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Business Creativity Module

Creativity and Problem Solving

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Creativity and Problem Solving - Topics

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- Introductions
- Understand the concepts of / distinction between creativity and innovation
- Review techniques for improving creativity
- Understand the sources of /drivers for / innovation
- Short cases and examples

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Creativity and Innovation

- A company's success is determined by the quality of new ideas – competitive edge comes from creative thinking
- Insufficient time is given to the creative process – so make time!
- Knowledge grows from exchange with others, leading to increased creativity i.e. teamwork helps the process


ALPHA ADVERTISING
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"YOU ARE NEITHER TATTOOED, NOR PIERCED, OR HAVE FACIAL HAIR— HOW CREATIVE CAN YOU BE?"

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So, what is creativity?

- The generation of **novel** and **useful** ideas (Amabile et al, 1996)
- The ability to combine ideas in a unique way or make unusual associations between ideas (Coulter, 2000)

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Creativity and Innovation

- The essential characteristic is “newness”
- Anyone can be creative, attitudes are critical
- It’s difficult, but it’s possible OR it’s possible but it’s too difficult
- Release your creativity, take a risk!

Explanations of Creativity

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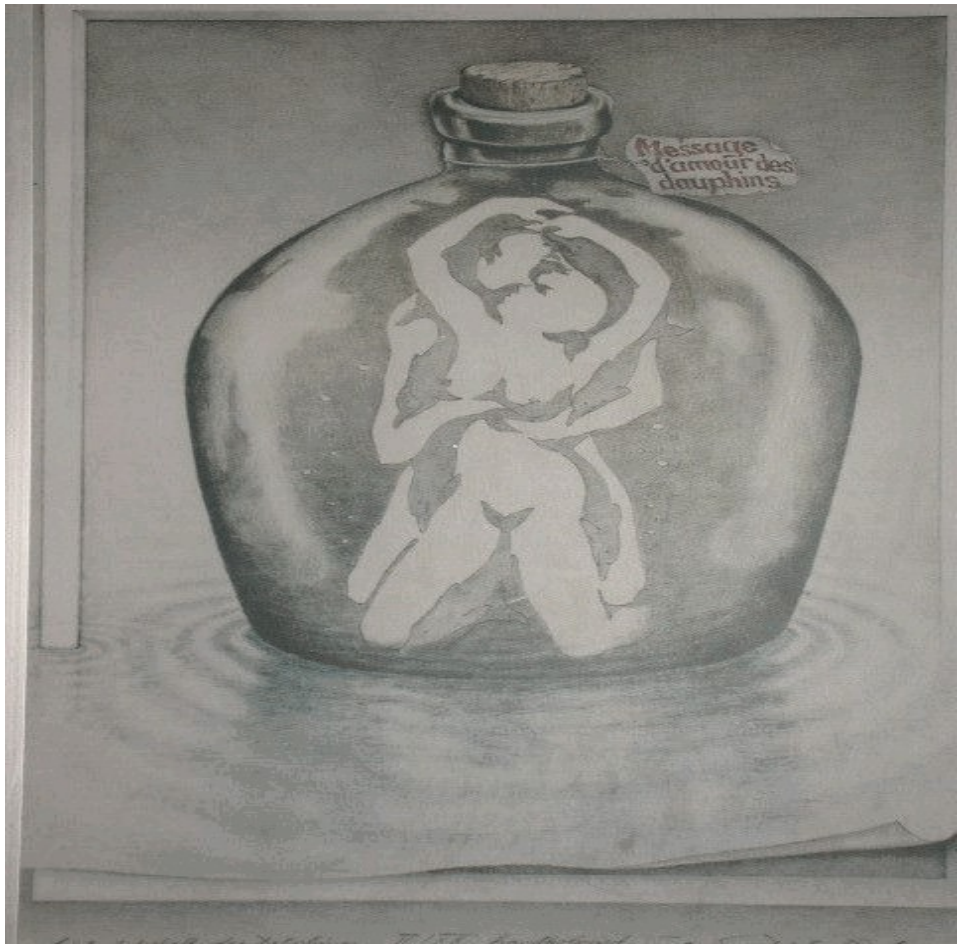
- Grace - God given
- Personality - A special ability. (e.g. Steve Jobs, Apple Computers)
- Accident – (radioactivity discovered from wrong hypothesis; Smallpox vaccination from observation)
- Association - lateral thinking and the ability to make connections
- Cognitive - a normal process involving recognition, reasoning, understanding

What do you see ?



Children see dolphins!!
No prior association

The Creative Thinking Process

(Source: Kuratko and Hodges, 1995)

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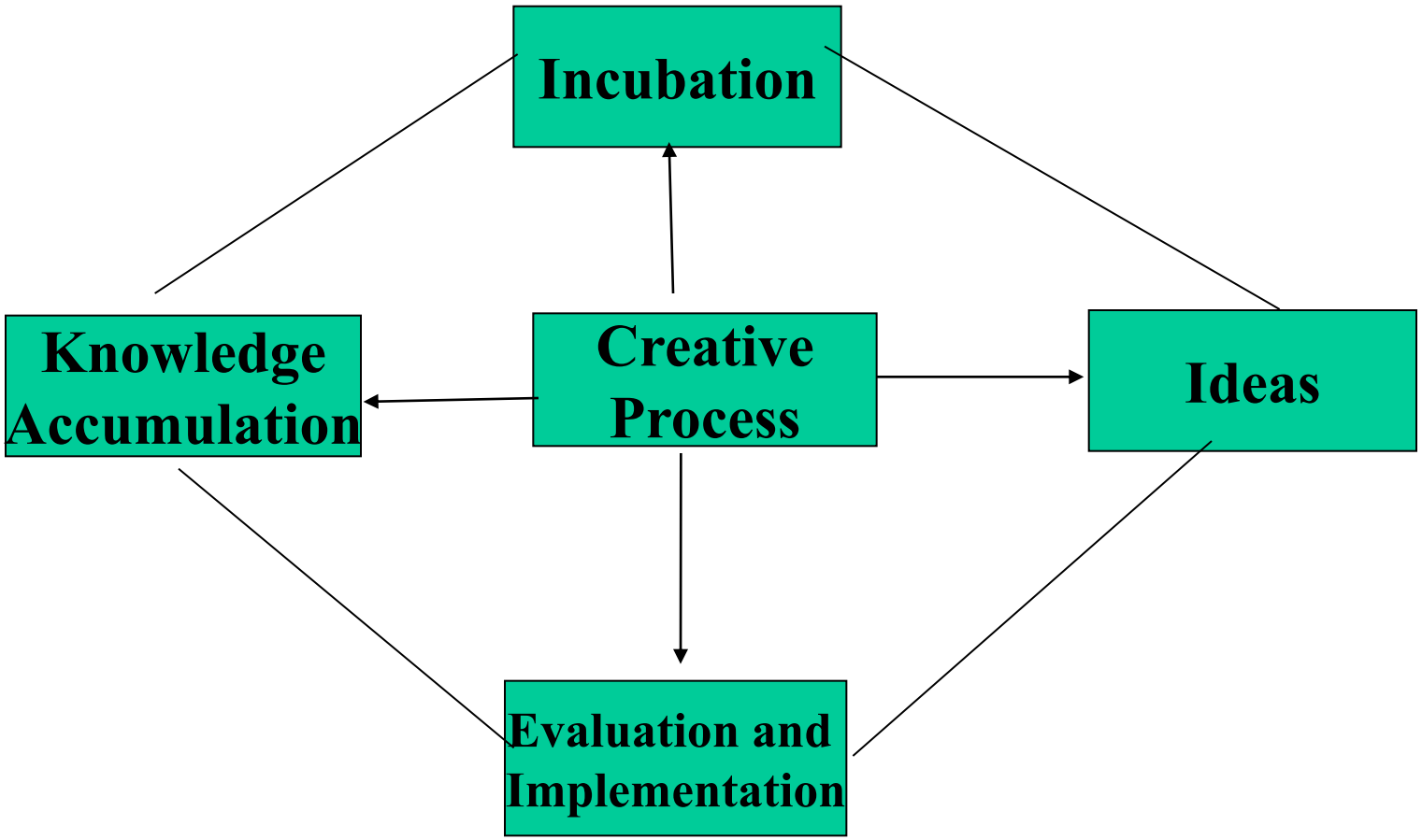

Structured Techniques

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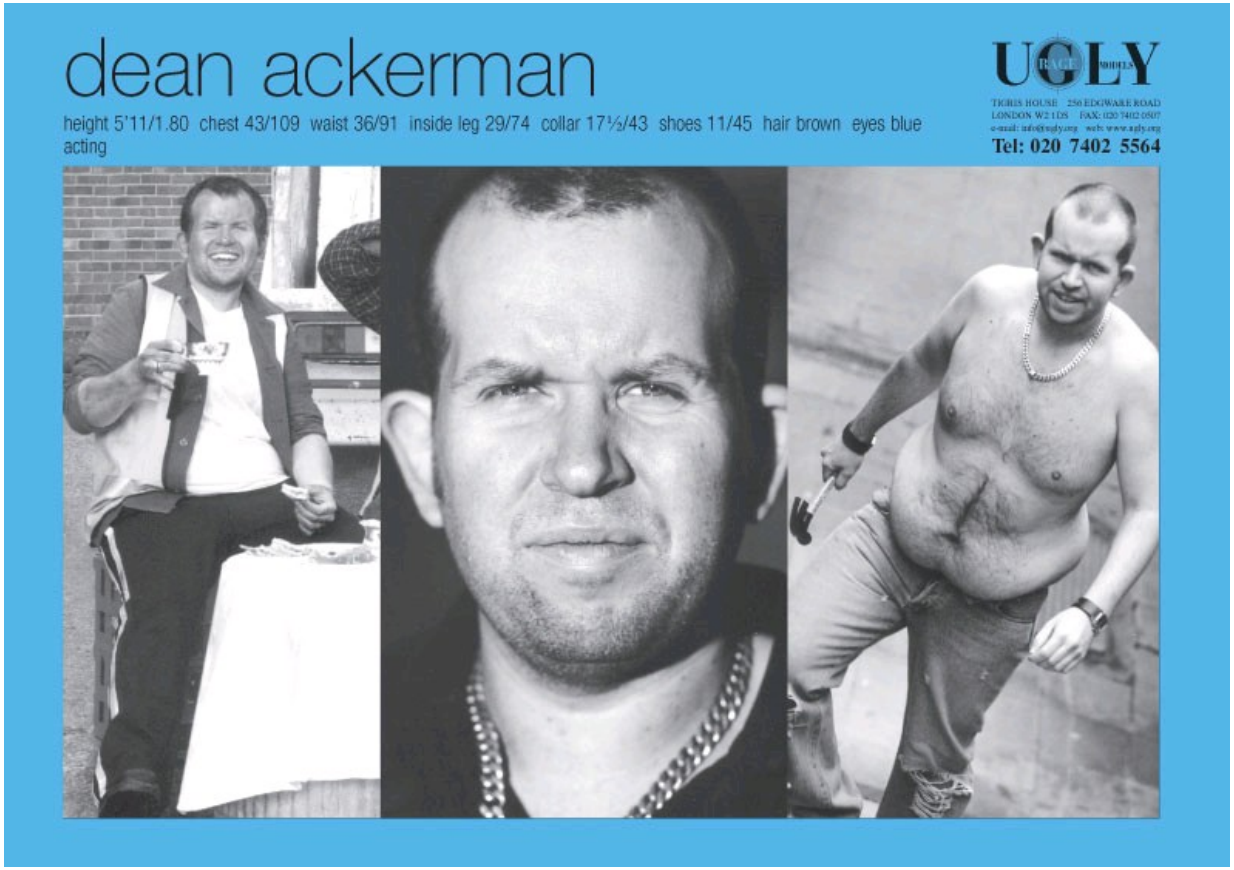
- Environmental scanning
- Brainstorming
- Mind mapping
- 6 thinking hats (de Bono)
- Features stretching (bigger, faster, etc)
- TRIZ (Theory of Inventive Problem Solving)
- Synectics
- Question what works
- Negative to positive
- Brain writing 635
- Idea cards – Metaplan
- Imaginary brainstorming
- Morphological analysis
- Heuristic redefinition
- Forced connections
- Fields of future cross referencing
- Attribute listing
- SCAMPER

Negative to positive
Ugly models.com



Brainwriting : Method 635

6 participants write down 3 ideas and these ideas are written down 5 minutes apart

1. Present, discuss and define the problem within the group of 6 participants.
2. Give each team member an idea-form with three boxes.
3. Fill the top boxes with 3 ideas in 5 minutes.
4. Pass the forms to the right and the next person writes down 3 more ideas. You can
   - take up preceding ideas for completion or variation
   - contribute completely new ideas of your own.
5. The process is repeated until the ideas boxes are all filled in
6. You can adjust the time per round and increase it as necessary with the last round taking a maximum of 10 minutes
7. If desired repeat the circulation process and mark interesting ideas as a rough pre-evaluation.

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Brainwriting 635

Problem Statement:	How to.....		
Round	Idea 1	Idea 2	Idea 3
1			
2			
3			
4			
5			
6			

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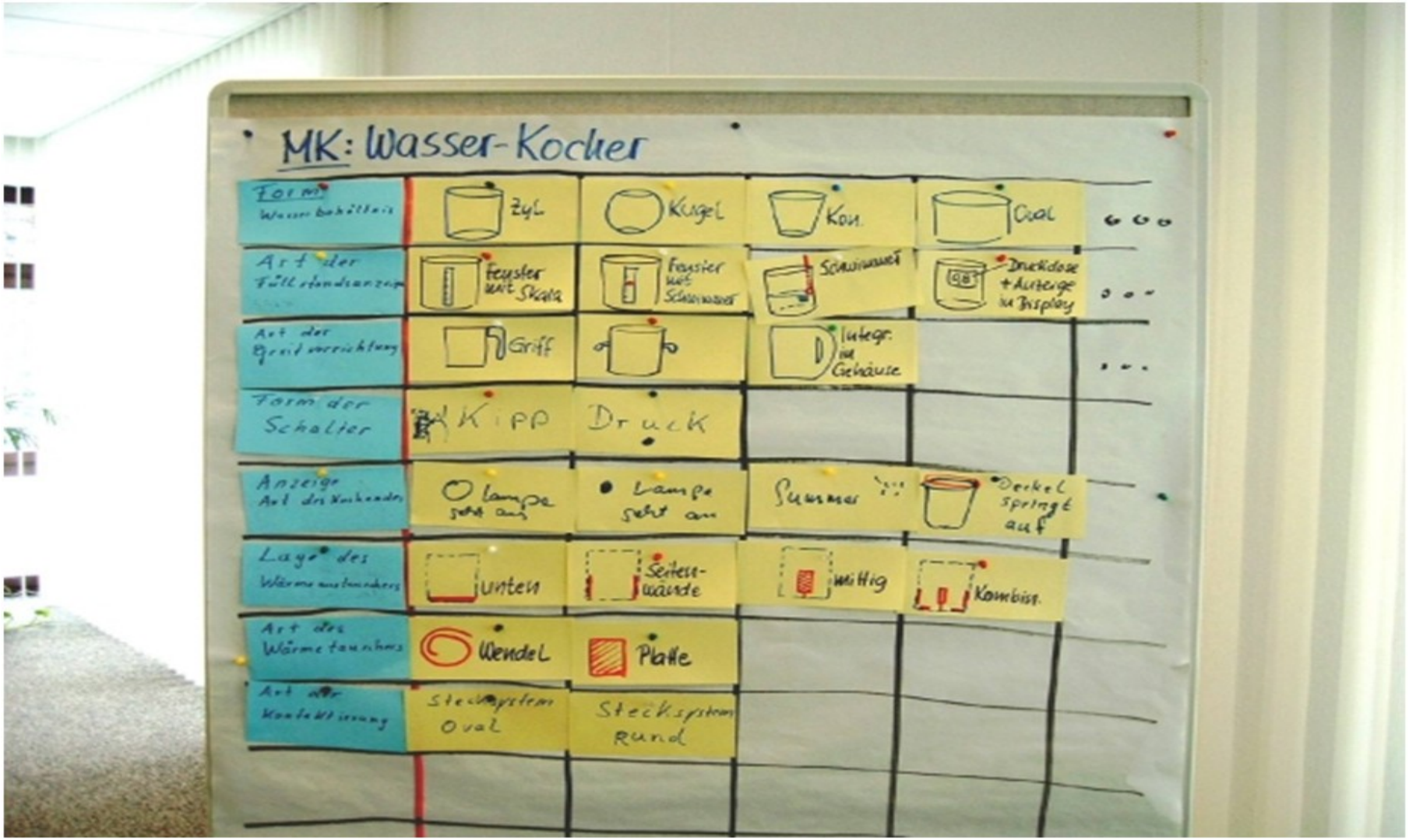
Idea Cards – Metaplan Technique

(1) The problem is presented, analysed and well defined.
(2) The group members individually write down ideas on their 20 cards.
(3) The facilitator continually collects completed cards and pins them on board for all to see until idea flow stops.
(4) The facilitator reads aloud the cards one after the other.
(5) Before evaluating the idea cards, they may be clustered according to similarity or belonging to a category.
(6) If it is intended to determine the most promising ideas and to elaborate them in more detail, the facilitator will hand out three to five adhesive dots to the participants and invite them to mark their favourites. The cards or clusters with the most dots are assumed to express the most preferable solutions or approaches.

Idea Cards – Metaplan Technique



Imaginary Brainstorming

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1. When defining the problem make sure that it has
   - a subject - who is acting
   - a verb - the action – what is being performed
   - an objective - what is the desired outcome.
2. Define the essential elements of the problem, and identify which of the elements above (1) is the most directly tied to a successful solution.
3. Perform a classic brainstorming session
4. Propose imaginary replacements for the other elements.
5. Formulate a new problem statement, substituting one of the imaginary elements.
6. Brainstorm ideas for the imaginary problem
7. Apply ideas from the imaginary brainstorming back to the real problem statement.
8. Analyse all of the ideas (real, imaginary and combined) and take forward those of most interest

Imaginary Brainstorming

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How can we develop training in half the time it usually takes?

	Original	Replacement
Subject	We	-Children -Donald Duck
Action	Develop training	-Get a college Degree - Build a house - Pay the bills
Objective	In half the time it usually takes	Don't replace the objective of the solution

Morphological Analysis

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1. Create a table with numbered rows and columns
2. Label each column with a different parameter or characteristic of the problem or task
3. For column 1 generate varied and/or unusual ideas and fill the column
4. Repeat for all other columns
5. Randomly select four numbers in the range 0 – 9
6. Use the four numbers to generate combinations by using each number in turn as an index into one of the columns. Record your combination
7. Repeat the previous step as many times as you wish (and keep recording the results).
8. When you have sufficient combinations, choose one (or more if you have time) to examine in greater detail

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Morphological Box – a new lamp

Power supply	Bulb type	Light intensity	Size	Style	Finish	Material
Battery	Halogen	Low	Very large	Modern	Black	Metal
Mains	Bulb	Medium	Large	Antique	White	Ceramic
Solar	Daylight	High	Medium	Roman	Metallic	Concrete
Generator	Coloured	Variable	Small	Art Nouveau	Terracotta	Bone
Crank			Handheld	Industrial	Enamel	Glass
Gas				Ethnic	Natural	Wood
Oil					Fabric	Stone
Flame						Plastic

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Heuristic Redefintion

1. Choose two items of interest that are already in existence but are not apparently connected.
2. Make a list of “components” for each selected item.
3. Set up a matrix where the rows list the components of the one product and the columns list the components of the other, and each cell corresponds to a combination of two “components” from different products
4. Cross out any matrix cells that correspond to existing products.
5. Identify any cells with a natural market potential.
6. Looking at the matrix from another angle, try to identify any cells that look creatively thought provoking
7. Develop the highlighted cells into workable ideas.

Heuristic Redefinition

Components Crossing matrix

	Card	Glitter decoration	Poetic message	Sent by post
Mug	Mug, card	Mug, glitter decoration	Mug, poetic message	Mug, sent by post
Floral design	Floral design, card	Floral design, glitter decoration	Floral design, poetic message	Floral design, sent by post
Coloured design	Coloured design, card	Coloured design, glitter decoration	Coloured design, poetic message	Coloured design, sent by post
Coffee sized	Coffee sized, card	Coffee sized, glitter decoration	Coffee sized, poetic message	Coffee sized, sent by post
Square shape	Square shape, card	Square shape, glitter decoration	Square shape, poetic message	Square shape, sent by post

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Attribute Listing

- Identify the product or process you are dissatisfied with or wish to improve.
- List its attributes. For a simple physical object like a pencil eg Material, Shape, Colour, Texture, etc.
- Choose, say, 7-8 of these attributes that seem particularly interesting or important.
- Identify alternative ways to achieve each attribute (e.g. different shapes: triangular, cubic cylindrical, multi-faceted….), either by conventional enquiry, or via any idea-generating technique.
- Combine one or more of these alternative ways of achieving the required attributes, and see if you can come up with a new approach to the product or process you were working on (see Forced connections).

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SCAMPER

The changes **SCAMPER** stands for are:

- **S - Substitute** - components, materials, people
- **C - Combine** - mix, combine with other assemblies or services, integrate
- **A - Adapt** - alter, change function, use part of another element
- **M - Modify** - increase or reduce in scale, change shape, modify attributes (e.g. colour)
- **P - Put to another use**
- **E - Eliminate** - remove elements, simplify, reduce to core functionality
- **R - Reverse** - turn inside out or upside down.

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Forced connection

STARBUCKS COFFEE ™

BOSTON DUCK TOURS

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Forced Connection

Baby Mops

Make your children work for their keep

After the birth of a child there's always the temptation to say "Yes, it's cute, but what can it do?" Until recently the answer was simply 'lie there and cry', but now babies can be put on the payroll, so to speak, almost as soon as they're born.

Just dress your young one in Baby Mops and set him or her down on any hard wood or tile floor that needs cleaning. You may at first need to get things started by calling to the infant from across the room, but pretty soon they'll be doing it all by themselves.

There's no child exploitation involved. The kid is doing what he does best anyway: crawling. But with Baby Mops he's also learning responsibility and a healthy work ethic.

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Fields of the Future

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Pyjamas for Dogs


PETS
TEEN
Sale


sale limited time only
8.49
Reg. 9.99
Bumblebee small or medium pet costume
DOG COSTUME
mounted moose
FOR PETS ONLY
1 piece
$7.99
8.49
Reg. 9.99
Grapes small or medium pet costume
sale
limited time only
DOG COSTUME
grapes
FOR PETS ONLY
2 piece set
$9.99

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Some Strange Results!!

Exercise

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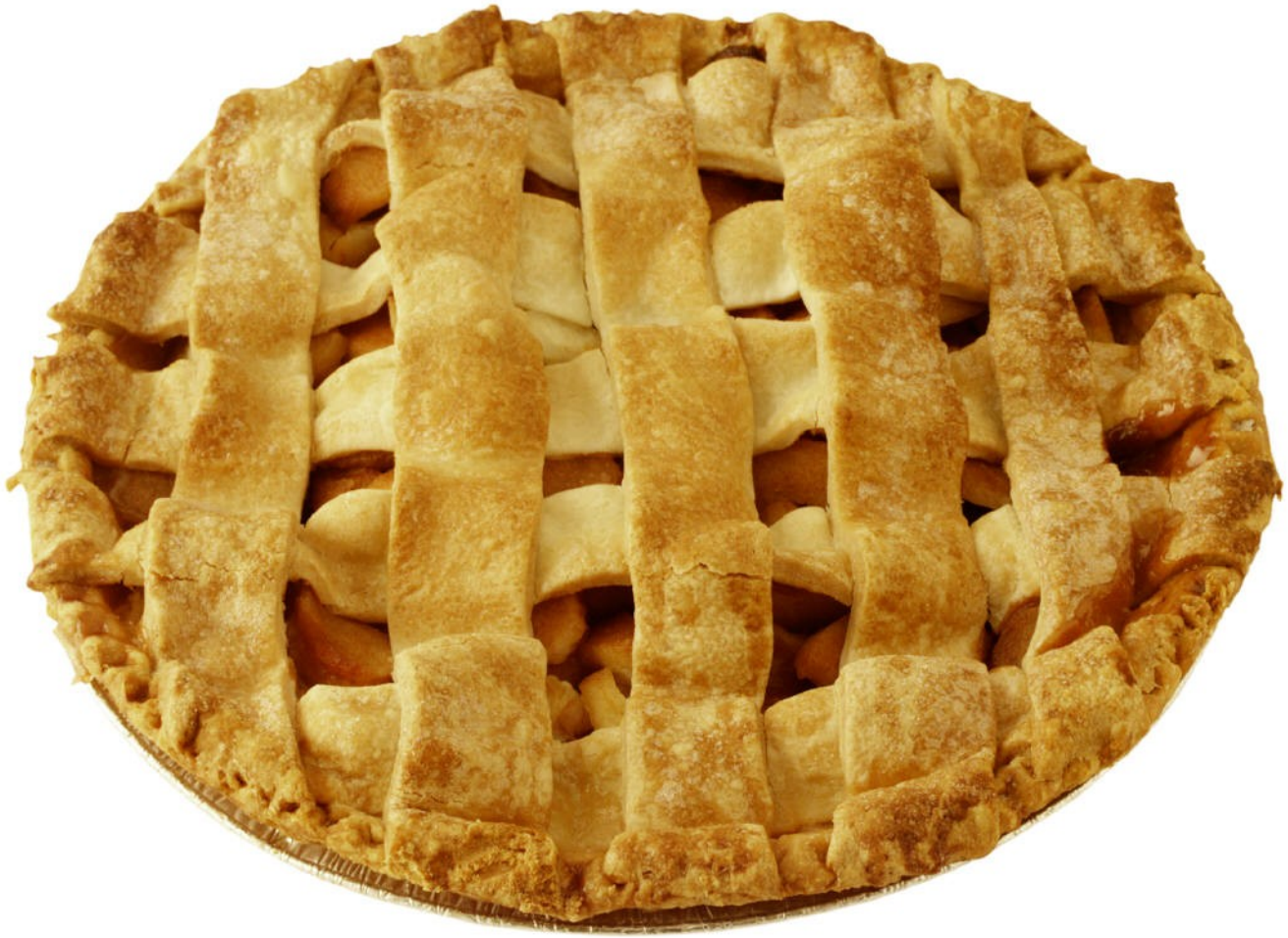
Cut a pie into 8 equal pieces using three cuts



Complete -
Inside or outside the box?

B C D

What do you see ?

(Source: Open University, 1993)

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So, what is innovation?

- The search for, and the discovery, experimentation, development, imitation and adoption of new products, new processes and new organisational set-ups (Dosi, 1988)

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CREATIVITY

The generation of novel and useful ideas

INNOVATION

Deliberate implementation of ideas
Makes money (or value) out of creativity

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Innovation is MORE than Invention

- Innovation is the specific function of entrepreneurship..... It is the means by which the entrepreneur either creates new wealth-producing resources or endows existing resources with enhanced potential for creating wealth (Drucker 1985)

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Sinclair C5 Car

Produced by Hoover

Sold in Comet!

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Smart Car – Partnership between Mercedes and Swatch!

http://www.truthaboutsmart.co.uk/?atlassource=paid

Innovation Typology

Schumpeter, 1934

- New products / services
- New production techniques and operating practices
- New markets
- New sources of supply of raw materials or other inputs
- New forms of business organisation (e.g. franchising)
- New ??
  - New ways of distribution / delivery
  - New means of communicating with customers and suppliers

Radical v Incremental Innovation

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Radical

- Might be something completely new
- Revolutionary products /services/ processes
- Higher uncertainty and risk
- OR

Incremental

- A new way of perceiving something already in existence which can still be highly profitable
- Washed/bagged lettuce market
- From $0 to $1 billion in USA in 2 years
- Simple ideas are adopted more readily!

Reasons for Innovating

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- Revenue generation
- Increase market share / penetration
- Cost reduction
- Improve quality / speed of service / health and safety
- Expand the product range
- Respond to customers
- Government legislation
- INNOVATION LEADS TO BETTER PERFORMANCE (Schumpeter 1934, Kanter, 1983)

The Innovative/ Creative Organisation

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- **Structure** (e.g. little hierarchy/ bureaucracy)
- **Culture/climate** (e.g. trust, risk-taking)
- **Strategy** (e.g. vision, differentiation, speed to market, lead times)
- **Work design** (e.g. team working, autonomy)
- **Management /leadership** (e.g. support for ideas)
- **HRM practices** (e.g. recruitment, training, rewards and benefits)
- **Technology & R &D (in-house, resources, patents)**
- **Networks, strategic alliances and collaboration** - universities, suppliers, competitors – e.g. Costa

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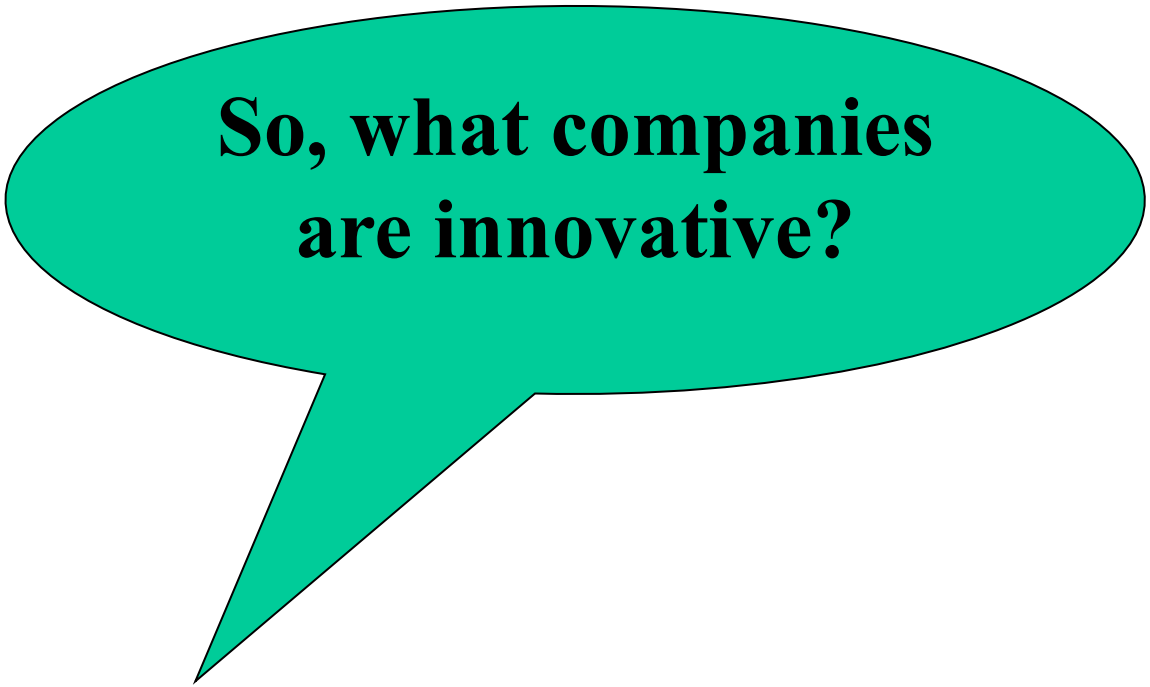

Business Week - Most Innovative Companies 2010 (2009)

1. Apple (1)
2. Google (2)
3. Microsoft (4)
4. IBM (6)
5. Toyota Motor (3)
6. Amazon.com (11)
7. LG Electronics (27)
8. BYD (8)
9. General Electric (17)
10. Sony (14)

Apple

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- Well-designed new products that create and build new markets from existing technologies/platform
- Creates demand by understanding customers' needs and anticipating new ones
- Effective and timely marketing
- Culture that encourages innovation

- Innovation engrained in culture
- Encourages employees to innovate – empowerment and rewards
- Balances technology with customer design
- Coined the word inventorpreneur – invent and implement

William McKnight CEO 3M

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- "First Principle is the Promotion of Entrepreneurship and Insistence Upon Freedom in the Workplace to Pursue Innovative Ideas"
  - **VISION**
- "Mistakes will be made, but if a person is essentially right, the mistakes made are not as serious in the long run as the mistakes management will make if it is dictatorial"
  - **MISTAKES ARE ALLOWABLE**
- "As our business grows, it becomes increasingly necessary to delegat responsibility and to encourage people to exercise their initiative ... Those people to whom we delegate authority and responsibility, if they are good people, are going to want to do their jobs in their own way"
  - **AUTONOMY / EMPOWERMENT**

Creativity and Innovation Summary

Ways to remove blocks include:

- Self-belief/displaying individuality
- Accepting mistakes/imperfection i.e. learn and gather experience
- Have fun! View life as a challenge
- Positive attitudes
- Accept and learn from criticism

Useful Websites

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- **INNOVATION NETWORK**
  - http://www.innovationtools.com
  - *An informative website dealing with issues of creativity and innovation and containing a good compendium of articles*
- **EDWARD DE BONO'S WEBSITE**
  - http://www.edwdebono.com
  - *Descriptions, discussions and latest musings on lateral thinking*
- **TRIZ JOURNAL**
  - http://www.triz-journal.com
  - Details TRIZ methods of creativity and innovation

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Brainstorming Activity

Brainstorming rules include:

- Define and agree the aim/problem
- Set time limit
- Separate idea generation from idea evaluation
- Listen to and explore (even the daftest) ideas
- Fantasy/imagination allowed to roam free
- Try everything and anything – ‘quantity will breed quality’
- Use lateral thinking
- Build on/combine ideas from each other

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Activity 1

- Select an everyday object from either a paper clip, umbrella, or comb
- Individually, think of as many alternative uses in 2 minutes
- Repeat the exercises, but in groups – 5 minutes
- What happens if you repeat the exercise, but apply it to a specific problem?
- What happens if you force a connection with other products?

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Activity 2

- Individually identify problems that YOU encounter in everyday living
  - Some may be similar and reflect your gender/age/stage in life cycle
  - Others will reflect individual problems/circumstances/culture e.g. big feet, absent partner
- Share problems and as a group select one problem (at random) and brainstorm ideas to solve the problem

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