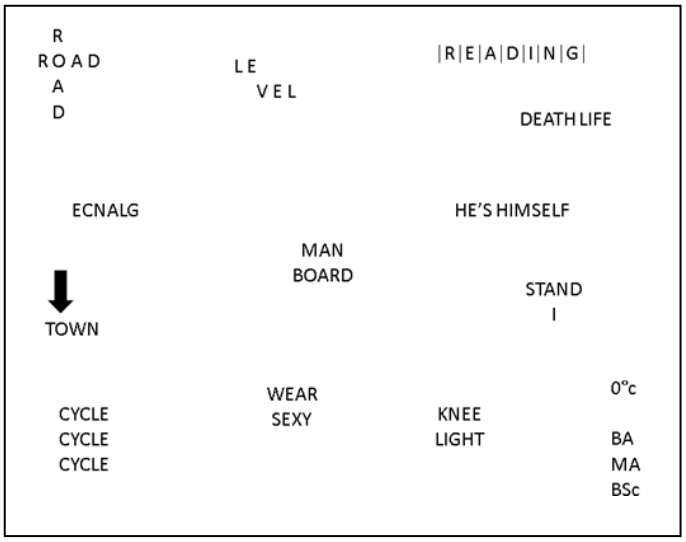
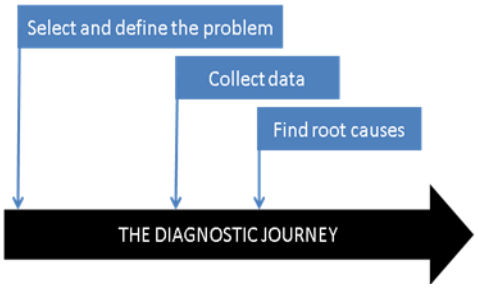
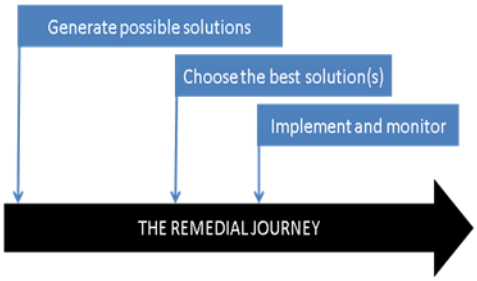
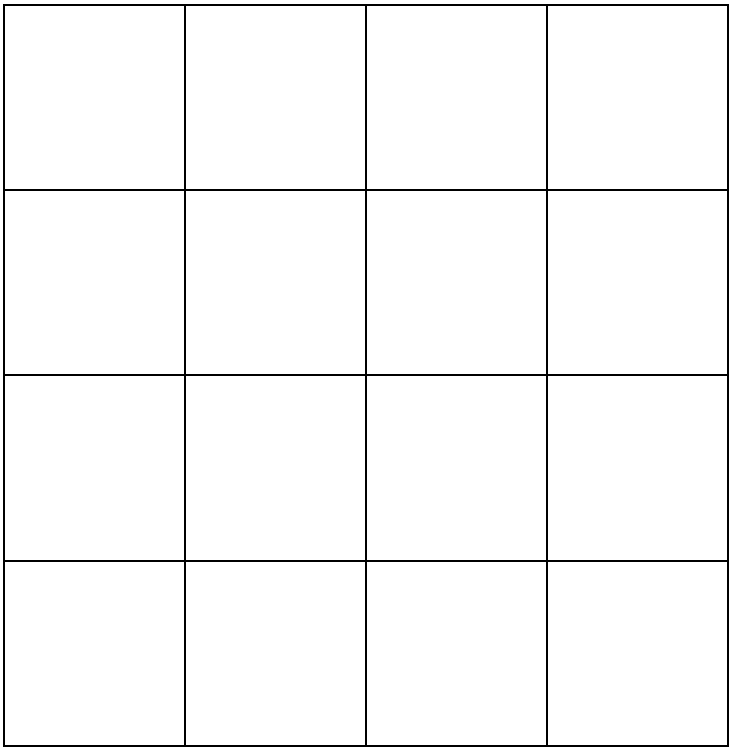
Solving Problems Creatively

(Finding lasting solutions)

Purpose	To introduce participants to the key ingredients required for creative problem solving.
Application	This session will provide an effective introduction to creative problem solving, focusing on creating the right environment, and introducing the key steps to follow.
What happens?	The session opens with the team identifying the key factors which need to exist to stimulate creative thinking, and how they can bring about the optimum conditions in their work team. The session continues with an imaginary visit to the doctor, which is used to illustrate the key steps of problem solving, followed by a more detailed walk-through of the six key steps.
Resources	**Overall time required: 1 hour 15 minutes.** • 50 minutes for the introduction, and discussion on developing the right environment for creative problem solving • 25 minutes for the visit to the doctor, and the six key steps of problem solving. **Materials and resources** A pre-prepared flipchart with the following word puzzles: **Fig. 1** 

	• Two flipcharts which you have pre-prepared, with the headings: ***1. What inhibits creative thinking?*** ***2. What encourages creative thinking?*** • Two flipcharts which you have pre-prepared, summarising the six key steps of problem solving, as follows: **Fig. 2**  **Fig. 3**  • A flipchart which you have pre-prepared, with the rules of brainstorming as defined in the introduction to this activity pack • Smooth vertical surface, at least 1m high by 2m wide (ideally use a whiteboard) • Flipchart Stand with Blank Pads • Marker Pens • Blue-Tack, etc. • Paper, Pens or Pencils for Participants • ***Optional***: props for visit to the doctor (role play), including sling for arm and bag containing bottle of tablets and saw
How do I do it?	**OPEN THE SESSION** Before the session starts, display a flipchart with the word puzzle shown above (fig. l).

	This opens the session in a light-hearted way, encouraging your participants to look at familiar words in a different way. One of the keys to creative thinking is the ability to make the familiar strange, and the strange familiar. Leave the flipchart on display, and after a few minutes you will hear individuals starting to realise the significance of the wording. You may need to prompt some of them and, just in case you haven't seen all of them yourself, they are (from left to right): 1. Cross roads 2. Split level 3. Reading between the lines 4. Life after death 5. Backwards glance 6. Man overboard 7. He's beside himself 8. Down town 9. I understand 10. Tricycle 11. Sexy underwear 12. Neon light 13. Three degrees below zero This is just a bit of fun, but it does help people to start to free-up their minds from the usual mind-set. Solving problems in a lasting manner will be made easier if people can look beyond their normal boundaries, and suspend judgement based on past experience. You may wish to try out another two simple exercises, which clearly demonstrate how often we limit our thinking. Ask your participants to draw the following grid of squares on a sheet of paper:



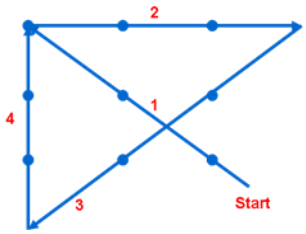
Now ask them to write down how many squares they can see. If anyone has done it before, ask them to keep the solution to themselves for the moment.

After a few minutes ask people to call out how many squares there are. There are actually 30 but few of your participants will have seen them all.

Ask one '30' person to come out and demonstrate where he/she can see 30 squares. The simplest way to explain it is as follows:

Single squares	- 16
Squares formed of 2x2	- 9
Squares formed of 3x3	- 4
Squares formed of 4x4	- 1

What does this tell us about the way we approach problems? When faced with a problem, it is all too easy to make a quick assessment of the situation, and make an instant judgement of what may be the best solution. Problems are often more complicated than they at first seem.

	In many of life's situations we do not have the time to do anything else and relying on experience often delivers a good result. However, there are many other situations when a 'quick fix' approach is not appropriate. Try another simple demonstration. Ask your participants to draw a grid of nine dots on a clean sheet of paper, thus:  Now ask them to draw four consecutive straight lines, such that every dot has at least one line through it. Once the pen or pencil starts drawing it cannot leave the paper. Again ask anyone who knows the solution to keep it to themselves for the moment. After a few minutes, ask a volunteer to show the solution to the team. If you don't have any volunteers, the solution is shown below. **The solution is:**  What does this tell us about ourselves? Most people will recognise that they tried to solve the problem whilst staying within the pattern of dots. In other words, they imposed a boundary on themselves. In reality, this is something we all do to a greater or lesser extent throughout life. These simple exercises show two of the barriers to creative thinking, but there are many others. Let's find out what they are. **TEAM EXERCISE** Now give your participants the opportunity to identify their own barriers to creative thinking. Produce the two pre-prepared flipcharts with the headings:

1. What inhibits Creative Thinking?
2. What encourages Creative Thinking?

Place the flipchart stands in the corners of the training room, and ask your participants to form two teams, one at each flipchart. Arrange the flipcharts so that they cannot see the other team's list.

Ask each team to consider their task and to list the factors they think are important. Team members should avoid discussing or criticising any idea suggested. All ideas should be recorded, together with the originator's initials.

After 10 minutes, the teams should move to the other flipchart, and add any ideas to the list already started by the first team. Allow 5 minutes for this second round.

Once each team has visited both flipcharts, you can end the exercise and review the results. Ask each person to explain briefly their comment, and why they consider it to be important.

Working through both flipcharts will reveal a wide range of factors which will influence the ability of the team to generate creative or innovative ideas.

The team will be able to put some of the listed factors into effect, but some of them will probably be outside their control. However, simply recognising them may in itself help.

One technique which will help to create a positive and encouraging climate is brainstorming. To make it effective, there are some rules for the team to follow which you should have written upon a flipchart.

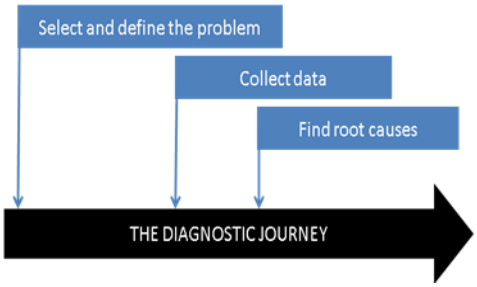
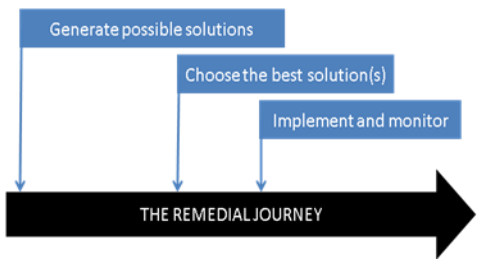
Ideally, display them in the room, and briefly discuss each one in turn with the team. You may wish to add some specific items from the team's lists.

You may wish to stress the following points.

- **'Never criticise - ideas or people.'**
  If anyone finds either themselves or their suggestions criticised, they are quite likely to withdraw from further participation. Also, discussing each idea as it is suggested will prevent you getting past the first few ideas.

	• **'Get lots of ideas - however wild or crazy!'** The more ideas, the better! Also, the solution may lie outside previous experience, so encourage free-range thinking, unlimited by practical, everyday considerations. • **'Record all ideas - can everyone see them?'** Make sure that every idea is recorded, ideally in the person's own words. Otherwise, people may feel disenchanted if their ideas are not included. Also, make sure everyone can read what is being recorded. • **'Incubate - is our list complete?'** Once the ideas start to dry up, the team needs to incubate on the list. Take a break, and consider what's been written. Are there any other ideas? • **'Evaluate - which ideas can we use?'** Switch back into analytical mode, and consider each idea from a practical viewpoint. This is the time to discuss the merits of each idea, but still keep an open mind. Having discussed how the team can create a more effective environment for innovative problem solving, this is perhaps the right moment to introduce the team to the key steps in problem solving. **HOW ARE PROBLEMS SOLVED?** Your teams may think they already know enough about problem solving - what else can they learn? The fact that they are actually sitting in front of you suggests that they have already solved many problems today quite successfully. Common sense tells us that many of the problems we are faced with in life can be solved quite easily and quickly, based on previous experience. For example, ask the team to imagine that they are crossing the road when they suddenly see a bus roaring towards them. That is not the time to pause and reflect on the situation, and consider what might be the best course of action to take. Experience tells you to jump out of the way fast! However, many of the problems facing us at work are more complex, and require more detailed analysis of what is going on. Doing what seems to be the best thing, or what we did last time, may not actually solve the problem. The ability to find lasting solutions to complex problems is the hallmark of an effective team. Having a structured and logical

	process to follow will increase team confidence to come up with the right answer and improve general team working. So the additional benefit of this session is to ensure that everyone has a common understanding of the steps and techniques involved, and can apply them in similar ways. There are many different problem solving models, with varying numbers of steps, ranging from four to fourteen. The one chosen here has six steps, which can be easily illustrated using an everyday example - ***a visit to the doctor.*** **THE DOCTOR WILL SEE YOU NOW!** You can be as theatrical as you like in this introduction (if you don't mind a bit of role play that is). Perhaps put your arm in a sling, and moan or groan a bit! You can also have a bag beside you to hold a saw and a bottle of painkillers - to illustrate two potential solutions, one a little more drastic than the other! Ask the team to imagine that you are seeing your doctor with a pain in the arm (or an ailment of your choosing). Ask them to tell you the steps the doctor normally takes to establish the 'problem'. After some light-hearted comments, someone will use the word 'diagnosis'. Focus on this, and ask the team to be more specific about what actually happens. Again, interspersed with some humorous remark(s), you will be able to tease out something like: The doctor asks you to give a clear description of what the problem appears to be. **This is Step I - Select and define the problem.** The doctor then asks further questions to find out how it started and when it happens, where it hurts, how often it occurs, and what you feel. He/she may probe or squeeze the affected area, and may also send you for further tests or X-rays, etc. **This is Step 2 - Collect data.** Having collected all this information, the doctor then considers all the evidence available, and decides what the likely cause of the ailment is. **This is Step 3 - Find root cause(s).'** This is an appropriate moment to reveal your flipchart with the summary of the diagnostic journey. Post it up, and quickly walk through the steps relating them to the experience at the doctor's surgery.

	The diagnostic journey consists of these three steps:  Having identified the cause of the illness, ask the team what happens next. After some humorous remarks, you will eventually hear the words 'remedy' or 'treatment'. Focus on these and ask the team what takes place during this phase? You will be able to piece together the following sequence: The doctor will consider all the possible remedies which could be applied. **This is Step 4 - Generate possible solutions.** In consultation with the patient, he/she will agree what appears to be the best treatment. (this is the moment to use the saw and the tablets to illustrate different solutions that may be more or less acceptable to the patient). **This Step 5 - Choose the best solution(s).** Finally, doctor and patient will agree the course of treatment, a prescription may be written, or expert advice sought. The patient will review progress, and consult the doctor again if the problem is not cured. A wise patient will also ask himself or herself 'What can I do to prevent that happening again?' **This is Step 6 - Implement and monitor.** Now reveal your flipchart with a summary of the remedial journey. Post it up, and quickly walk through the steps, relating closely to the experience at the doctors. The remedial phase consists of these three steps:  Check for understanding on the basic concept. Has anyone experience of a different problem solving model? If so, what

	can they share with the rest of the team? **THE DIAGNOSTIC PHASE** Now walk the team through the six steps in a little more detail, so they can understand exactly what will happen at each stage. They will of course experience the steps more thoroughly when they use them on a practical topic. **Step 1 - Select and define the problem** • Generate a list of problems or possible projects • Choose which problem to tackle, by comparing each option with appropriate selection criteria • Agree a problem definition statement for the chosen problem **Step 2 - Collecting data** • Decide what data will be required • Collect the data **Step 3 – Finding root causes** • Determine the underlying or 'root' causes of the problem **THE REMEDIAL PHASE** Having identified the underlying cause or causes of the problem, the team must then develop the most appropriate and lasting solutions. The three steps which can be used are as follows. **Step 4 - Generating solutions** • Agree the criteria for choosing the solution which offers the best chances of success • Generate a number of varying solutions to the problem **Step 5 - Choosing the best solution(s)** • Agree which solution(s) to adopt. **Step 6 - Implement and monitor** • Develop an action plan, and gain support from the key people • Once implemented, ensure that suitable measurement systems are in place to check that a lasting solution has been found • Hold the gains by introducing non-reversible changes • Make sure that people involved in making the changes receive recognition for their efforts • Finally, look for opportunities to make further improvements, with the focus always on improving customer satisfaction

	Before moving on, check that everyone understands the flow of the process, and how each step relates to the one before and after. **CLOSING THE SESSION** How you close this particular session will depend very largely on what you intend to do next. Ideally, move the team into a practical walk-through of the six steps in more detail, as a preliminary to using the process for real.
 **Note**	Though role play might not be your preferred activity, the ***'Doctor will see you now'*** scenario can work very well if used in this way. Play the doctor yourself, and ask a colleague to play the patient. The patient should have his/her arm in a sling, and be groaning appropriately. Go through the diagnosis, asking the participants to tell you at what stage in the process you might be Then move on to discussing the remedy, and this is when you can produce the bottle of painkillers as one possible 'solution'. To give a good exit cue for your colleague to leave, produce and wave about the saw, which you recommend as the best solution. ***If 'role play' is not your preferred style, you can still use the scenario of a visit to the Doctor to explain the process by which the GP goes from the presentation of the symptoms by the patient, through the diagnosis stage, then on to prescription of the remedy***
 **When?**	• To find solutions to problems presented to teams • To allow teams to understand how difficult it is for a manager to make decisions when presented with a set of Information • Can be used in conjunction with the Reaching an Agreement activity