Creativity and Improvisation

Some statistics on Research report “Succeeding on innovation”

- The Sales increase in highly innovative companies was nearly twice as much as in companies that were less innovative.

- The profit increase in most innovative companies was more than three times as high as in less innovative companies

What is the backbone of innovation?

Creativity & Creative idea

Creativity : It is the ability to produce new and original ideas and things. Creativity is synonymous with inventiveness. R & D and innovation are creative processes. The inventiveness of an innovator is linked with his creativity.

Creativity vs. Innovation

Creativity	Innovation
Creativity enriches the innovation process as an inseparable part of innovation. It helps in the generation of ideas.	Innovation is the application of such idea towards doing things better or cheaper or more effectively or more aesthetically.
Creative ideas can be wild, outlandish and impractical	Innovation must be practical, realistic and result oriented
Creativity is more concern with quantity of input	Innovation is more concerned with quality of output
One without other is like a child without parents	

The Relationship between Creativity and Innovation

The inputs
Ideas
Day dreaming
Observing happenings
Brainstorming

Criteria of evaluation

The output
Results
New
Better
Faster
Cheaper
Aesthetic

How can an organization be creative?

- Creative people
- An environment receptive to new idea
- Use of creative problem solving techniques

The creative process

1. Preparation

- building information and knowledge base
- Familiarity with related and other fields
- Wide breadth of interest

Time ↓

2.Incubation:

- Conscious divorce of idea from mind
- "Free thinking" without restraint
- Visualization of image

Time ↓

3.Illumination

- Sudden insight
- Ah-ha effect

Time ↓

4. Verification:

- Details
- Conclusions
- Method of proof

Elements of the Creative Process

- Preparation: Preparation means building a knowledge foundation and skill base in a chosen field. Without such an underlying structure, an individuals would have nothing to draw on for either conventional or creative thought. New ideas and insight do not emerged full bloom from blank minds but rather from ones that have become progressively more immersed in the facts, tools, research results and so forth that make up a particular line of human endeavor.
- Incubation: Incubation, the second stage, seems to require relaxing and partially “turning off“ the process of conventional thinking. This involves the holding of or keeping in check the normal tendency to criticize and judge the value of what is taking place in the flow of thought. It is possible for the thought flow to reach the deeper mental functions of mind.

Continue

Elements of the Creative Process

- The deeper functions are believe to take two forms: Free thinking and visualization

Free thinking: The individual must allow the mind to wander in any direction without restraints or evaluation, until later when evaluation is re-imposed.

Visualization: It is a mode of thought employing visual images rather than verbal or numerical symbols, a process having a lot in common with the content of dreams. During this phase, the mind seems to scan pictures of possible new relationships, structures and objects in an effort to solve a problem or satisfy a need. During this phase, the mind seems to scan pictures of possible new relationships, structures and objects in an effort to solve a problem or satisfy a need. Recent research indicates that dreams can play an important part in creative thinking. It appears that information processing during dreams and meditation is faster or more efficient than when one is awake.

Elements of the Creative Process

- Illumination: if incubation is successful, there follows the moment of illumination, which often is like a light bulb going on. This sudden insight of people is likened to a mystical experience. There is no known standard manner of predicting when illumination will occur.

- Verification: The final stage of creative thought is verification. Here, mind returns to the pursuit of more conventional patterns and workout the creative solution in details, polishes it into a more final form and chooses some test or method of proof so that the idea becomes credible and acceptable.

Common understanding among people about creativity

- It is impossible- don't waste my time
- It is possible-but it’s not worth doing
- I said it was a good idea all along

The Innovation Process- People

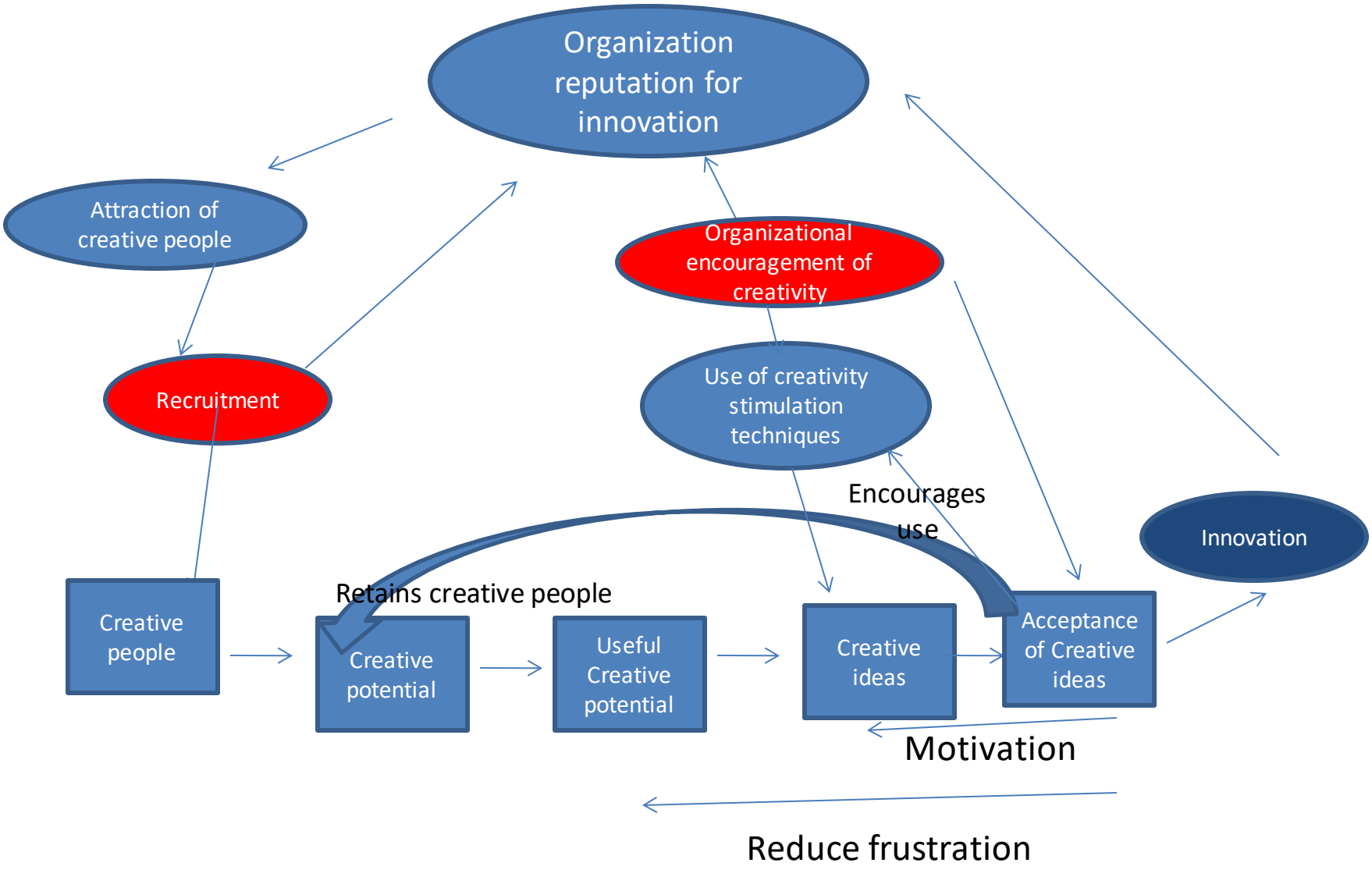
- **The creative person:** He has ideas. There are his/ her output
- **The inventor:** He/ She has the creative idea and transform it into some principle
- **The Innovator:** Translate the idea into reality. Action leading to tangible products or services is the output.
- **The Entrepreneur:** Is a person who by his innovative thinking and business ability develops the product or service into a money making proposition. Final outcome is the successful product or services
- **The Intrapreneur:** He/ She is a person who pursues entrepreneurial type innovation but within the framework of a large organization

- **The Champion:** Who picks up an idea not necessarily his or her own and through tenacity, belief and commitment , he or she convert this idea into a successful outcome.
- The **sponsor** is usually a senior manager who believes in the idea and have faith on the team. He/ She has the clears idea about the way or method by influencing the key people, he or she convert this idea into a successful outcome through various stages of organizational scrutiny

Creative Individuals-Main Characteristics

- Optimistic about the future
- Open to alternatives
- Day dreamers
- Highly curious and observant
- Independent thinkers
- Able to recognize and break bad habit
- Good at turning innovative idea into practical solution
- Adventurous with multiple interest
- Constantly exposing themselves to new idea and information
- Willing to take risk
- Open to new experience
- People who take action and make things happen
- Full of commitment to what they are doing.

Organizational Environment for creativity



Organizational encouragement of creativity

- Top level commitment, support and encouragement
- Psychological safety and freedom of expression and action
- Clear work standards and realistic requirements
- Tolerance of failure
- Adequate information & other resources
- Exposure to new experience, new ideas and new directions
- Healthy competition
- Positive feedback
- Creative time

How R & D director create a climate that promote innovation

- R & D manager can catalyze creative action through hid relations with members of the group and the quality of his leadership
- She / he can give focus on executive and management development programmes to emphasis items that foster innovation.
- Initiate organizational development interventions such as training, team building, role analysis, survey feedback and quality circles
- Provide specific training in imaging and creativity for employee groups
- Improve job descriptions

Barriers to Creativity

- **1. Whose sources reside within the individual him/herself**
- **2. Whose sources reside within the organization**
- **3. For which both organization and individuals are responsible**

Creative padlocks

- I am not a creative person
- Be as practical as you can
- Follow all the rules
- That's not logical
- Avoid ambiguity at all cost
- Don't be foolish
- Having fun is frivolous
- That's not my area
- To make a mistake is wrong
- That's not the right answer
- I cannot do this
- Some one must already be doing this
- If I share my idea, some one will steal it
- Thinking- I am not paid to think

Key to unlock the Creativity

- ✓ Observation
- ✓ Incubation
- ✓ Intuition
- ✓ Emotion
- ✓ Stimulation

Technique for enhancing /Improvising creativity

- **Structured:** Techniques that apply logical thought processes exercised within a formal structuring of information
- **Non-structured**: Techniques that stimulate imaginative thinking in a non-structure manner

Technique of Structured method

- **Morphological analysis:** Morphological Analysis was developed by Fritz Zwicky (the Swiss astrophysicist and aerospace scientist based at the California Institute of Technology) in the 1940's and 50's as a method for systematically structuring and investigating the total set of relationships contained in multi-dimensional, usually non-quantifiable, problem complexes.
- Example: you have a product that could be made of 3 types of material, in 6 possible shapes, and with 4 kinds of mechanism. Theoretically there are 72 (3x6x4) potential combinations of material, shape and mechanism. Some of these combinations may already exist; others may be impossible or impractical. Those left over may represent prospective new products. This method of can be extended to virtually any problem area that can be structured dimensionally

Morphological analysis- Example

Source	Form	Flavour	Additive
Wheat	Flake	Natural	None
Corn	Granule	Honey	Raisins
Oats	Bit	Brown sugar	Prunes
Rice	Powder	White suger	Strawberries
Soybeans	Biscuit	Chocolate	Blue berries
Peanut	Puff	Butterscotch	Peacxhes
Maize	Grid	Grape	Apricots
Carrot	Figure	Vanilla	Pecans

Structured Technique

- **Attribute listing:** It is an another structured approach that involves the analysis of a product or process into its basic elements. The basic idea of attribute analysis is writing down all attributes of the existing products, services etc. and performing manipulations on these attributes. Morphological Analysis is an extension of Attribute Listing. Example: The task was to devise a more useful hammer. To take only the claw on the hammer heas as an example, changes might be made in its design, shape, size, function, location etc. The use of an attribute list in this case assures a complete consideration of all attributes of the hammer

Structured Technique

- **Checklists:** Problem solver some times use checklist to assure himself that he has cover the major responsibilities for idea before he abandons his research. Checklists are set of specific question used by participants in problem solving situation to uncover clues for new solutions. The checklist technique enable us to think of a series of actions that could be possible. The list are prepared in advance and used to stimulate ideas.

Structured Technique

- **Guided Imaging:** Some times call visualization. . Guided imaging makes use of the imaging and imaginative power of human mind to review the past, contemplate the present and speculate about the future to create picture of possibilities. The task has is to perceive it in an open minded way and to generate images of the situation and mental pictures of the results of applying solution. Descriptive notes aremade of these images and are shared with others

Structured Technique

- **Forced Relationships:** The creativity technique involves taking two or more normally unrelated principles together, jamming them into forced relationships. Forced relationship technique can be used in all types of techniques. The purpose is to force a mental connection between the two principle, articles etc by stimulating the ideas

- For example: A committee charged with generating new product ideas for the manufacturing of training equipments. First the committee will see all the product already available with company. Suppose Overhead projectors, slide projectors, flim strip projections, microfile viewers, video monitors, cathode ray tube terminals (CRTs) and projection screens etc are available with company.
- A free discussion may result into a product that combines the features of both

Technique of Non-structured method

- **Brainstorming:** Brainstorming is designed to produce as many ideas as possible within a short time frame. It uses the principle of free association or “free wheeling” –purposely permitting ungoverned, uncontrolled, wild thinking including improbable, impractical, even silly ideas, without attempting to evaluate them. Association works best when people have a large database-minds well stocked with images gained from varied experiences.

- Brainstorming is a completely unstructured approach to solve problem (s) based on free association. A group of people gather together and interact together to generate ideas. No evaluation is permitted during brain storming season.

The ideal brainstorming group or panel consists of a leader and seven or ten people of substantially the same rank or status.

Technique of Non-structured method

The leaders prepares for the session by simplifying and focusing the problem and may develop a list of suggested solutions to be used to priming the group when ideas begin to slow down. When the group meets, the leaders present the four basic rules of group storming. These are as follows:

- 1. Criticism of idea is not allowed
- 2. Free-wheeling is welcomed
- 3. Quantity is the goal. The more idea you have, more likely you will find the solution
- Combination and improvement are encouraged. Combining and building on ideas create even better ideas.

At the end of the meeting the group leader is listed all the suggestions for the problem.

After the first meeting, the Group leader may fix a small meeting with small group (It may be the same person from first meeting or new person) upto five person to finalized the solution.

Technique of Non-structured method

- **Synectics:** A problem-solving technique which seeks to promote creative thinking, typically among small groups of people of diverse expertise. It is developed by J. J. William Gordon. The process come from recording the meeting, analyzing the results, experimenting with alternate ways of dealing with obstacle to success in the meeting. There are several phases for using synaptic. These are as follows:
- Description of the present condition: Describe (Present a problem)
- Direct Analogy: suggest, select and explore (provide research & Information & start questioning and explore the possibilities
- Personal analogy: become the analogy (Individual problem statement)
- Compressed conflict: Suggest and choose (choose one problem)
- Direct Analogy : select based on the chosen (question it & explore the possibilities
- Reexamine the original task: based on new insight & solve the problem