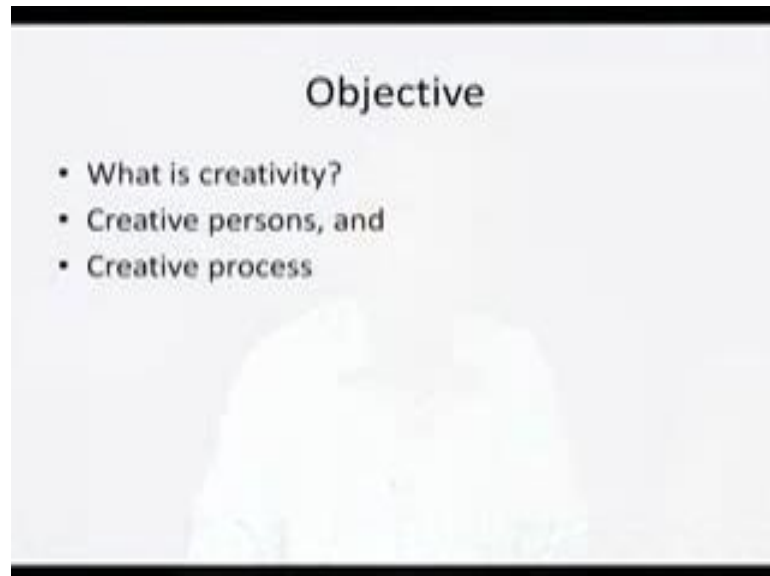


**Soft Skills Development**  
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**Lecture – 27**  
**Creativity: A Detailed Exploration**

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Friends, today we will be talking about creativity and in this context will be talking about what is creativity and to explain that we will also explain the attributes of the creative persons, and lastly will also discuss about creative process.

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- The challenge of 21 century is to have more innovation and creativity in every sphere of life—technology, health, education, agriculture, industry, environment, etc.
- Creative ideas from group and individuals are scarce. For example students of business schools know how to develop models but they do not have knowledge of creative process and how to develop creative solution. Example- General food from USA, market plan to boost the plunging sale of "Sugar-free-cool-aid".
- **Creativity is the production of new and original ideas. It encompasses novelty, originality, and usefulness. Creativity implemented is innovation.** It is popularly known as out-of-box thinking and mindmix procedure.

So that you can know how you can be creative the challenge of the 21 century that we need more innovation and creativity, it is required in every sphere of life in agriculture education, health, as well as industry, in environment, in business, in politics, in every sphere of activity we require creativity.

And it can be a technological innovation or a non technological social innovation or creativity and this creative people are very rare. For example in USA general food had a product called sugar free cool aid and the product sale of the product declined. So, the management thought that let us call to the students from prestigious business school in USA. So that they can provide a solution to boost the plunging sale of the product the students from business schools were called they are given the problem they came out with various models, and the models were presented submitted to the management seeing the models the management concluded that the students are provided the ideas, but not a single idea is new that the management has not thought off.

And that is why creative people are rare and creativity it is a production of new and original ideas creativity the production of new and original ideas it encompasses novelty originality and usefulness. Creativity implemented is innovation and it is popularly called as out of box thinking and mind mix procedure then the question must be coming to us that why out of box.

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**Are the two parts of the brain different?**

- Why **out-of-box**? Inside the box we feel safe, everyone stays there with boundary of knowledge structure in mind. Out of box is invisible, it is accountable for divergent thinking.
- **The right hemisphere in brain processes divergent, non-linear, intuitive, visual-spatial, inductive and qualitative thoughts and responsible for creativity.** The left hemisphere processes convergent, linear, rational/analytical, verbal, deductive, quantitative thought.
- Right brain-idea generation; left brain-Idea evaluation and analysis; Both brains involved in idea protection and improvement. **Mindmix** for innovation.
- Socialization process and learning system condition us to use our left brain frequently, conform to the norm, write answer logically to fetch marks in exam, read a story and answer from the story and do not write similar new stories. Everybody has the right brain, recognize, respect, accept odd ideas, take steps to nurture and protect ideas

We have inside the box we feel safe everyone stay there with the boundary of knowledge in the mind out of box is also not visible, but it is accountable for divergent thinking. And in our brain we have 2 hemispheres one is called the left another is called the right hemisphere. The right hemisphere brain process divergent non-linear intuitive visual spatial inductive and qualitative thoughts and the right brain is responsible for creative generation of the creative ideas.

Contrarily the left brain or the left hemisphere processes convergent, linear, rational and analytical, verbal, deductive and quantitative thought. So, right brain generates the new and useful ideas. But left way does evaluate the ideas and analysis the ideas. So, both the brains are involved in idea protection and improvement therefore, mind mix is used for innovation. Unfortunately our socialization process and learning system is such that those do not encourage our creativity and our left brain continuously conditioned we are asked in the social system to confirm to the social norms and in the educational system we are asked to write answer logically to fetch marks in the exam.

And when the teacher even teachers to children he or she read a story or a children read a story and they answer the question from the same story, but never the children are encourage to write similar stories. Therefore, these procedures erase our creativity, but everybody has a right brain recognize and respect the person accept the odd ideas take steps to nurture and protect the ideas. So that creativity can flourish.

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**Creativity: Two tests**

**(1) Alternative Uses Test(Guilford, 1967)**

Tell me as many unusual ways you could use a

1. Knife
2. Automobile Tire
3. Chair
4. Key
5. Pencil
6. Telephone book

And how you know that the person is creative there are 2 tests, much earlier in 1967 and 1980 this tests are developed by Guilford one is called alternative uses test. Tell me as many unusual ways you could use a knife, automobile tire, a chair, a key, a pencil and a telephone book for every item you have to mention the unusual ways in which you can use it.

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**Example**

*Name all the uses for a **brick**:*

1. A paperweight
2. A doorstep
3. A mock coffin at a Barbie funeral
4. To throw threw a window
5. To use as a weapon
6. To hit my sister on the head with

Example is there say for example; name all the objects name all the uses for a brick. Brick is general used for the construction of the wall, here is a conventional use. But the


unconventional use that it can be used as a paperweight, it can be used as a door stop, it can be used to throw through a window, it can be used as a weapon, it can be used to hit my sister on the head with the brick. These are some of the unusual uses of the brick.

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*Scoring is comprised of four components:*

1. Originality - each response is compared to the total amount of responses from all of the people you gave the test to. Responses that were given by only 5% of your group are unusual (1 point), responses that were given by only 1% of your group are unique - 2 points). Total all the points. Higher scores indicate creativity\*
2. Fluency - total. Just add up all the responses. In this example it is 6.
3. Flexibility - or different categories. In this case there are five different categories (weapon and hit sister are from the same general idea of weapon)
4. Elaboration - amount of detail (for Example "a doorstop" = 0 whereas "a door stop to prevent a door slamming shut in a strong wind" = 2 (one for explanation of door slamming, two for further detail about the wind).

\*You might have noticed that the higher fluency the higher the originality (if you did "good for you!") This is a contamination and can be corrected by using a corrective calculation for originality (originality = originality/fluency).

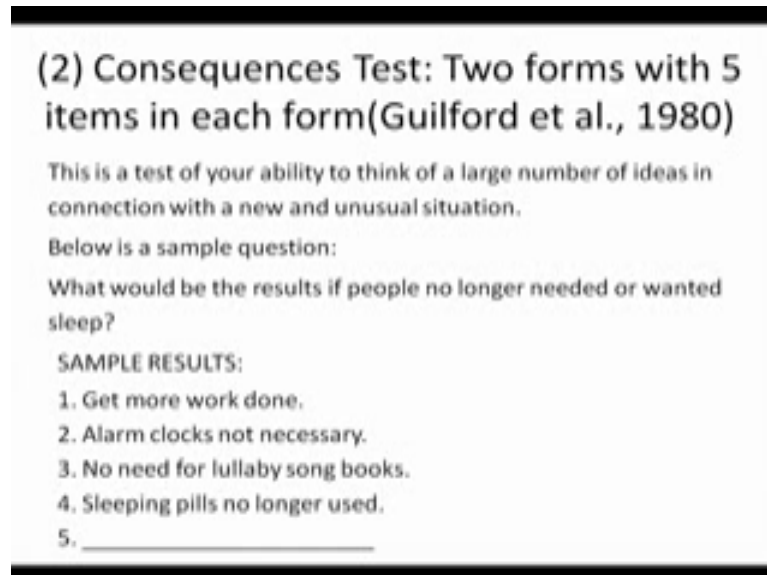


Similarly, students are asked how many unusual uses for the persons are asked how many unusual uses you can make up the knife automobile, tire, chair, key, pencil, telephone book and so on. These ideas will give you alternative uses to give the idea more the ideas would generate more is the fluency and similarly whether the idea is original in order to know that if 5 percent of the group on which this test is administered if the ideas are given by 5 percent of the group members they are definitely usual unusual.

Therefore, 1 point is given if it is given by 1 percent of the group members they are unique and 2 points are given and total all the points higher the points higher is the originality. Similarly, elaboration what is the amount of detail that the person which taking the test is able to do suppose for example, a door stop 0 whereas, a door stop to prevent a door slamming shut in a strong wind is equal to 2, 1 for the explanation of door slamming 2 for further detail about the wind. Therefore, accordingly the elaborations score has been given you might notice that higher the fluency higher will be the originality. Therefore, this contamination of the problem can be corrected by using a

corrective calculation for originality that is originality is ratio of originality divided by fluency.

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**(2) Consequences Test: Two forms with 5 items in each form(Guilford et al., 1980)**

This is a test of your ability to think of a large number of ideas in connection with a new and unusual situation.

Below is a sample question:

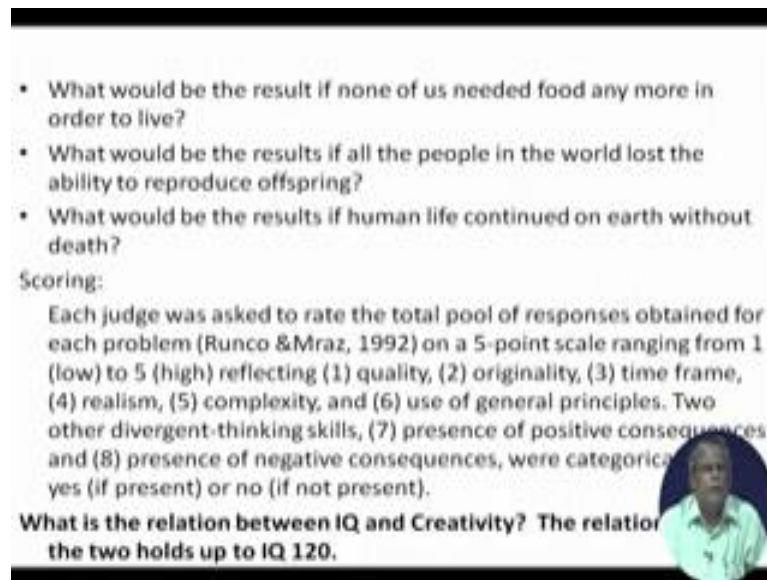
What would be the results if people no longer needed or wanted sleep?

**SAMPLE RESULTS:**

1. Get more work done.
2. Alarm clocks not necessary.
3. No need for lullaby song books.
4. Sleeping pills no longer used.
5. \_\_\_\_\_

And there was the another consequence test there are 2 forms of it 5 items were in each form and the test your ability to think of a large number of ideas in connection with a new or original situations there is a sample question. What would be the results if people no longer need needed or wanted sleep then the sample answers will be like that they will get more work done alarm clocks not necessary no need for song books sleeping pills no longer are needed or used. Likewise the consequences will be many.

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- What would be the result if none of us needed food any more in order to live?
- What would be the results if all the people in the world lost the ability to reproduce offspring?
- What would be the results if human life continued on earth without death?

Scoring:

Each judge was asked to rate the total pool of responses obtained for each problem (Runco & Mraz, 1992) on a 5-point scale ranging from 1 (low) to 5 (high) reflecting (1) quality, (2) originality, (3) time frame, (4) realism, (5) complexity, and (6) use of general principles. Two other divergent-thinking skills, (7) presence of positive consequences and (8) presence of negative consequences, were categorized yes (if present) or no (if not present).

**What is the relation between IQ and Creativity? The relation the two holds up to IQ 120.**

Similarly, what would be the result if none of us needed food any more in order to live no need to do the agriculture? Agriculture of production of agricultural instruments will be stopped people may search for the sea food to eat likewise there are various consequences, if it is needed if it is none of us needed food any more in order to survive in the earth there are various consequences.

Similarly, what would be the results if all people in the world lost the ability to produce offspring another question what would be the result if human life continued on earth without death. So, likewise you have to write what would be the consequences. So, these responses the individual gifts are evaluated on a 5 point scale ranging from high to low based on the quality reflecting on the quality originality time frame realism of the answer complexity and use of general principles presence of positive consequences and presence of negative consequences. So, based on this the total response obtained on each problem which will be score on the use of on the consequences test.

Then the question must be coming to your mind that what is the relationship between IQ and creativity. IQ stands for intelligence question it is a measure of intelligence it is measured by in mental age divided by chronological age multiplied by 100. A task is there if you perform if one performs the task then the mental age can be found out chronological age is the horoscope age dividing that we find multiplied by 100 we find what is his intelligence question or the IQ. But all IQ test if you look in to from Beneat to

till now Beneat Simon initially had the test until now variety of tests are available to measure intelligence all the test you find that they are measuring the analytical ability for the logical way of solving the problems.

But creativity on the other side is a diverging thinking it is intuitive in nature it is unusual in response unusual solutions. So, therefore, when intelligence and creativity are related it was found that the relationship between intelligence and creativity holds good up to the IQ of 120. But after when the intelligent question is greater than 120 the relationship between creativity and intelligence disappear what does these findings suggest we can inform from this finding that intelligent people are creative, but highly intelligent people are not necessarily creative.

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**Creative people:**

- are divergent thinkers; newspaper → reading; tongue cleaner → cleaning tongue. Unusual ways how the items can be used.
- have cognitive complexity, terrorizing imagination, have preference for elaborate, intricate and complex stimuli and thinking
- are different from usual people, philosophical, mystiques. Capable, confident, clever, intelligent, egotistic, humorous, informal, individualistic, insightful, reflective, resourceful, sexy. They have wide range of interests, are independent, interested in abstract problems, have tolerance of ambiguity. Big five personality—Openness to experience (curiosity, flexibility, imaginativeness, openness to change, and unconventional ideas). They are more vulnerable to losing touch with reality that they are akin to madness.
- have exceptional mental and physical energy for pursuing their activity of interest. Inventors have a knack for persisting after failures as Thomas Edison tried countless substances for his light-bulb filament.
- are intrinsically motivated; challenge of the task is more important than money, meeting deadline, secure job, etc.

This creativity shown by the creative people and they have various attributes definitely as you have seen the earlier slides and from with me. Obviously, creative people are divergent thinkers they can think of variety of ways how the newspaper can be used like a child, the child can use a newspaper to make a kite of it the tongue cleaner can be used by the child it is used for cleaning the tongue the child can write AC with the help of tongue cleaner.

He can make O by joining the tongue cleaner 2 sides of the tongue cleaner by saying. I am not saying that the child is more creative than that of us what you meant to say that the way the unusual ways how the items can used will reflect the creativity at this

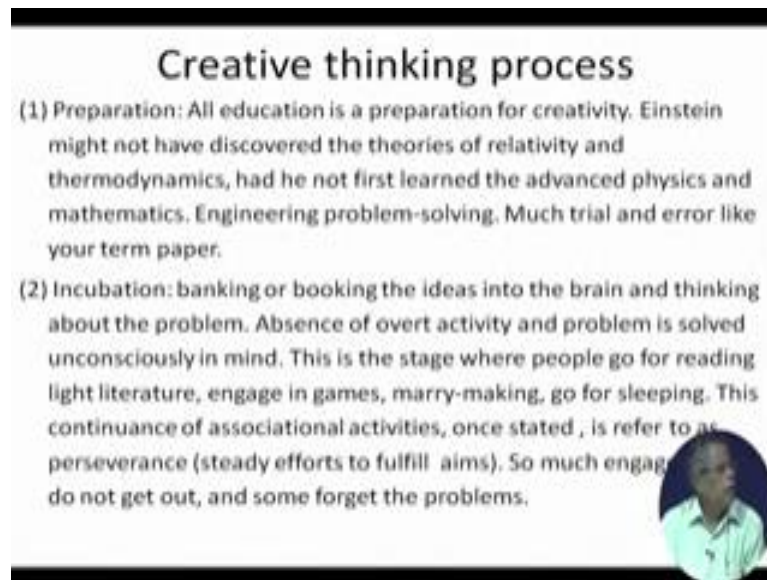


creative people are divergent thinkers they can think of multiple possibilities to a particular given problem. Then cognitive complexity they have terrorizing imagination have a preference for elaborate intricate and complex stimuli and thinking's they can think a question like this can you make a car that can take us from the earth to another planet. And this are the people who are different from usual persons they are philosophical they are mystiques they are just like magicians. And the perception of the general people is that the creative people are capable, confident, clever, intelligent, egoistic, humorous, informal, individualistic, insightful reflective, resourceful and sexy.

These are the findings from western countries they have wide range of interest they are independent and interest in they are interested in abstract problems and at the same time they may have high tolerance for ambiguity and uncertainty when the 5 big 5 personality were examined in the creative people it was found that openness to experience that is the one of the attribute of big 5 trades that is a very high relationship with creativity suggesting that the trade that measures curiosity, flexibility, imaginativeness, openness to change and unconventional ideas correlates highly with that of creativity.

And creative people may lose touch with reality because they are more interested in abstract problems they are unconventional type of people and they are more akin to madness and they have exceptional mental and physical energy for pursuing their activity of interest. Inventors have a knack for persisting after failures you can know that Thomas Edison tried countless substances for his light bulb filament. And they are intrinsically motivated, they are internally driven, challenge of the task is more motivating to them than that of money or meeting deadlines or having a secure job.


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### Creative thinking process

(1) Preparation: All education is a preparation for creativity. Einstein might not have discovered the theories of relativity and thermodynamics, had he not first learned the advanced physics and mathematics. Engineering problem-solving. Much trial and error like your term paper.

(2) Incubation: banking or booking the ideas into the brain and thinking about the problem. Absence of overt activity and problem is solved unconsciously in mind. This is the stage where people go for reading light literature, engage in games, marry-making, go for sleeping. This continuance of associational activities, once stated, is refer to as perseverance (steady efforts to fulfill aims). So much engaged do not get out, and some forget the problems.



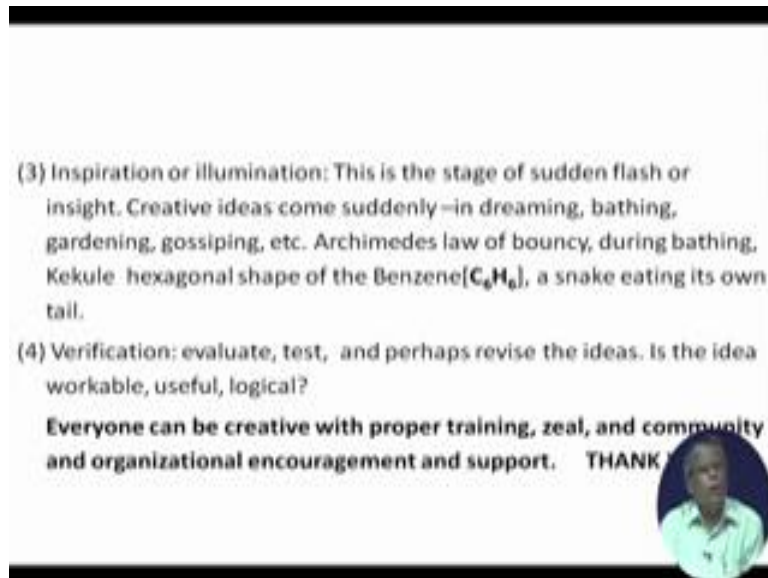
I have been said about these creative persons that they decreative persons or the persons who want to be creative thinking text plays through a sequence of steps the steps are not clear cut they may be overlapping. But for understanding they can be decomposed in to 4 steps first step is the preparation all education is a preparation for creativity Einstein must not have discovered the theories of relativity and thermodynamics had he not first learned the advanced physics and mathematics.

Similarly, the person cannot solve the engineering problem without having a engineering degree. If I being a doctor cannot solve a medical problem having a medical degree and therefore, this education gives in the basic grounding on the basis of which he can do the creative he can go for creative in his or her area of expertise. And when you start the creativity there is much of it is of trial and error types it is just like when you are writing a term paper you write the term paper tear it again you write it again you tear it and you do it again and again till you reach a final stage where you say this is the term paper you have produced.

And after this preparation once you have the ideas then the ideas the banking or booking of the ideas in the brain we think about the problem it is called incubation and that is the step where there is absence of overt activity and, but once you put the ideas or book the ideas in your brain the problem is solved unconsciously in mind. And this is the stage where people may go for reading write literature engage in games marry making or go

for sleeping the continuance or continuance of association activities among different ideas once stated it is refer to as perseverance that is the steady efforts to fulfill the aims. And incubation is such a stage that people are so much think about the ideas some people do not get out of that ideas and people are so long they continue with the ideas that after some time they forget the problem that they have thought.


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(3) Inspiration or illumination: This is the stage of sudden flash or insight. Creative ideas come suddenly—in dreaming, bathing, gardening, gossiping, etc. Archimedes law of bouncy, during bathing, Kekule hexagonal shape of the Benzene[ $C_6H_6$ ], a snake eating its own tail.

(4) Verification: evaluate, test, and perhaps revise the ideas. Is the idea workable, useful, logical?

**Everyone can be creative with proper training, zeal, and community and organizational encouragement and support. THANK**



And following the incubation there is a stage called illumination this is the stage of sudden flash or insight creative ideas come suddenly may be in the stage of dream or when you are taking bath or when you are engage in gardening or when you are talking with your friends. Archimedes law of bouncy the idea of the law bouncing came to him when he was taking bath in a pot and as he entered as he sat on the pot the water level is rising and that gave him the idea about the law of bouncing and he found the solution eureka and he got naked and run in the street by declaring that he has declared by declaring that he has discovered the law of bouncing.

Similarly, you can find kekule he has gave the idea about the hexagonal shape of the benzene which stands for  $C_6H_6$ . A snake is eating its own tail like that he saw in the dream and that gave him the idea about the shape of benzene. And once this illumination comes then once you get the ideas then you have to verify the ideas can the ideas be tested is it workable is it useful to the society. Likewise the question we ask the questions

and we evaluate and test the ideas and then we finally, we freeze that this is the idea which can be a new innovation or it is a new creative ideas.

Remember one thing that everyone has a right brain. So, logically everyone us has the right brain and left brain the right brain is accountable for creativity. So, logically everyone can be creative with proper training zeal and community and organizational support and encouragement if the idea is there then the verification may require on the part of the persons to test the ideas in the Lab. Machine time is required if the idea is related to the machines. Therefore, until and unless this superstructure is there so training community and organizational encouragement and support the idea will not be reached for a creative venture.

Thank you.