

The 'Socratic method' can be used in critical thinking to evaluate an argument. It uses open questions, such as the following:

- What do you mean by ... ?
- How did you come to that conclusion?
- What assumption has led you to that conclusion?
- Can you give me two sources who disagree with you and explain why?
- Why is this significant?
- What is the source of your information?
- Why do you believe that you are right?
- What happens if you are wrong?
- How do I know you are telling me the truth?
- What is an alternate explanation for this?

This can be used in conflict resolution.

See also the background information on critical and creative thinking.

Learner Worksheet – The Critical Thinking Process

The following is a critical thinking process that can be followed as a guide:

1. Define what you want to achieve (i.e. your goals and objectives);
2. Define the problem to be addressed;

3. Collect relevant concepts: theories, definitions, axioms, laws, principles, models;
4. Collect information and evidence (including data, facts, observations, and opinions from relevant sides of an issue);
5. Analyse and test the 'evidence', including any assumptions and arguments and their implications: presuppositions, perspectives, things taken for granted, internal contradictions etc.;
6. Assess opposing claims, assigning relative weightings:
 - Give priority depending on relevance to the goal or objective;
 - Increase weighting when the claims have strong support, especially distinct chains of reasoning or different sources;
 - Decrease the weighting when the claims have contradictions;
 - Require sufficient support to justify any incredible claims, otherwise ignore these claims when forming a judgment.
7. Conclusions on existing situation (interpretation);
8. Develop options – suggested solutions (ideation);
9. Evaluate options (implications and consequences – you can consult stakeholders at this stage);
10. Select an option.

These stages can be changed depending on the nature of the problem, but this is a basic guide to the critical thinking process.

Notes

Conflict Resolution in Schools

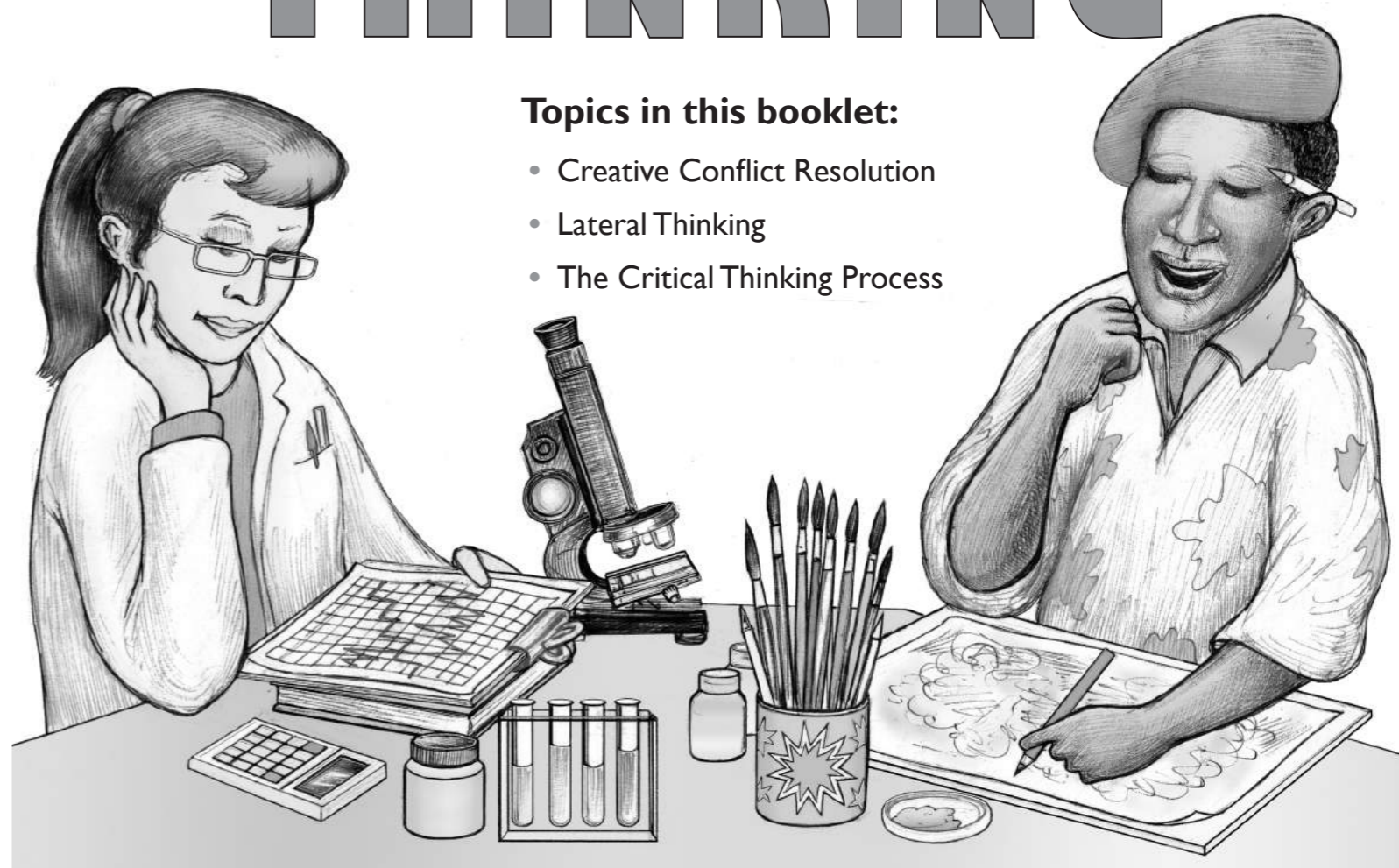
Guide for Educators in South Africa

Booklet 10

CRITICAL and CREATIVE THINKING

Topics in this booklet:

- Creative Conflict Resolution
- Lateral Thinking
- The Critical Thinking Process



Conflict Resolution for Schools

Guide for Educators in South Africa

Booklet 10 - Critical and Creative Thinking

Contents

	Page
Background:	1
Critical Thinking	2
Creative Thinking	3
Conflict Resolution	4
Further Resources	4
Class Lesson: Lateral Thinking	5
Class Lesson: Thinking Hats	7
Class Lesson: Creative Visualisation	9
Class Lesson: "Idea-toons"	11
Class Lesson: Creative Drawing	11
Learner Worksheet: Creative Drawing	11
Class Lesson: Critical Thinking	13
Learner Worksheet: The Critical Thinking Process	14
Acknowledgements	Inside Back Cover

Critical Thinking

Objectives

- To help learners to understand and apply critical thinking skills

Age/level

Ages 13 years and over

Duration

One lesson or part lesson

Materials

- Board and chalk;
- Worksheets (critical thinking process).

Procedure

Hand out a worksheet of the critical thinking process (see below), or write a copy of this on the board. Introduce the lesson by explaining critical thinking and the difference between critical and creative thinking.

Then ask the learners to use the process as a guide to examine a real problem for the class, or use the following example:

Problem:

There is a problem with stealing in the class

Go through each stage of the process, but where it proves difficult (e.g. because the facts are not available), ask the learners how they would work on this given more time (i.e. ask for the method, rather than the answers). Some simple suggestions are given below.

At the end of the exercise, ask the learners how it felt to use this method.

Was it difficult to follow such a rigid system?

Did it help them to cover the problem from all sides?

Do they usually think of a problem in so much detail?

If not, how do they reach decisions?

What could the danger be of taking decisions in this way?

Discuss how critical thinking could be used in conflict resolution (e.g. for analysing problems and trying to evaluate solutions). Introduce the Socratic method of questioning given below (for older learners).

See below for 'Issues to Explore' in the discussion.

Issues to Explore

The aim of critical thinking is to analyse and draw out the logic of an existing or planned situation. It uses skills such



as comparison, classification, listing, cause and effect, patterning, reasoning, forecasting and planning.

Some thoughts on the problem solving exercise:

1. **Goal:** To stop stealing in the class;
2. **Problem:** There is a problem with stealing in the class;
3. **Concepts and Theories:** In broad terms, the thieves could be: needy, naughty, unaware, uncaring, etc. (mention the 'nature versus nurture' theory. That is, are they born thieves through their 'built-in' nature, or have they become thieves for example because of needs, friends etc.);
4. **Information and Evidence:** Ask learners for examples of stealing that can be documented;
5. **Analyse and test the 'evidence':** Draw out any assumptions, contradictions, things taken for granted etc.;
 - Assess opposing claims: Here educators could list potential problems (e.g. the type or location of the thefts) and rank them to show which are more problematic (e.g. on a scale of 1 to 5);
6. **Conclusions:** Conclude what are the most problematic types of theft (where, what, who, etc.);
7. **Suggested Solutions:** Bring ideas, based on the conclusions (secure storage, secure bags, banning items at school, monitoring, supervision, watching trouble-makers, follow-up, sanctions, expulsion, etc.);
8. **Evaluate Options:** What are the implications of each? (think in terms of effectiveness, viability, cost etc.);
9. **Select an Option or a Range of Options:** You could write the options on the board, and ask the learners to vote on them.

If the exercise is useful – take it further. Could the solutions be implemented?

Procedure

Discuss the importance of creative thinking in balanced thinking processes.

This is an exercise using a creative technique called creative drawing, which is a device that lets you express, view and think about problems in a different light. It should help the learners to tap into their creative potential, beyond the usual traditional, verbal, linear patterns.

Start by playing some very low, soft music in the background. Sounds of nature (e.g. birdsong, water flowing etc.) work well.

Ask the learners to take their paper and divide it into six boxes, numbered 1 – 6 (see below).

Then, ask them to draw their current situation in the first box (box 1): their world – in either drawing or cartoon, or even simple stick people etc. It does not have to be artistic, but some thought is needed! It needs to be seen in the minds eye, before it is put onto paper.

Then, ask them to draw in the last box (box 6), their image of how they would like their ideal life to be when they are older. Again, artistic mastery is not needed – just a visual image of their ideal life, depicted on paper.

When they have finished, ask them to fill in the remaining four boxes, using them as the steps they would have to go through to get from their existing life to the ideal life (e.g. it could be university, or apprenticeship, or marriage etc.). Whatever they think are the most important steps along the way – in chronological order.

There are no right or wrong answers!

The learners may find these steps difficult to imagine, so reassure them and encourage them to do their best.

When they have finished (or have done what they can), give them praise for their work, as it is a difficult exercise. Walk around the class and look at the drawings, speaking to each learner about their dreams and the intermediate steps they have constructed in between.

Then, come back to the front of the class and ask them how difficult the exercise was.

Did they feel more creative and imaginative doing this through drawing?

How did they feel about the ideal life they imagined?

Could they fill in the steps in between?

Do they see any barriers to working towards their ideal vision in a step-by-step way?

Explain that keeping a vision of an ideal future fixed in their mind can give a focus to work towards. Things don't happen overnight, but have to be broken up into stages - like climbing a staircase one step at a time. The important thing is to take the first step and not to lose sight of the final goal (the top of the stairs).

Then open up the discussion to look at the value of creative thinking, including in conflict resolution.

See below for 'Issues to Explore' in the discussion.

Issues to Explore

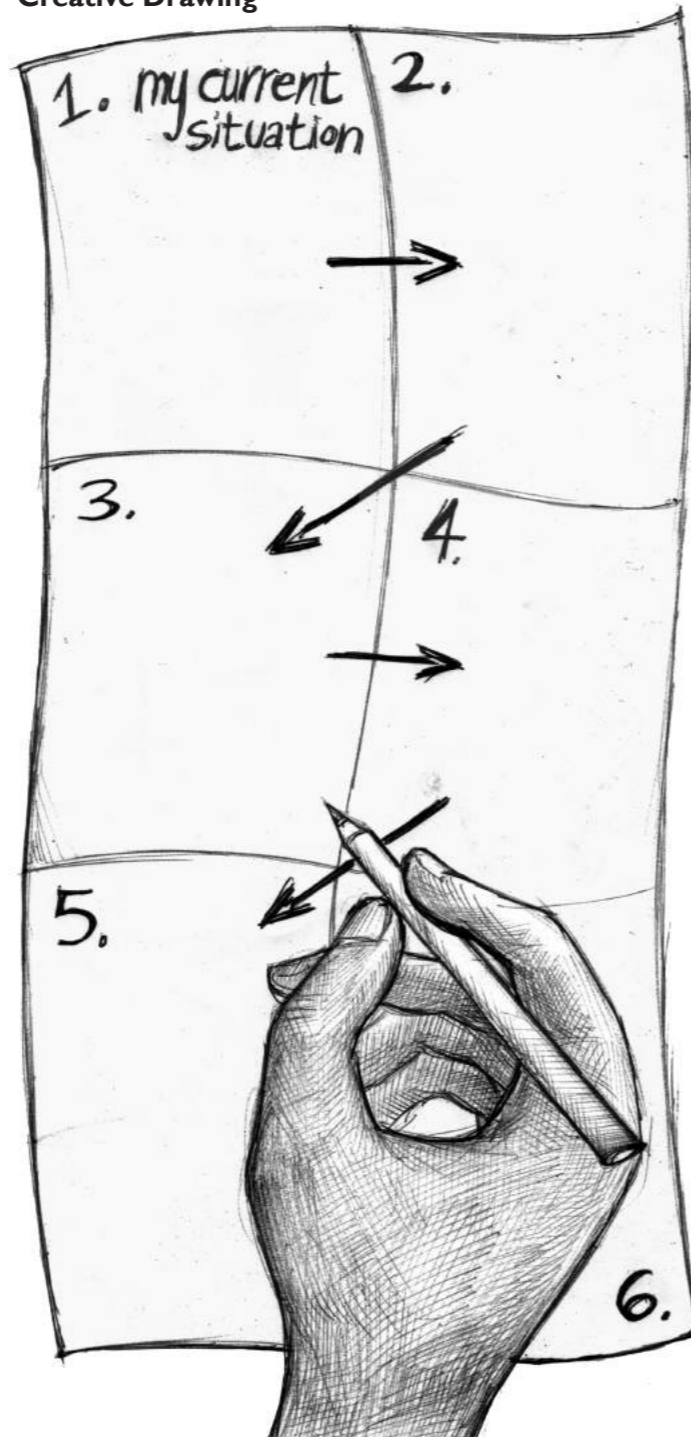
This type of approach can be helpful in conflict resolution. It can be used to provide new perspectives and aid communication and understanding (especially when creative people are involved).

If two people are in conflict, but are unable to see any shared solutions to their conflict, it may be useful to undertake this exercise – with the ideal picture (at box 6) being the position when the conflict is completely over and forgotten. This can give clues to the steps that have to be taken to overcome the conflict. It can also provide a useful focus for shared discussions about potential solutions.

See the background information on critical and creative thinking.

Learner Worksheet

Creative Drawing



Critical & Creative Thinking

Background

Some people use the terms 'critical thinking' and 'creative thinking' interchangeably but this is a mistake. Although these are both methods of thinking, they are very different in approach.

Critical thinking involves logical thought and reasoning. It uses such skills as comparison, classification, listing, sequencing, cause and effect, patterning, use of analogies, reasoning, forecasting and planning. The aim of critical thinking is to analyse and draw out the logic of an existing or planned situation.

Creative thinking involves creating something new or original. It involves skills such as flexibility, originality, fluency, elaboration, brainstorming, imagery, associative thinking, metaphorical thinking and relational thinking. The aim of creative thinking is to stimulate curiosity and to promote divergence. It is a process that can give rise to 'lateral thinking'.

Both kinds of thinking are important to contemporary education as both assist in problem solving and are necessary in conflict resolution. Critical thinking can be thought of as more left-brain in nature and creative thinking as more right-brained. We need both for balanced thinking processes.

When we are faced with a problem, we must first analyse it and then generate possible solutions. Next, we must choose and implement the best solution and, finally, we must evaluate the effectiveness of that solution. As you can see, this process reveals an alternation between the two kinds of thinking, both critical and creative.

Creativity generates potential solutions (the more creative, the more diverse the solutions) and

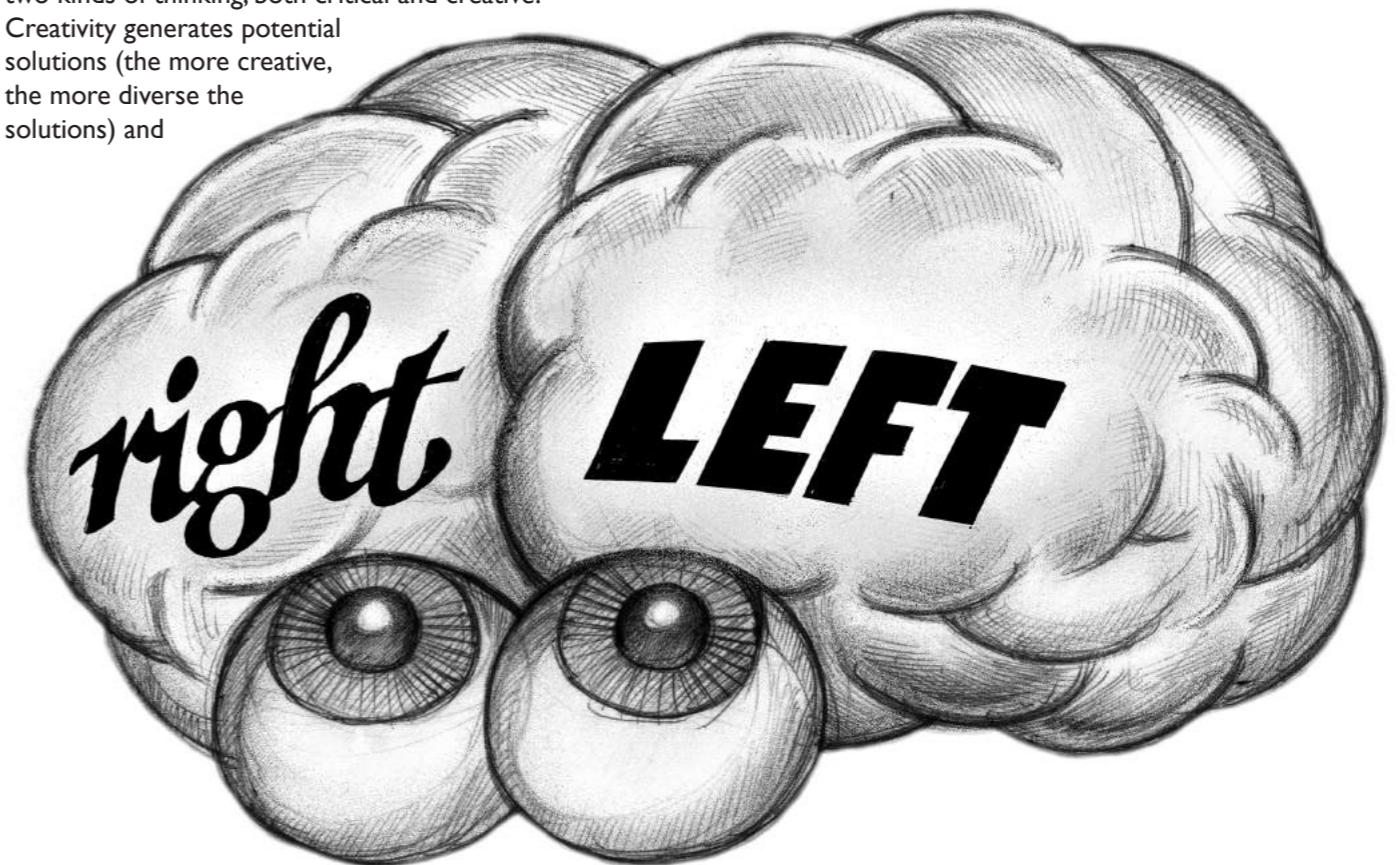
critical thinking assesses and evaluates these solutions. In practice, both kinds of thinking operate together most of the time and are not always independent of each other.

The world is in a constant state of change. Technology changes ever more rapidly and so does the society in which we live. Political parties change their views and so do their voters. What seemed impossible one month becomes feasible the next and develops into an everyday fact of life within a few years. Globalisation and increased travel are also speeding the pace of change. We have reached the stage where it is impossible to acquire sufficient facts to cope with the diversity and rate of change of today's society.

We now have the Internet, where an inexhaustible supply of facts can be found at our fingertips (or rather at the click of a mouse). In this day and age it is not enough for the education system just to concentrate on learning facts by heart. This is confirmed by recent findings in cognitive psychology. What we need in addition to this are the critical and creative thinking skills necessary to find and assess the ever-changing and expanding sources of information. The way forward is thus to develop the skills needed to be able to challenge these 'facts'.

Much of the thinking done in conventional education emphasises the skills of analysis - teaching learners how to understand claims, follow or create a logical argument, figure out the answer, eliminate the incorrect paths and focus on the correct one. This is part of critical thinking. Creative thinking, however, is just as valid and important. It focuses on exploring ideas, generating possibilities, looking for many possible right answers rather than just one.

The differences between these two kinds of thinking are listed overleaf:



Critical Thinking **Creative Thinking**

Analytical	Generative
Convergent	Divergent
Vertical	Lateral
Probability	Possibility
Judgment	Suspended judgment
Focus	Diffusion
Objective	Subjective
“The answer is...”	“An answer is...”
Left-brain	Right-brain
Verbal	Visual/Aural/Kinetic
Linear	Associative
Reason	Richness, novelty
“Yes, but...”	“Yes, and...”

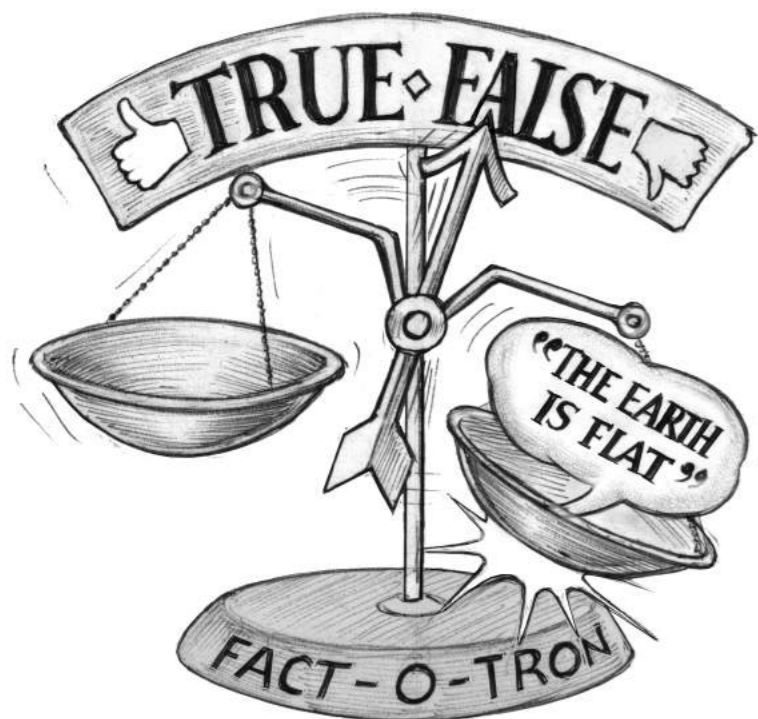
Many of the lessons in this series have been designed to use these two methods of thinking – creative generation and critical evaluation. Usually, creative generation is the more exciting part of this process, but critical evaluation can be more important because, if creative ideas are immediately converted into action (without having been carefully evaluated), the result can be unwise action. “By itself, creativity is not sufficient.” But it is both useful and fun!

Critical Thinking

Critical thinking has two key components:

- Information processing skills;
- The habit of applying these skills and then applying their results.

This is not simply the acquisition and retention of information or the acquisition of processing skills. Critical thinking



goes beyond this to develop these skills and then to apply them as a matter of habit and turn their results into action.

Critical thinking consists of a mental process of analysing or evaluating information, particularly statements or propositions that people have offered as being true or false. It forms a process of reflecting upon the meaning of statements, examining the offered evidence and reasoning, and then forming judgments about the facts.

Critical thinkers can gather such information from:

- Observation;
- Experience;
- Reasoning;
- Communication.

Critical thinking is based on intellectual values including:

- Clarity;
- Accuracy and precision;
- Evidence;
- Thoroughness;
- Fairness.

The following is a critical thinking process that can be followed as a guide:

1. Define what you want to achieve (goal, objective);
2. Define the problem to be addressed;
3. Collect relevant concepts: theories, definitions, axioms, laws, principles and models;
4. Collect information and evidence (including data, facts, observations, and opinions from relevant sides of the issue at hand);
5. Analyse and test the ‘evidence’, including any assumptions and arguments and their implications: presuppositions, perspectives, things taken for granted, internal contradictions, etc.
6. Assess opposing claims, assigning relative weightings to each:
 - Assign a priority depending on relevance to the goal or objective;
 - Increase the weighting when the claims have strong support, especially when this support consists of distinct chains of reasoning or multiple sources;
 - Decrease the weighting when the claims have contradictions;
 - Require sufficient support to justify any claims that are less than credible; otherwise, ignore these claims when forming a judgment.
7. Form conclusions on the existing situation (interpretation);
8. Develop the possible options – suggested solutions (ideation);

Idea-toons

Objectives

- To give learners an opportunity to practise creative thinking – using the concept of ‘idea-toons’.

Age/level

Age 9 to 14 years

Duration

One lesson or part lesson

Materials

None needed

Procedure

Discuss the importance of creative thinking in balanced thinking processes. Traditional ‘left-brain’ (analytic, theoretical) thinking is inadequate when exploring new ideas, situations and emotions. It is restrictive and too verbal. This is an exercise using a creative technique called ‘idea-toons’, which is a device that lets you express, view and think about problems in a different light. It should help the learners to tap into their creative potential, beyond the usual traditional, verbal, linear patterns.

See the background information on critical and creative thinking.

Ask the learners to carry out the exercise described below. (This could also be given for homework). They are free to use any symbols, or cartoons, in their speech.

Then, continue the discussion. It would be interesting to ask the learners how using symbols was different to the usual essay-writing approach. Did it help them to think of different aspects of their town or village? Did they spend a long time thinking about the symbols? Was it easier to visualise their town or village when they were thinking in this way?

See below for ‘Issues to Explore’ in the discussion.

Issues to Explore

Pattern language increases your capacity to divide the whole into parts and regroup the parts into a variety of new patterns. Symbols also help you develop a deeper insight into any situation.

Pictures stimulate your imagination and provide a pleasant change after being deluged with words. Pictures permit you to look at challenges with a fresh pair of eyes.

Some people think visually, and may find this approach easier than traditional thinking and writing. Others may find it difficult, and find themselves stuck with the symbols, rather than the vision they want to put across. We all think in different ways, and have different aptitudes. There are no



right and no wrong ways! Some people are more left-brain (analytical, logical) whereas others are more right-brain (creative, feeling).

This type of approach can be helpful in conflict resolution. It can be used to provide new perspectives, and aid communication and understanding (especially when creative people are involved).

See the background information on critical and creative thinking.

Learner Worksheet

A delegation of Martians has just landed in the middle of your town or village. They do not understand any Earth languages, only graphic symbols. Prepare a short speech composed of graphic symbols to welcome them and tell them just what kind of place you live in.

Creative Drawing

Objectives

- To help learners to explore creative drawing as a creative thinking process

Age/level

Ages 11 to 14 years

Duration

One lesson or part lesson

Materials

- Paper (full size sheet for each learner) and pencils or crayons;
- Soft, gentle music (optional, see below).

As you come to this point, gradually let your voice become lower, until you stop speaking altogether or just speak very softly from time to time.

Then, after a few minutes, tell the learners:

You are so happy in your life
 You do not want to leave it
 But you want to wake up slowly
 So, gradually feel your fingers, wiggle them around
 Feel your feet and wiggle them too
 Slowly move your head from side to side
 And slowly, very slowly, open your eyes

(If any learners are asleep at this point, wake them very gently – by saying their name, if possible!).

After the process, let them come to the normal state slowly.

Still speaking gently, ask them how that felt?

Did anybody really imagine their future life?
 What was it like?

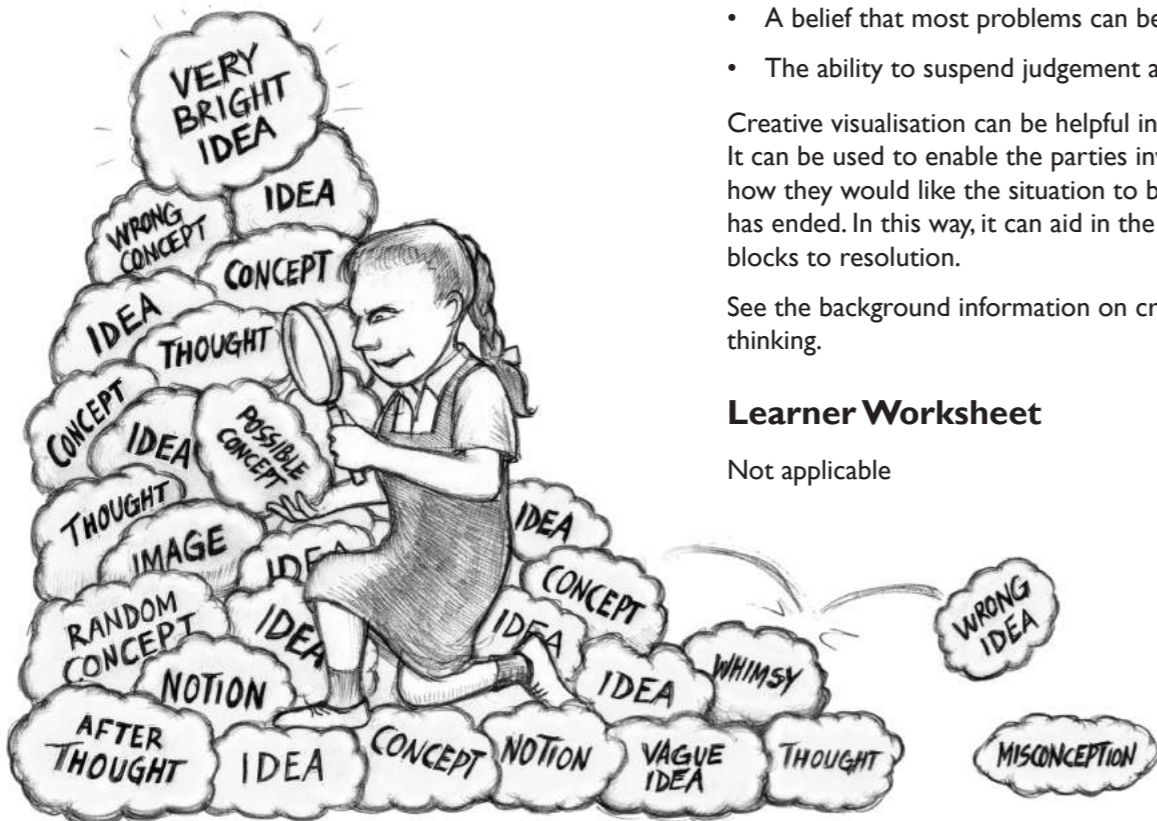
Let the learners take it in turns to tell the class what they imagined.

Would their life have suited them?
 Did they know this before the guided visualisation?

Why can't those dreams come true

If they keep the vision in their mind's eye, it can help them to make it a reality.

Discuss any questions arising with the learners.



If any learner was unable to imagine, put their concerns at rest. All people are creative to some degree or another, but at some times we are more receptive than others. It is particularly difficult to let ourselves go enough to visualise if we have many thoughts tumbling in our heads, for example. Or if we refuse to let ourselves go (e.g. because we feel self-conscious).

If appropriate, raise the possible negative blocks to creativity, and the positives that assist creativity (see below).

See below for 'Issues to Explore' in the discussion.

Issues to Explore

Most people are creative to some extent or another. In many cases it is just a question of relaxing and allowing ourselves to be creative.

Negative attitudes that block creativity:

- “Oh no – a problem!”;
- “It can't be done!”;
- “I can't do it; there's nothing I can do!”;
- “I might fail...”;
- “I'm not creative!”;
- “That's childish!”;
- “What will people think?”.

Positive attitudes for creativity:

- Curiosity;
- Challenge;
- Constructive discontent;
- A belief that most problems can be solved;
- The ability to suspend judgement and criticism.

Creative visualisation can be helpful in conflict resolution. It can be used to enable the parties involved to picture how they would like the situation to be when the conflict has ended. In this way, it can aid in the removal of mental blocks to resolution.

See the background information on critical and creative thinking.

Learner Worksheet

Not applicable

- Evaluate the various options (implications and consequences). You can consult stakeholders at this stage);
- Select a final option.

This is merely an example of one possible process and these stages can be changed depending on the nature of the problem.

Creative Thinking

“Creativity, it has been said, consists largely of re-arranging what we know in order to find out what we do not know.”

George Kneller

Creative thinking is a mental process involving the generation of new ideas or concepts, or new associations between existing ideas or concepts. From a scientific point of view, the products of creative thought (sometimes referred to as divergent thought) are usually considered to have both originality and appropriateness.

Creativity is more than just a process. It is:

- **Ability:**

The ability to imagine or invent something new. Creativity is not the ability to create out of nothing, but the ability to generate new ideas by combining, changing, or reapplying existing ideas. Some creative ideas are astonishing and brilliant, while others are just simple, good, practical ideas that no one seems to have thought of yet. Everyone has substantial creative ability. Children can be particularly creative. In adults, creativity has too often been suppressed through narrow education.

- **Attitude:**

Creativity is also an attitude: the ability to accept change and newness, a willingness to play with ideas and possibilities, a flexibility of outlook and the habit of enjoying the good, while looking for ways to improve it.

- **Process:**

But creativity is also a process. Creative people work hard to continually improve ideas and solutions, by making gradual alterations and refinements to their works. The creative person knows that there is always room for improvement.

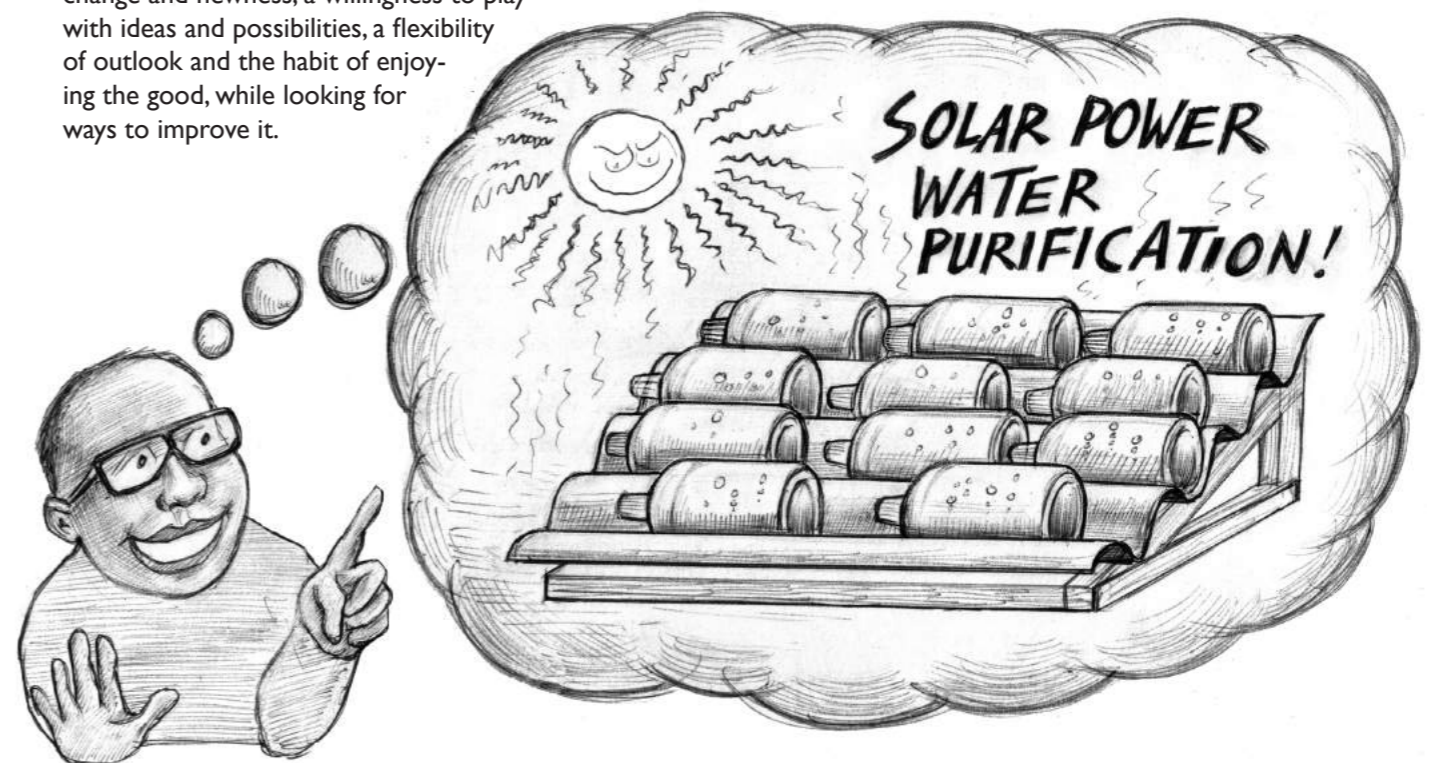
Creative thinking is the kind of thinking that leads to new insights, novel approaches, fresh perspectives and new ways of understanding and conceiving of things. “The products of creative thought include some obvious things like music, poetry, dance, dramatic literature, inventions, and technical innovations.” But there are some not so obvious examples as well, such as a way of posing a question that expands the horizons of possible solutions, or ways of conceiving of relationships that challenge presuppositions and lead one to see the world in imaginative and different ways.

Negative attitudes that hinder creativity:

- “Oh no – a problem!”;
- “It can't be done!”;
- “I can't do it; there's nothing I can do!”;
- “I might fail...”;
- “I'm not creative!”;
- “That's childish!”;
- “What will people think?”.

Positive attitudes that promote creativity:

- Curiosity;
- Challenge;
- Constructive discontent;
- A belief that most problems can be solved;
- The ability to suspend judgement and criticism.



There are various ways of nurturing creativity, and some of these have been included in these lessons. They include: brainstorming, use of imagery and metaphor, use of drawing, poetry, drama, music etc. Some learners will respond to some methods better than others. Also, learners have different styles and reactions to creative thinking. These are all valid and worthwhile and should not be rejected. Similarly, all creative contributions should be welcomed and accepted – however ‘far out’ they appear. After all, many creative ideas that were rejected out of hand when they were first thought of have now been adopted and are part of contemporary society. An important part of the process of fostering creativity is that of creating an environment in which learners feel valued and secure – free to explore their wildest fantasies and imagination without criticism or rebuke.

Conflict Resolution

Both styles of thinking are necessary in conflict resolution. Sometimes conflicts arise because neither side can see the other’s perspective. They are each caught up in their own culture, beliefs, experiences and understanding. This not



only makes it difficult for them to understand the other party’s views and perspectives, but also restricts their imagination of potential solutions. Creative thinking helps give a wider perspective, opening the imagination to other views and potential solutions.

The creative response to conflict is about turning problems into possibilities. It is about consciously choosing to see what can be done, rather than dwelling on how terrible it all is. It is affirming that you will choose to extract the best from the situation.

Critical thinking enables potential solutions to be processed and analysed in a logical and reasoned manner that avoids unnecessary emotional entanglement or provocation.

Finally, one might also use the ‘Socratic method’ to evaluate an argument, asking open questions, such as the following:

- “What do you mean by... ?”;
- “How did you come to that conclusion?”;
- “What assumption has led you to that conclusion?”;
- “Can you give me two sources which disagree with you and explain why?”;
- “Why is this significant?”;
- “What is the source of your information?”;
- “Why do you believe that you are right?”;
- “What happens if you are wrong?”;
- “How do I know you are telling me the truth?”;
- “What is an alternative explanation for this?”.

Further Resources

Wikipedia Encyclopaedia

<http://en.wikipedia.org/wiki/Creativity>

http://en.wikipedia.org/wiki/Critical_thinking

Creative Thinking

<http://eduscapes.com/tap/topic69.htm>

<http://www.creativethinking.net/>

<http://www.brainstorming.co.uk/tutorials/creativethinkingcontents.html>

<http://www.virtualsalt.com/crebook1.htm>

Creative Thinking Skills

<http://www.asa3.org/ASA/education/think/creative.htm>

Conflict Resolution Network: Creative Response

<http://www.crnhq.org/windskill2.html>

Class Lesson: Creative Visualisation

Objectives

- To give learners an understanding of creative thinking using the process of creative visualisation

Age/level

Ages 9 to 14 years

Duration

One lesson or part lesson

Materials

- Low, soft and gentle music (see below);
- Blackboard and chalk (optional).

Procedure

Reassert the importance of creative thinking. Stress that sometimes people consider creative thinking to be less valid than critical thinking, though this is not the case. It is a vital part of the thinking process. For example, it brings forward ideas and proposed solutions. This is particularly important in conflicts which seem to be in a stalemate because all conventional solutions have failed.

In any sort of problem-solving, it helps to work out what we would try to achieve in an ‘ideal world’. This is the best possible solution that we could imagine. If we have an image in our minds about what we want to achieve, or where we want to go, we are far more likely to succeed (or at least to be on the path to success).

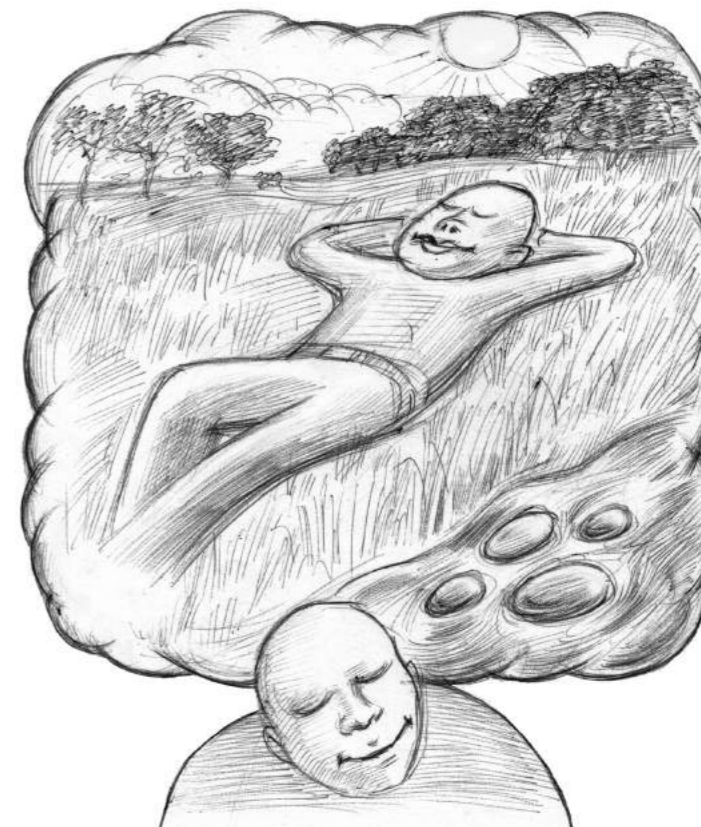
The exercise is a guided visualisation that relaxes the learners and helps temporarily suspend their critical faculties to aid in the visualisation process.

Start by playing some very low, soft music in the background. Sounds of nature (e.g. birdsong, water flowing etc.) work well. You can download free relaxing sounds at these websites:

http://www.melatonin.com/sound_samples.php

<http://www.lhj.com/lhj/files/relaxationzone/relaxpopupSized.html>

Then, using a low, soft voice, ask the learners to close their eyes, and make sure they are sitting comfortably in their seats. Then tell them to relax their bodies. Start with their feet – clench them and feel the tension, then relax them so they sink into the floor. Then the legs: tense and feel them, and then feel them relax and leave all tension aside. Then the stomach, etc. And the same throughout the body. (Avoid mentioning anything that may set the learners off laughing). Pay special attention to the neck and shoulders as these often hold tension. Tell them to turn their shoulders in circles, and then to lower and relax them then turn the



head to each side a number of times and then to lower the chin and relax the head and neck.

When they have stopped fidgeting, and have relaxed, continue speaking slowly and with some quiet pauses.

Tell them:

You are relaxed and have no cares in the world.

You are walking through a forest, where you can hear the birds singing.

The day is warm and carefree

You have come to a clearing in the forest and the sun is shining through onto the bright green grass

You are beside a stream and you can hear the water trickling gently over the stones

You lie down on the soft grass and the sun warms your face

You close your eyes and begin to dream...

You are dreaming of what you want to be in life

You can see your future mapped out in front of you

You are happy and successful and have everything you want in life

Now imagine your life

Set your imagination free...

How does it look?

Where are you living?

Who are you with?

What are you doing?

Picture your happy life

Thinking about a problem in a team also provides full and well-rounded consideration. The team can use a wide variety of thinking methods cooperatively. That is the joy of diversity (strength in diversity and the pooling of resources).

See the background information on critical and creative thinking.

Learner Worksheet

You could give the learners the following explanation of the Six Thinking Hats as handouts or worksheets.

The Six Thinking Hats

Early in the 1980s Dr. de Bono invented the Six Thinking Hats method. The method is a framework for thinking and can incorporate lateral thinking. It is now used by many leading international companies.

The six hats represent six modes of thinking, and are a tool to help people to think in different ways about one subject. When used, they remind people to step outside their usual narrow thinking processes and patterns. They encourage parallel thinking and full spectrum thinking.

The method promotes fuller input from more people. In de Bono's words it 'separates ego from performance'. Everyone is able to contribute to the exploration without feeling embarrassed (e.g. if using the red hat) or guilty (e.g. if they using the black hat). The six hats system encourages performance rather than ego defence. People can contribute under any hat even though they initially support the opposite view.

The key point is that a hat is a direction to think rather than a label for thinking.

Six Hats

There are six metaphorical hats and the thinker can put on or take off one of these hats to indicate the type of thinking being used. This "putting on and taking off" is essential. The hats must never be used to categorise in-

dividuals, even though their behaviour may seem to invite this. When done in groups, each member of a group will wear the same hat at the same time.

White Hat thinking

This covers facts, figures, information needs and gaps. Putting on a white hat means examining figures, statistics, data, etc.

Red Hat thinking

This covers intuition, feelings and emotions. The red hat allows the thinker to put forward their feelings or intuition without any need to justify doing so. e.g. "Putting on my red hat, I think this is a terrible proposal."

Black Hat thinking

This is the hat of judgment and caution. It is a most valuable hat. It is not in any sense an inferior or negative hat. The black hat is used to point out why a suggestion does not fit the facts, the available experience, the system in use, or the policy etc. The black hat must always be logical.

Yellow Hat thinking

This is the logical positive. Why something will work and why it will offer benefits. It can be used in looking forward to the results of some proposed action, but can also be used to find something of value in what has already happened.

Green Hat thinking

This is the hat of creativity, alternatives, proposals, what is interesting, provocations and changes.

Blue Hat thinking

This is the overview or process control hat. It looks not at the subject itself but at the 'thinking' about the subject. "Putting on my blue hat, I feel we should do some more "green hat" thinking at this point."

*John Culvenor and Dennis Else,
Engineering Creative Design, 1995 (excerpt)*

Class Lesson: Lateral Thinking

Objectives

- To give learners an understanding of the value of lateral thinking, and the opportunity to practise lateral thinking skills.

Age/level

Ages 9 to 14 years

Duration

One lesson or part lesson

Materials

Blackboard and chalk can be used, but are not essential

Procedure

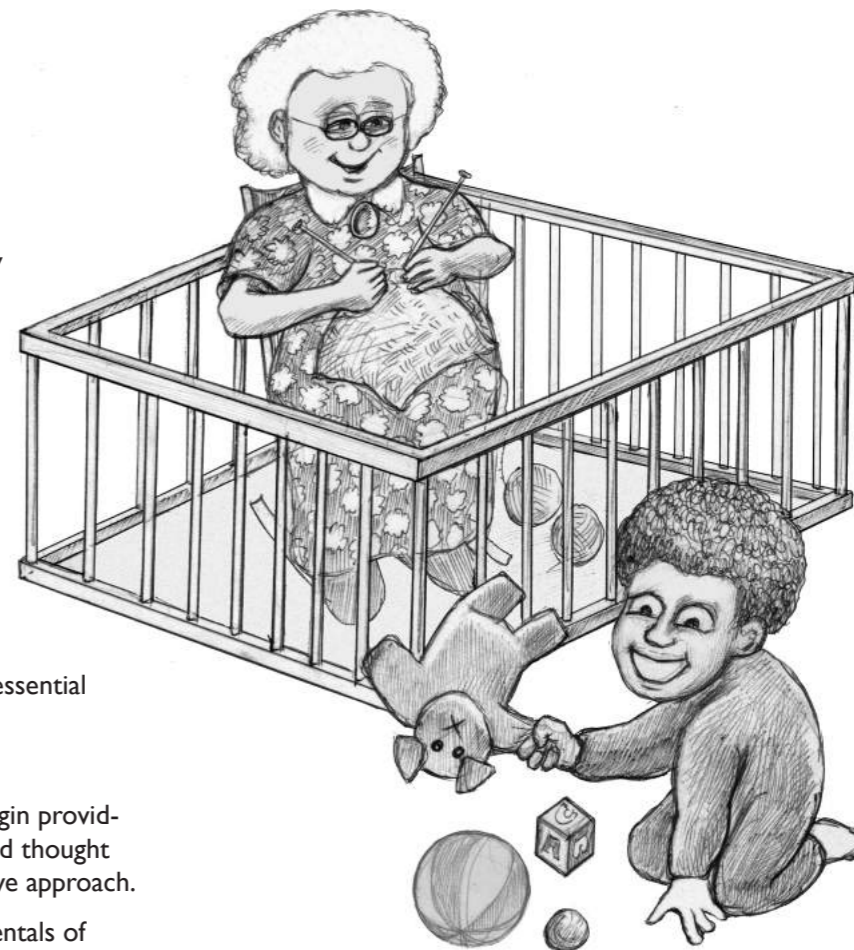
Lateral thinking problems are a good way to begin providing learners with the opportunity to escape rigid thought patterns and to begin to develop a more creative approach.

Begin by explaining to the learners the fundamentals of critical and creative thinking (see background information above). Explain that both critical and creative thought are necessary for an effective thinking process. Then, explain about lateral thinking. The class can try some lateral thinking exercises to show how we are all tied to conformist thinking and limited by our own experiences and perceptions. But lateral thinking, one type of creative thinking, can help us to break out of this mould.

Lateral thinking is about moving sideways when working on a problem to try different perceptions, different concepts and different points of entry to the problem. The term covers a variety of methods including provocations to help us out of the usual line of thought. Lateral thinking involves cutting across patterns in a self-organising system and has much to do with perception.

For example: Granny is sitting knitting and three year old Sam is upsetting Granny by playing with the wool. One parent suggests putting Sam into the playpen. The other parent suggests it might be a better idea to put Granny's chair in the playpen to protect her from Sam (that way Sam still has the run of the house, whereas Granny was seated in any case!). A lateral answer!

Try some of the lateral thinking puzzles below with the class. Give the learners the scenario (you can give this verbally, or write it on the board so they can remind themselves of it as the game progresses) then invite them to ask any questions they like about the problem – none are considered too weird and wacky in this game, all suggestions are welcomed! Answer their questions briefly (yes and no answers, or a short answer not giving too much away). If the puzzle seems too tricky, start to give some clues in the



answers. If the learners are really stuck, suggest ways in which they can get out of their conventional thought patterns (for example, get them to reflect on their presumptions and review the problem).

Then, continue the discussion. See below for 'Issues to Explore' in the discussion.

Issues to Explore

Discuss how people are taught to think critically and analytically, but how creative thinking is often not valued sufficiently. Our views of the world are often related to our past experiences and we tend to look at all new things we come across in the light of these. If we do not look at each new experience in the world afresh, we do not appreciate and value its full (and novel) significance. Lateral thinking is a way of moving us from the rigid confines of our perceptions.

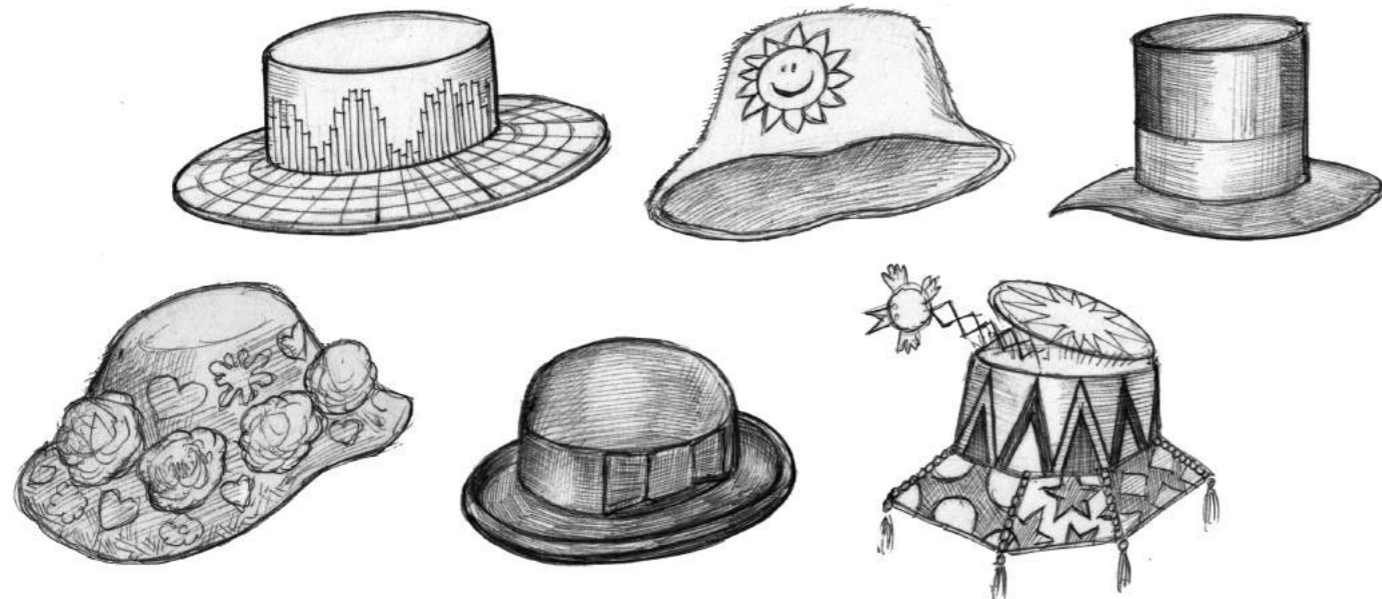
Lateral thinking is a useful skill in conflict resolution, particularly where entrenched views and positions are held. It can open up new perspectives, and sometimes give rise to novel solutions or compromises.

See the background information on critical and creative thinking.

The background information on Perception may also be useful here.

Learner Worksheet

Not applicable



Lateral Thinking Questions

1. Bob and Carol and Ted and Alice all live in the same house. Bob and Carol go out to a movie, and when they return, Alice is lying dead on the floor in a puddle of water and glass. It is obvious that Ted killed her but Ted is not prosecuted or severely punished. Who are Alice and Ted?

Answer: Alice is a goldfish; Ted is a cat.

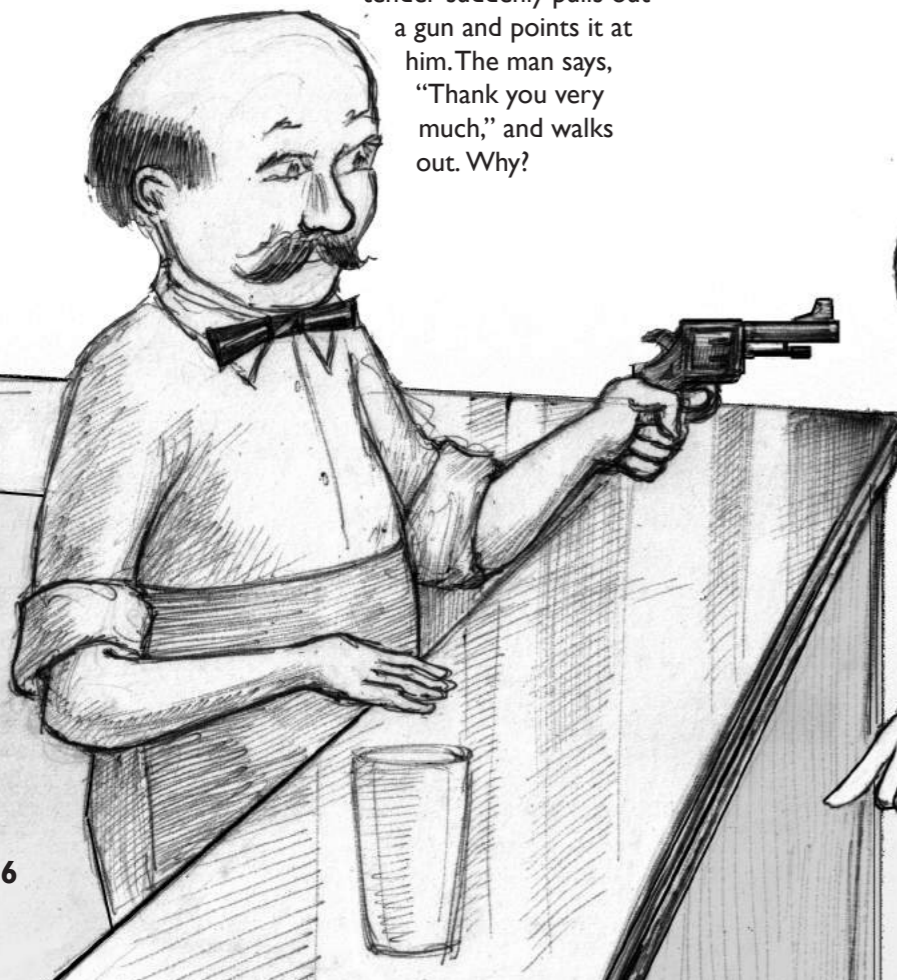
2. A woman comes home with a bag of groceries, gets the mail, and walks into the house. On the way to the kitchen, she goes through the living room and looks at her dead husband. She then continues to the kitchen, puts away the groceries, and makes dinner. Why does she not react?

Answer: The husband died a while ago; it's his ashes in an urn on the mantelpiece that the widow looks at.

3. A man lives on the twelfth floor of a high rise apartment building. Every morning he wakes up, gets dressed, eats, goes to the elevator, takes it down to the lobby, and leaves the building for work. In the evening, he goes through the lobby to the elevator, and, if there is someone else in the elevator (or if it was raining that day) he goes back to his floor directly. However, if there is nobody else in the elevator and it hasn't rained, he goes to the 10th floor and walks up two flights of stairs to his room. Why?

Answer: The man is a midget. He can't reach the upper elevator buttons, but he can ask people to push them for him. He can also push them with his umbrella.

4. A man walks into a bar and asks for a drink. The bartender suddenly pulls out a gun and points it at him. The man says, "Thank you very much," and walks out. Why?



Answer: The man has hiccups; the bartender scares them away by pulling out a gun.

5. Two children born in the same hospital, in the same hour, day, and year, have the same mother and father, but are not twins. What are they?

Answer: The children are two of a set of triplets.

6. A couple will build a square house. In each wall they'll have a window, and each window will face north. Why?

Answer: The house is built right on the South Pole.

7. There are a pipe, a carrot and a pile of pebbles lying together in the middle of a field. Why?

Answer: It's the remains of a melted snowman.

8. An Arab sheikh tells his two sons that they are to race their camels to a distant city to see who will inherit his fortune. The one whose camel arrives last will win. The brothers, after wandering aimlessly for days, ask a wise man for advice. After hearing the advice they jump on the camels and race as fast as they can to their destination. Why? Or, what did the wise man tell them?

Answer: The wise man told them to switch camels.

9. A boy and his father are injured in a car accident. Both are taken to a hospital. The father dies on arrival, but the boy lives and is taken to surgery. The bespectacled surgeon looks at the boy and says, "I cannot operate on this boy, he's my son." Why?

Answer: The surgeon is the boy's mother.



Class Lesson: Thinking Hats

Objectives

- To provide learners with a 'thinking' framework that will help them to apply different thinking processes to problems.

Age/level

Age 13 years and above

Duration

One lesson or part lesson

Materials

- Blackboard and chalk can be used, but are not essential;
- A drawing - at the front of the class - showing each hat (on OHP, chart or blackboard), with a brief description would be useful.

Procedure

Explain the six thinking hats method (see 'The Six Thinking Hats' below), and then try it out with the class on a problem issue.

If you do not have any genuine problems to address, try the following issue:

- There is too much bullying in this class – what should be done about it?

Try first of all asking the class for their views (this can be treated as a brainstorming session). Then, after discussion has flowed for a while, stop the class and ask them to 'put on their thinking hats', and consider the problem together, using one thinking hat at a time.

For example:

Start with the white hat. All learners should pretend they have a white hat on and think about the problem by examining facts, figures and information, i.e.

- What is the extent of the bullying?
- Are there any figures on the level of bullying?
- How serious is the problem? (Document the severity of cases.)

Explain that this is important thinking because it puts the problem into perspective: there is no point in hiring a riot squad to deal with the bullying if only one pencil has been broken in the last year!

Then, move onto the red hat. All learners should pretend they have a red hat on and think about the problem from the perspective of their feelings and emotions i.e.

- What do they feel about bullying?
- What is their intuition about its causes?



Explain that this is also important thinking, as any solutions have to satisfy people emotionally, taking care of their emotional concerns. Also, intuition sometimes gives rise to new, but valid, perspectives.

Carry on until all the hats have been worn. After each hat, explain the value of that type of thinking.

Then, discuss the value of the exercise and six hats thinking.

Did the learners feel free to contribute?

Was the problem looked at from all sides?

How could 'six hats thinking' be used in conflict resolution?

Then, continue the discussion. See below for 'Issues to Explore' in the discussion.

Issues to Explore

In the discussion, it might be useful to ask learners the following questions:

- Which thinking methods are used most often?
- Which are used least often?
- Which are they usually too embarrassed to use?
- Which are more difficult to use?

Explain that the method is valuable for overcoming these reservations. It allows the problem to be thoroughly explored, without making any one person guilty for taking an unpopular or misunderstood role or viewpoint.

Discuss the fact that some people are naturally more prone to some thinking methods than others. For example, girls will sometimes be more emotionally intuitive than boys (boys may feel embarrassed to express their emotions). It may seem difficult to make yourself think in unfamiliar ways, but it is very valuable in providing well-rounded thought processes.