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# The process of creative thinking

Creativity is the process of making something new by imagining possibilities and/or thoughtfully linking these in novel combinations.

Creativity can be seen in:

- humour
- artwork
- performances
- solutions to a problem
- campaigns
- brochures
- arguments, theories and models
- stories
- buildings and machines
- musical creations
- systems and procedures
- fashion
- experiments and research designs.



Can we teach students to think creatively? Research evidence suggests that all students can learn to think more creatively if they are taught the skills, and are encouraged and given opportunities to practise those skills.

There are some highly motivated and creative students who appear to need very little encouragement to discover new ways of doing things, new products and new solutions. They appear to have a 'natural' ability to think in original ways. But even they can benefit from specific training in skills which will enable them to use that ability to its fullest extent. To quote Edward de Bono (1993):

**It may not be possible to train genius – but there is an awful lot of useful creativity that takes place without genius.**

The following are the creative thinking skills and processes which we have built on. Within each topic they are referred to as 'Aspect of creativity'.



## 1 Fluency

- List all the possible effects of allowing students to wear casual clothes instead of a uniform.
- Brainstorm all the ways a school fete could be improved.
- How many songs can you list which feature a colour in the title?
- What else could a potato masher be used for?
- Design a new game based on the features of several games you have played.
- Improve a school desk to make it more appealing to a student.
- By thinking only about colours, develop a solution to the problem of young bicycle riders not wearing protective helmets.

Fluency, first identified by Torrance, is about generating many different but relevant responses. Research suggests that the best and most original idea is more often found in the later ideas suggested, rather than the initial ones.

### Brainstorming

Brainstorming is one example of a process based on fluency. Lots of possibilities are suggested and accepted without comment, even if some seem irrelevant at the time.

Later they are evaluated. One of the positive outcomes of brainstorming is 'hitchhiking'. This is the building upon the brainstormed ideas of others – even the discarded ones. This is co-building, not stealing others' ideas.

### Lists

Listing as many things as you can, which are in a specific category, is also a form of fluency, e.g. attribute listing is an example of a 'list'.

### Systematic Alphabetic Generation (SAG)

In this fluency technique, each letter of the alphabet is taken in combination with every other letter in order to find a solution (e.g. to try and recollect the name of something) or to increase the number of items you can list in a particular category (see Blackline master 1, p 28).

## 2 Flexibility

Flexibility is about approaching things in a flexible and alternative way. It can also involve thinking of a variety of alternative ideas or interpretations.

## 3 Originality

Originality involves knowing the difference between an original idea, and an ordinary and typical idea; and producing novel or unique ideas. It can be about producing something completely unique. It can also involve combining known ideas into some new form.

## 4 Elaboration

This is the process of filling out ideas, adding interesting details or making something more complex.

## 5 Lateral thinking

This is a process identified by Edward de Bono which involves freeing up the mind so that it does not automatically go down routine and traditional paths when seeking new ideas and solutions.



If you start from a different point, rather than starting from the centre (as most people usually do), then you increase the likelihood of beginning new patterns of thinking.

## 6 Synectics

Synectics is the process of finding similarities between unrelated and seemingly disconnected ideas. In this way, new possibilities become apparent.

## 7 Imagination

This involves projecting yourself into the feelings of others, or putting yourself in another place or time where you haven't ever been.

## 8 Risk-taking and curiosity

People who develop new ideas must be prepared to:

- follow their curiosity
- have the courage to expose themselves to criticism or failure
- show a willingness to express their ideas to others
- take a guess, rather than get 'hung up' on having the 'right' answer
- be prepared to defend their original ideas, solutions and products.

Students should be exposed to these attitudes and encouraged to adopt these behaviours as the basis of constructive creativity.

## 9 Creative problem-solving

This is a systematic process of coming up with a solution to a problem where there is no correct answer and where many solutions could work. Details of the problem are given, and there are a number of systematic steps to be followed in pursuit of the best and most creative solution. These steps usually focus on:

- getting facts
- identifying the problems and their priorities
- generating possible solutions
- evaluating them
- choosing the best one
- working out how to implement it
- reviewing
- long-term evaluation.

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- How are a banana and an elephant alike?

- Imagine a world where there is no colour, only black and white. Describe life in this world.

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## 10 Creative people need to think logically, too!

'Imagineers' may have good ideas, but 'innovators' put them into practice by thinking logically about the good ideas, evaluating them and then developing an action plan. Here are some of the implementation skills.

### Looking at the big picture

When thinking creatively, the 'big picture' also needs to be taken into account. De Bono has outlined these two processes:

- Consider All Factors (CAF) – What are all the factors which must be taken into account in making a decision as to what kind of product or solution could be used?
- Consider All the People (CAP) – Who are the key people involved in the big picture and what are their perceptions and values? How will this decision/solution/idea/product affect them?

### Logical thinking

The kind of logical thinking might be:

- deductive reasoning – following through the logical sequence of implications and putting pieces of logical data together
- logical application – taking an idea, model or solution and applying it accurately and logically to a specific context
- hypothetical thinking – predicting the logical implications of a given hypothetical situation
- heuristics – identifying the 'rules' or 'themes' in a situation or context
- analogical thinking – identifying logical parallels and similarities between two or more things.

## 11 Evaluation/redirection of a new idea

Developing new ideas, solutions and products is the first step. Assessing whether they are feasible is the second step. They can be evaluated and/or redirected by the following strategies.