

# Introduction to Creative Problem Solving

Institution of Chemical Engineers

North Western Branch

Warrington and Widnes Centre

## Creativity – The myths

### Myth

Creativity is a natural talent you either have it or you don't

Creativity is only suitable for certain industries

Creativity is a mysterious process

It has to be "whacky"

### Reality

We are all creative and have our own preferred style

It is a valuable approach in every walk of life

It has a structure and can be learned

Can be but not essential

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## Creativity –my definition

- Non-obvious answers to questions with "obvious" answers
- Answers to questions that don't seem to have answers
- Better answers to better questions
- Second, third and nth "right" answers to problems
- The lawnmower story

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Creativity is inventing,  
experimenting, growing, taking risks,  
breaking rules, making mistakes, and  
having fun.

Mary Lou Cook

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## Why you need to be creative

- Get different answers to the competition
- Get an edge
- "Wow" your customers and theirs
- The "right" answers aren't always good enough – and can be copied
- You can make leaps of understanding
- Introduce your, your organisation or your client's "personality"
- Make it distinctive – they will own it
- You can't get ahead of the competition by copying them!

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If you are not getting better faster  
than the other guy is getting  
better you are dead.

Tom Peters

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If you always do what you have  
always done, you will always get  
what you've always got!

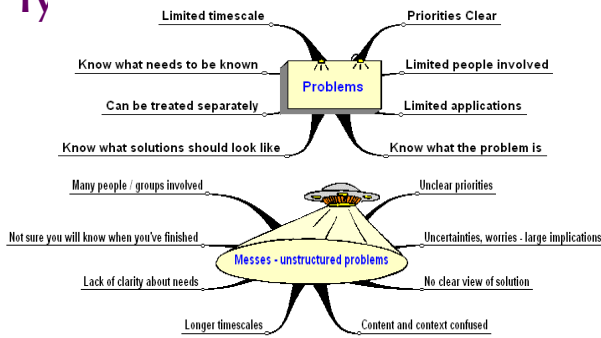
Anon

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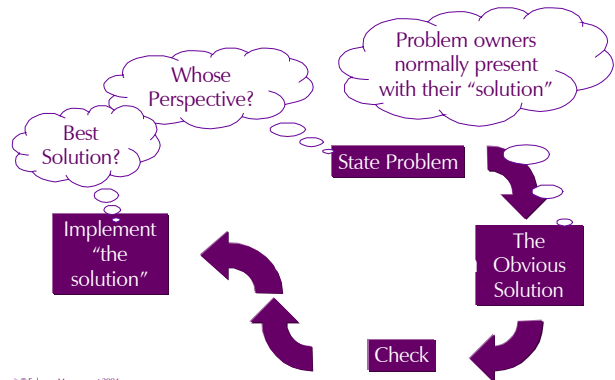
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## Types of problem



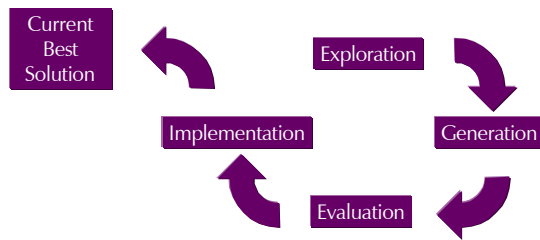
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## Common Practice ?



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## Problem Solving Cycle



Each cycle gives new insights so....

Cycle often and close as late as possible

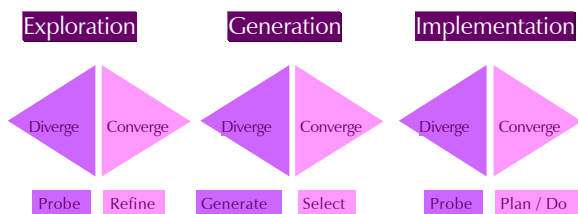
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We shall not cease from exploration, and the end of all our exploring will be to arrive where we started and know the place for the first time.

T. S. Eliot

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## Creativity = Structured Thinking + Imagination



Imagination is more important than knowledge  
Albert Einstein

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## Whole Brain Thinking

### LEFT BRAIN

Logical  
Sequential  
Rational  
Analyses  
Objective  
Parts

*Dominant*  
*Need to*  
*overload*



### RIGHT BRAIN

RANDOM  
INTUITIVE  
HOLISTIC  
SYNTHESISES  
SUBJECTIVE  
WHOLE

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Jim Yates

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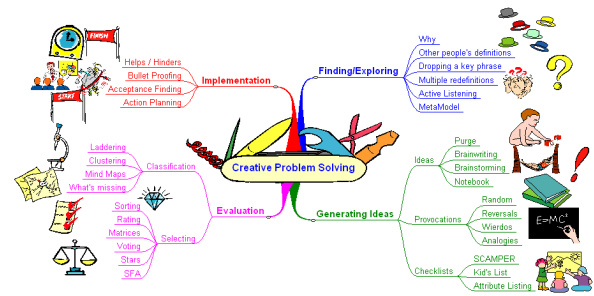
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## The Toolkit



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## Problem Finding and Exploration

- Why
- Other people's definitions
- Five Whys
- Kipling's Serving Men
- Dropping a key phrase
- Mapping
- Metaphor

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## Kipling's Serving Men

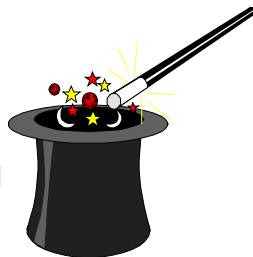
- I keep me six honest serving men
- They taught me all I knew
- Their names are why and what and when
- and where and how and who



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## Brain Storming Rules

- ✓ Defer Judgement
- ✓ Quantity Breeds Quality
- ✓ The Wilder the Better
- ✓ Combine and Improve
- ✓ Yes ... and [not yes ... but]
- ✓ Use a provocation
- ✓ Take a Break



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## The enemy.....



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"Yes .....But"

Don't be a butter!

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## Idea Generation - Techniques

- Divergent Thinking
- Brainstorm
  - Quantity not quality
  - Defer Judgement
- Provocations
  - Random
  - Reversals
- Alternative points of view

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## SCAMPER Checklist

- **S**UBSTITUTE
- **C**OMBINE
- **A**DAPT
- **M**AGINIFY / MINIMISE
- **P**UT TO ANOTHER USE
- **E**LIMINATE / ELABORATE
- **R**EARRANGE / REVERSE

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## Evaluation - Techniques

- Classification
- Mind mapping
- Sorting
- Will someone champion idea
- Ranking
- Good - Bad – Interesting
- SFA
- Matrix Analysis
- Stakeholder Analysis

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## Implementation Approaches

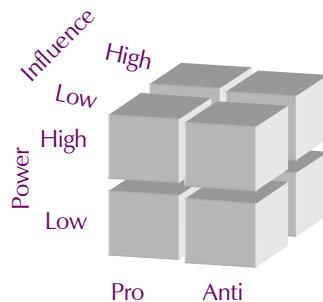
- Helps : Hinders
- Stakeholder Analysis
- Project Appraisal
- Stage and Gate  
Go On or No Go
- Acceptance Finding
- Bullet Proofing
- Action Planning

Remember that what you find here may change your understanding of the problem, acceptable solutions and criteria for assessment so you may need to recycle. More “quick and dirty” cycles are better than one long detailed one.

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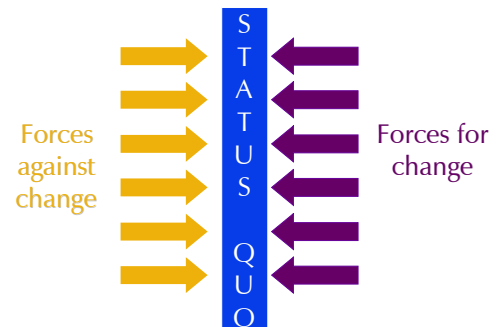
## Stakeholder Analysis

- Who is involved?
- Are they for or against?
- Are they powerful?
- Are they influential?



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## Force Field Analysis



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## The AA Prayer

Chance favours the prepared  
mind

Blaise Pascal

Lord give me the courage to change the  
things that can and ought to be changed

The serenity to accept the things that can not  
be changed

and the wisdom to know the difference

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## How to encourage creativity

1. Yes and
2. Try something new
3. Get other people's perspective
4. Challenge the givens
5. Give it time
6. Look for more than one "right" answer
7. Be suspicious of the obvious
8. Look for connections
9. Build on others' ideas – intermediate impossibility
10. Be playful

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## How to kill creativity

1. "Yes but"
2. Keep on doing the same old thing
3. Believe you are right
4. Accept the problem as stated
5. Make rushed decisions
6. Stop with the first answer you come up with
7. Don't look beyond the obvious
8. Demolish others' ideas
9. Listen to the voice in your head!
10. Be "Professional"

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## Creativity Resources

More resources at  
[http://www.fulcrum-management.co.uk/Creativity\\_Resources.pdf](http://www.fulcrum-management.co.uk/Creativity_Resources.pdf)

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