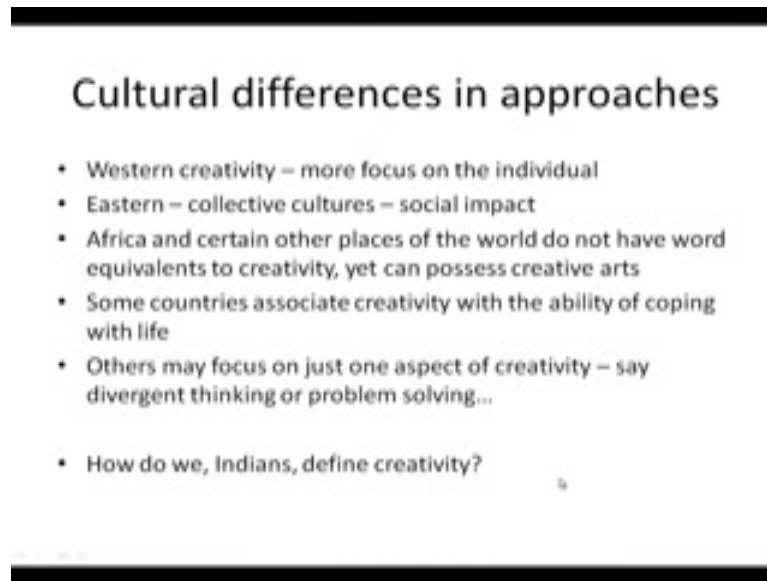
- Brain activity during creative behavior:
- creative innovation might require coactivation and communication between regions of the brain that ordinarily are not strongly connected.
- Highly creative people:
- they have a high level of specialized knowledge,
- they are capable of divergent thinking mediated by the frontal lobe
- they are able to modulate neurotransmitters in their brains

Kenneth M. Heilman, MD, Stephen E. Nadeau, MD, and David Q. Beversdorf, MD, "Creative Innovation: Possible Brain Mechanisms" *Neurocase* (2003)

Another area which is again of a fairly great area of significance is that a number of initial exploratory studies have also taken place, brain activity during creative behaviour. So, you find that; obviously, there are difficulties because you will have to define what you mean by creative behaviour as oppose to non creative behaviour, but even with a problematization of definition, if you do manage to have what in definition then you have found you use we have initial explorations do indicate that brain activities also are different for creative contexts as well as creative behaviour.

You find that certain parts of the context and frontal lobe especially is where the activities of a special kind take place to unconnected apparently which are not supposed to be linked together in that kind of activity, are activated during some of the creative processes and certain neurotransmitters are generated within the brain, which generally for other kinds of people or for other kinds of thought processes are not generated. So, this is just an insight, just a fragment of huge amount of research which is going on in the field. In fact, there are quite a normal number of interesting books I have come across, which talk about I mean brain activities of various kinds that get linked to creativity and maybe I will share with you 1 or 2 papers in those areas.

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Cultural differences in approaches

- Western creativity – more focus on the individual
- Eastern – collective cultures – social impact
- Africa and certain other places of the world do not have word equivalents to creativity, yet can possess creative arts
- Some countries associate creativity with the ability of coping with life
- Others may focus on just one aspect of creativity – say divergent thinking or problem solving...

- How do we, Indians, define creativity?

Another interesting aspect which we began was the historical definition of creativity in the western context. By talking about western context we; obviously, make ourselves aware of the fact that there are other contexts as well even within the apparent blanketed term of western concepts there can be let us say different distinctions in terms of specific countries, which define creativity in different ways. So, to begin with if you ask this question I do not really know in the discussion forum probably we will try to explore it together. Do we traditionally have a concept of creativity in our tradition? We have the concept of a genius in our tradition at some point of time when people were exploring the concept of visual arts and especially literary arts the concept of a genius and the quality of a genius which was known as Pratibha was explored in the ancient Sanskrit tradition, but and probably that is the only think that we have in the context of something which can be related to the element of creativity.

But interestingly this concept of Pratibha was emphasised or focused especially in the context of literary arts although the concept can be extended to other art forms, but interestingly as I told you it was not extended to the other kinds of activities like Darsana other kinds of analytical activities like exploring let us say astronomy, astrology and things like that, in which cases it was generically not explored in a systematic way, but probably this is the Indian concept of a poetic genius, a genius of any kind and it would

be interesting to explore what are the qualities that are identified there. May be what I will do is do a quick definition, working definition of this (Refer Time: 21:57) points and share it in a discussion forum. So, that you can have some interesting explorations of what creativity meant in the Indian context, but we can also have another interesting concept of what creativity means today in the Indian context. So, that again through the discussion forum in different cultures we can get ne have insights into what creativity means and we will put it up in the discussion forum.

Now, you see that many western traditions are individual centric, the focus is on the eye on the self and in such cases you find that there is a tendency to define a creativity in terms of individualism; However, in the eastern tradition there is collective cultures for instance in case of China, even in case of traditional India creativity is very often explored, number 1 within a tradition and number 2 within a collective or a collaborative work.

In fact, there is another book which a part of book which I will share with you and some of the basic ideas, I will share with you, I have not done this lecture, but in the slides I will incorporate the name of the book. That collaborative creativity as a collaborative act creativity as a diffused act, diffused amongst a group of people, creativity which is generated why let us say a tradition is something which can be has started when being explored and it can have significant implications in the context of let us say technology, because a much of technological creativity is collaborative. Currently much of the course that are written are very creative, but they are collaborative more and you see that all the crowd sourcing is a different issue all together I will talk about it when we discuss certain other things and I have already discussed it in the context of social media.

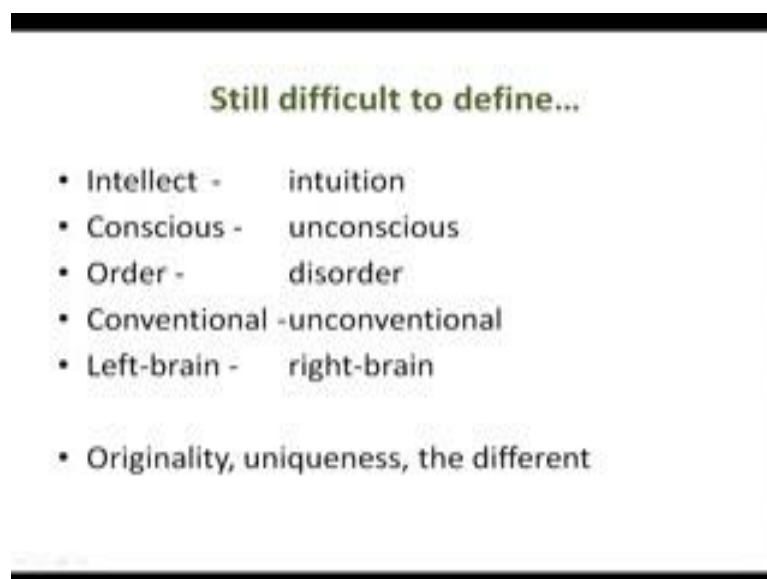
We find that there are certain other examples where you see that collective creativity it has existed as for example, in artisan communities. Let us say that if you are looking at a tradition of Bengali Pattu painting or Orea Pattu painting, we find that the craftsmen learn from one another the basic techniques are learned from one another, but you find that within that certain flexibility certain variations are encouraged, certain new themes are encouraged and there is a collective cue creativity one learns from the other transmit it with his or her distinctive originality and. So, you see that there is collaboration and

there is individualisation. Both the things you might say prosper simultaneously. Some of these artisans express themselves as saying that well we have to learn and we have to work within the tradition, we are doing collaboratively, but within that my individualisation is something which gets expressed.

That is another collective exploration of the concept of creativity. In certain other areas like for instance in china the social impact of the work is considered as significant, certain other places there is probably no word for to equivalent to creativity and some places creativity is all about the ability of hoping with life others may others may focus in just one aspect of creativity like divergent thinking or problems have resolving and so on and so.

This again is interesting, that how we need to aware of the fact that creativity is a concept with relative set of definitions depending on which particular category of people are using it. Still difficult to define, so I will just bring in this problems intellect intuition, conscious and unconscious, Order disorder, conventional unconventional, left brain right brain, originality, uniqueness, difference you see that you find that lot of things going to this debate which is creative which is not creative and in certain cases you will find that not all the attributes can be very clearly articulated.

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Somebody might even challenge the notion that somebody might say that disorder is creative because it leads to divergent thinking, but some of the others may say that no order is very significant in the context of creativity as well conventional as well as unconventional within a tradition you can have creativity, diffused within a community. In that case it is conventional in certain ways. You have a wide range of definitions of creativity and wide range of debates as well about what is creative? What is not creative and how to define it. This is just to make you aware of the fact that such problematic such problems such issues do exist, but in spite of that we come back after all these discussion to the three points it is the concept of originality something which is different unique and remarkably changing a remarkably transformative, so that the entire perception of things change. Now these are the qualities which again and again get retreated in many of the traditions. For a working definition people today use that.

And the next point is that if you are talking about all these things, how are they relevant in the context of soft skills? They are relevant in the context of soft skills because you see that one of the fundamental issues which come up is generating new ideas, developing new technologies, coming up with new solutions, strategies and so on and so forth in various walks of life when you are working. And much of these require creativity skills and hence after quickly going through some of the theoretical aspects of creativity we would lead to do certain activities in creativity. However, before we gone on to do anything creative, I would like to make up a point which is that is very important to develop a mind which is willing to accept changes, unlearning things that you have learnt is very important. You might be intelligent, but if you arrogant then you can never be creative. Arrogance and intelligence when they are together can be very bad.

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Artistic vs. scientific


- Individual expression
- Divorce from social reality
- Expressive
- Disciplined
- Logical thinking

And I would just like to touch up on points that are made by Edward De Bono about this particular thing. Artistic versus scientific how they are different they are just indicated here.

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Problem-solving

- Two boys of different age are playing badminton. The older one is a more skilled player, and therefore it is predictable for the outcome of usual matches who will be the winner. After some time and several defeats the younger boy finally loses interest in playing, and the older boy faces a problem.
- What's the solution?




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Solution by the older boy

- He proposes that they should try to keep the bird in play as long as possible - and thus changing from a game of competition to one of cooperation. They'd start with easy shots and make them harder as their success increases, counting the number of consecutive hits. The proposal is happily accepted and the game is on again.


Cognitive Psychology by Wikibook contributors, 2004-2006. <http://en.wikibooks.org/wiki/Cognitive_Psychology_and_Neuroscience>



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Insight

- Solution to a problem based on past experience
- Solution which needs a radical new way of looking at things, a restructuring, nonobvious
- Ah! Light Bulb!
- Sometimes earlier knowledge or familiarity can make the problem for difficult – fixation



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Why intelligence is not enough?

Edward De Bono

- Intelligence or mental ability?
- IQ tests
 - Ability – perception
 - Application – focus
- Intelligence is a potential
 - The car and driver analogy



Problem solving another things which I have already discussed indirectly are there in the slides and you will get to know about them. So, we will talk about it when you see the slides you will get some insights. So, we will skip that for the time being, time being limited for us.

What we are looking at right now? Is why is that intelligence is not enough and although de bono is controversial in the academic field and people challenge some of the theories he has developed and identify that many of them were only for certain kinds of thinking may not directly relate to the concept of intelligence, none the less I have feeling that probably that there is a lot of comb truth if not academically verified truth and what he says about intelligence and these can be stepping stones the points that he makes can be stepping stones to start off in the direction of being creative within a generation of new ideas strategies and so forth.

You see that, the way we developed the concept of intelligence we carry it with it a kind of a meaning load which tells us that if somebody is intelligent then probably or bright probably he should be more creative, he should be more effective and so on and so forth. This often very does not happen, because you see that as Goleman has convincingly pointed out and you have gone through the talk on emotional intelligence, creativity

intelligence is not enough to be socially successful or even for that matter successful in your life because you might have intelligence, but you may not bring it to take into consideration hard work and other things which are required with that and you see that mental ability is not in itself not good enough. You have IQ tests which test your ability mental abilities, but well do they test your perception, do they test your focus. Now you see that, other than abilities you need to also have a build these qualities of perception qualities of focus and so on and so forth.

Intelligence is a kind of a potential, it is something which is given which is there, but it has to be utilised. If you remember earlier I talked about perception and attention. In the perceptual field you can feel the presence of everything, but it is only what you attend to is what you register. In a similar way there is this energy of intelligence all around, but only when it is applied in a meaningful way, can it actually be successful. It is like the difference between having a very powerful car and a poor driver as De Bono's suggests and a moderately good car and a very careful and competitive driver. Now the possibility is that although apparently for a very short period of time the more powerful car might show success it might crash and that might be the end of the story. Where as a more careful driver will succeed in channelizing the energies of the brain, even if the energies and resources are limited in a more meaningful and constructive way.

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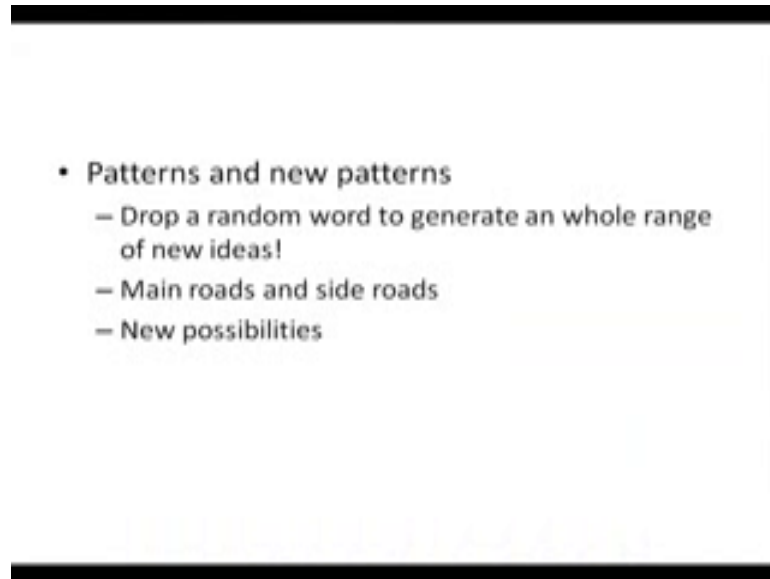
- Intelligence
 - Ego
 - Ability to defend cogently
 - Loss of opportunity to learn and explore
 - Over confidence
 - Analysis
 - Argument
 - Attack
 - To prove easily that someone is wrong – is this intelligent?*

Intelligence combines a lot of qualities like ego, ability to defend cogently. So, you have an ego which you have to unlearn very often. Accept that somebody else might have the points, which are meaningful because if you do not think that way what you will do is you will argue, if the other person may not be as intelligent as you are, but he might be telling the correct thing on the other hand you argue and because you are more intelligent you are convincing. So, you see that your points are taken into consideration you win, but because you see that you have not given the others perspective a chance, you have lost. Because probably the others perspective was more meaningful and if you had said your ego and given up your ability to defend cogently, then you would have gained an opportunity rather than losing an opportunity to learn an explore.

Similarly over confidence can be a killer because that does not permit you to explore. Analysis you is very important, argument is something which is to be avoided ad attack. You see that you have some of these skills. Analysis Analytical skill is something which an intelligent person has. So, he can again argue very competently. So the point, but if he analyses in a more constructive way, he is in own stand as well as the other person stand then he would probably come to a better solution.

You see that it is very easy for an intelligent person to prove that the other person is wrong because he has that ability to do that, but is that good enough, is that the right approach. So before we start learning about creativity, the arrogance of intelligence is something which has to be set.

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Patterns and new patterns you see that we will live in a world, where the brain tends to make heuristic decisions. I think I have made this point earlier also we need shortcuts. So, we create certain paths which are strengthened we create certain schemes which are strengthened and we work within those frameworks. The moment the problem comes we quickly move in that direction to solve it, but you see that that stops further exploration again taking De Bono's analogy.

If you are driving by the main road throughout your life you keep on doing that and probably you miss out on whatever is there in the side roads until may be your car breaks down may be you walk through the other roads and discover something very interesting exciting new. You are able to make new connections, you are able to see new things, you are able to have new experiences, which you can relate may be next time you take your friend along those paths. Exploring the bypaths is something which patterns in with. If you work according to patterns then you do not explore the bypaths. The various tools that we will be using in the next lecture we will try to break these bypaths.

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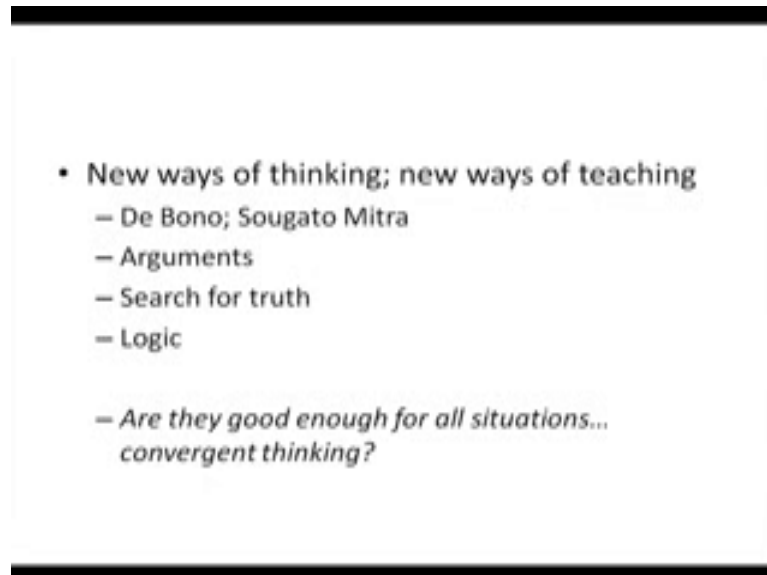
- Most creative ideas look logical when we look back at them? Why?
- But why do they sometimes look ridiculous at the beginning:
 - Large Computer – PC
 - Vaccination...

Most creative ideas look logical when they have been actually learnt or with when they have actually been applied, but initially they look illogical. So that is one of the things we have to keep in mind. So, that when you come up with new ideas apparently they might look illogical, so and later on when you look at it that look very logical two examples, one is they shift from large computers huge computers which occupied university buildings and were very less powerful to the contemporary pc as well as the mobile phones. Somebody had to take a step; you see that the moment somebody innovatively thought of computers at home. Then you had a situation, where computers became a byword in every house.

This is another issue that needs to be kept in mind. Also with the concept of vaccination, which you see that or renoculation, where you are bringing in the germs in the milder form are injecting them into the body. It apparently the idea looked ridiculous at right at the beginning. These are important issues that give us insight to the fact that, when some very radical interesting ideas emerge they look ridiculous, but afterwards they seem very logical because you are able to link the pieces together. This is something which has to be kept in mind that when you are making dynamic explorations, creative explorations apparently things which seem logical which various listening to the concept of intelligence may have to be said you might have to abundant on them and these are some

of the techniques again which we will discuss in the next section.

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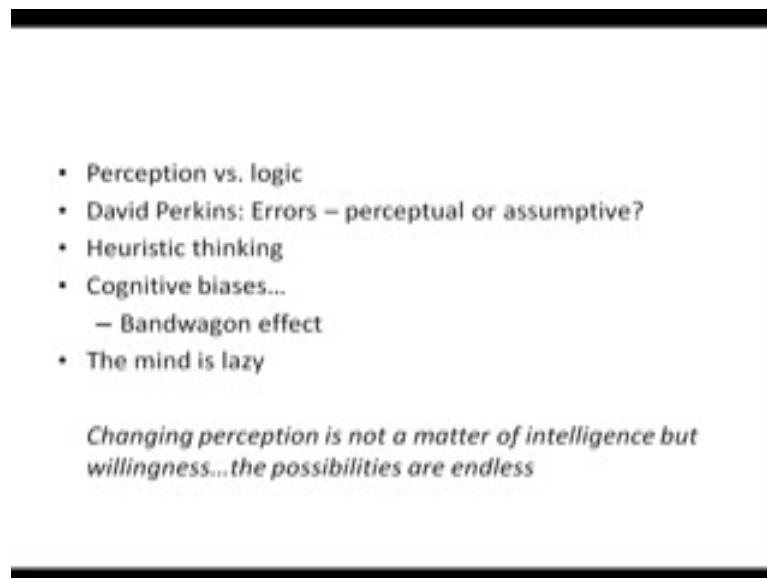
You see that new ways of thinking, new ways of teaching you have the example of De Bono which I am referring to Sougato Mitra who talked about certain very interesting concepts, I will not deal with them you Google and find out the concept of the hole in the world, where you see that in the ted talk he points out that you see that we live in a world where learning to a very great extend does not need instructors from outside. Teachers do not need to teach us because the information is floating, the key to learning is self motivation and an urgency to do something. When both these things are combined then you are able to learn very effectively very meaningfully.

What it tries to convincingly communicate to us and manages to succeed to a certain extend is the fact that learning is something for which teachers are not really required, inspiration is required, support is required and what is very important is to provide information and a love for exploration. So, you see that arguments search for truth logic. Now these were some of the things which have come down to us in the western tradition. If you are looking at let us say Aristotle Socrates argumentation all the time, Plato talked about the search for truth, Aristotle talked about logic and you see that these traditions have come down to us and after that you see that with the advent of colonization and all

that especially in the Indian context. The logic of faith of discipline these things have come down to us.

Now, how conducive are they to exploring a new idea to creativity, which is very deeply linked with learning is another issue that we need to have in mind. So, the point is that many of these lead to what is known as convergent thinking. So are they good enough for all situations or do we need to think in other ways.

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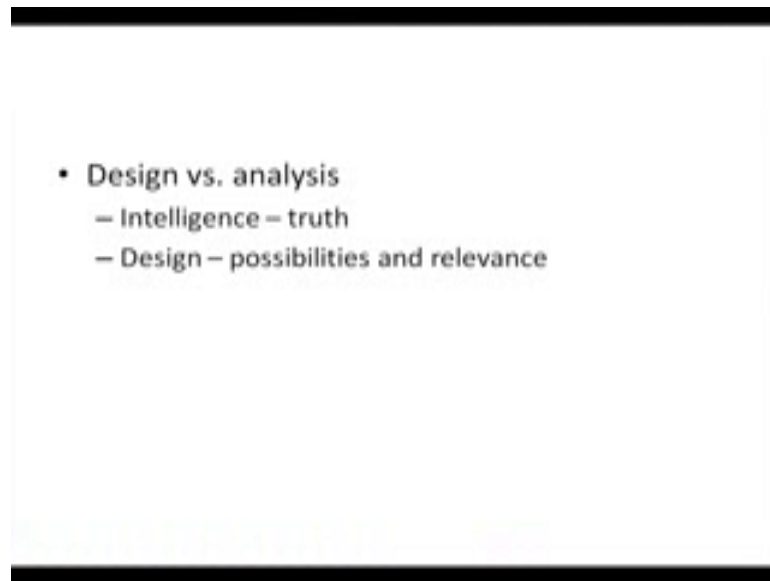
You see that Perception versus Logic, and I would like to quickly share with you is that David Perkin's article very popularly points out that, most of the mistakes are that we make are not logical mistakes, but mistakes are perception. We have cognitive biases where we for instances the bandwagon effect everybody is doing it let me do it. So, we see that the perception of something the fact, I am just giving an example there are 1000 other examples and there must be at least 50 to 60 different cognitive biases, if you search them up in the Wikipedia and these are of various kinds and these are all about errors in our thought processes, because of various kinds of flaws. Some of them are because the brain wants to find a quick shortcut solution some of it is because our perception as has been indicated here are wrong we have misperception.

For instance literature research tells us that most witnesses can give very contradictory or very let us say unpredictable and undependable account of what they have seen. Because you see that much the perception as we have discussed earlier comes from our own minds. So, you see that if you motivate in them in a particular way they would come up with various different discrepant let us say a descriptions of what they saw ok.

And when it comes to biases of the mind many of them are perceptual biases. When we talked of illusions were perceptual biases. When we are talking about propaganda, when we are talking about brain washing these are perceptual biases, when we are talking about persuasion for that that for persuasion has a concept itself as we have done that is also perceptual biases and as I told you bandwagon effect is where I find that 10 of my friends are doing a particular thing without giving it a thought, I say that probably this is the surface thing because everybody do is doing it probably it is the correct thing to do because a mind is lazy. So, changing perception is not a matter of intelligence, but willingness. If you are intelligent you generally do not change perception. In fact, in cases if you have the arrogance of intelligence, changing perception is very difficult.

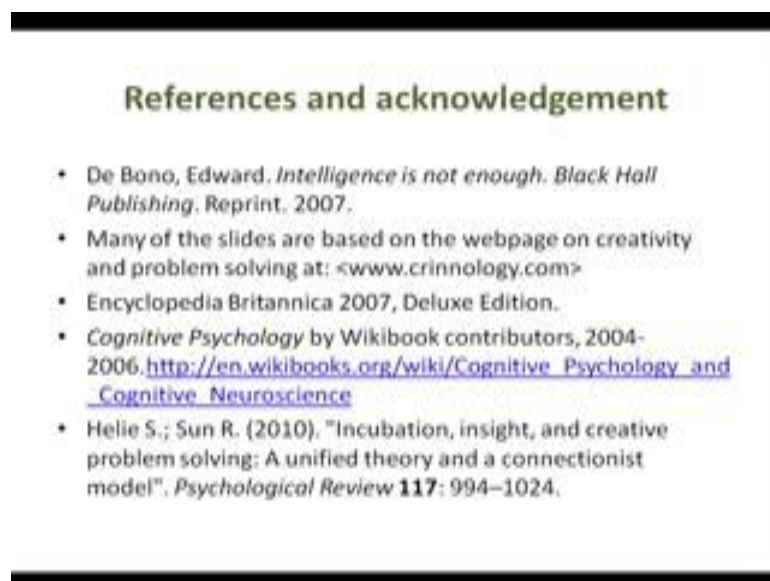
On the other hand if you have the ac willingness to accept to say that although I am probably very intelligent, I still have a lot to learn, I am capable of go being wrong and I need to learn and wherever required I can think in a different way and unlearn whatever I have learnt earlier. Now if you do these things probably the step, these mental activities attitudes are the stepping stone to becoming more and more creative in the future. The arrogance of intelligence is something which has to be taken care of by all of us.

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The difference between design and analysis focuses on design rather than analysis in the context of let us say creativity, not focus on intelligence and truth, but possibilities and relevancies.

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And with this I hope that you have kind of prepared yourselves for taking the next step

where you will ignore the misgivings of your mind. You will be more conscious of the fact that you are not arrogant, you are more open to new ideas, you do not block your mind and although you are intelligent you do not underestimate people who are less intelligent, but may have certain points which make sense and move in the direction of becoming coming up with more creative idea, because in a small way we can all definitely more creative than we are right now, if we try to think and explore things in a slightly different way.

Thank you.