Problem Solving

Appreciation - Extracting Maximum Information from Facts

Appreciation is a very simple but powerful technique for extracting the maximum amount of information from a simple fact.

How to Use the Tool:

Starting with a fact, ask the question 'So what?' - i.e. what are the implications of that fact? Keep on asking that question until you have drawn all possible inferences.

Example:

Appreciation is a technique used by military planners, so we will take a military example:

Fact: It rained heavily last night

So What?

- The ground will be wet

So What?

- It will turn into mud quickly

So What?

- If many troops and vehicles pass over the same ground, movement will be progressively slower and more difficult as the ground gets muddier and more difficult.

So What?
- Where possible, stick to paved roads. Otherwise expect movement to be much slower than normal.

While it would be possible to reach this conclusion without the use of a formal technique, Appreciation provides a framework within which you can extract information quickly, effectively and reliably.

Key points:

Asking 'so what?' repeatedly helps you to extract all important information implied by a fact.

Drill Down - Breaking Problems Down Into Manageable Parts

Drill Down is a simple technique for breaking complex problems down into progressively smaller parts.

How to Use the Tool:

To use the technique, start by writing the problem down on the left-hand side of a large sheet of paper. Next, write down the points that make up the next level of detail on the problem a little to the right of this. These may be factors contributing to the problem, information relating to it, or questions raised by it. This process of breaking the problem down into its component part is called 'drilling down'.

For each of these points, repeat the process. Keep on drilling down into points until you fully understand the factors contributing to the problem. If you cannot break them down using the knowledge you have, then carry out whatever research is necessary to understand the point.

Drilling into a question helps you to get a much deeper understanding of it. The process helps you to recognise and understand the factors that contribute to it. Drill Down prompts you to link in information that you had not initially associated with a problem. It also shows exactly where you need further information.

Example:

The owner of a windsurfing club is having complaints from its members about the unpleasant quality of the water close to the clubhouse. This seems like a huge problem. She carries out the analysis in Figure 1:

Figure 1: Drill Down Into Problem of Improving Quality of Sea Water

This gives her a starting point in which to begin thinking about the problem. It highlights where she does not fully understand the problem, and shows where she needs to carry out further research.

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Key points:

'Drill Down' helps you to break a large and complex problem down into its component parts, so that you can develop plans to deal with these parts. It also shows you which points you need to research in more detail.

It can be used in conjunction with the 5 Whys technique to ensure that you investigate each aspect of the problem systemmatically.

Cause & Effect Diagrams - Identifying the Likely Causes of Problems
Related variants: Fish or Fishbone Diagrams, and Ishikawa Diagrams

Cause and Effect analysis helps you to think through causes of a problem thoroughly. Their major benefit is that they push you to consider all possible causes of the problem, rather than just the ones that are most obvious.

The approach combines brainstorming with use of a type of Concept Map.

- brainstorming is a great way of generating radical ideas. During the brainstorming process there is no criticism of ideas, as free rein is given to people's creativity (criticism and judgment cramp creativity. This often makes group brainstorming sessions enjoyable experiences, which are great for bringing team members together. Individual brainstorming is best for generating many ideas, but tends to be less effective at developing them. Group brainstorming tends to develop fewer ideas, but takes each idea further. Group brainstorming needs formal rules for it to work smoothly.
- Mind Mapping is an extremely effective method of taking notes. Mind Maps show not only facts, but also the overall structure of a subject and the relative importance of individual parts of it. They help you to associate ideas and make connections that might not otherwise make.

  If you do any form of research or note taking, try experimenting with Mind Maps. You will find them surprisingly effective!

Cause and Effect Diagrams are also known as Fishbone Diagrams. The box and line can be thought of as the head and spine of the fish.

How to Use the Tool:

Follow these steps to solve a problem with a Cause and Effect diagram:

1. *Identify the problem:*
   Write down the exact problem you face in detail. Where appropriate identify who is involved, what the problem is, and when and where it occurs. Write the problem in a box on the left hand side of a large sheet of paper. Draw a line across the paper horizontally from the box. This gives you space to develop ideas.

2. *Work out the major factors involved*:
   Next identify the factors that may contribute to the problem. Draw lines off the spine for each factor, and label it. These may be people involved with the problem, systems, equipment, materials, external forces, etc. Try to draw out as many possible factors as possible. If you are trying to solve the problem as part of a group, then this may be a good time for some brainstorming! Using the 'Fish bone' analogy, the factors you find can be thought of as the bones of the fish.

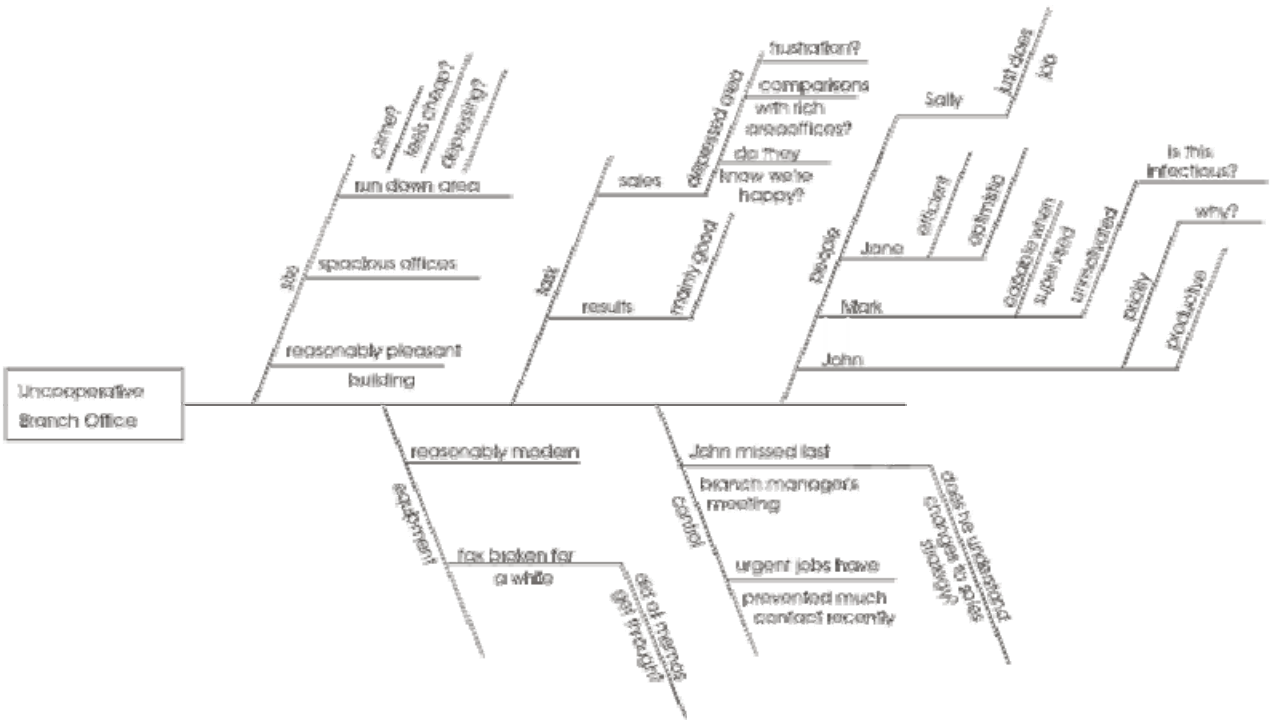
3. *Identify possible causes:*
   For each of the factors you considered in stage ii, brainstorm possible causes of the problem that may be related to the factor. Show these as smaller lines coming off the 'bones' of the fish. Where a cause is large or complex, then it may be best to break the it down into sub-causes. Show these as lines coming off each cause line.

4. *Analyse your diagram:*
   By this stage you should have a diagram showing all the possible causes of your problem. Depending on the complexity and importance of the problem, you can now investigate the most likely causes further. This may involve setting up investigations, carrying out surveys, etc. These will be designed to test whether your assessments are correct.

Example:

The example below shows a Cause & Effect diagram drawn by a manager who is having trouble getting cooperation from a branch office:

Figure 1: Cause & Effect Diagram Example:
A Manager's Analysis of Problems with a Branch Office



If the manager had not thought the problem through, he might have dealt with the problem by assuming that people were being difficult. Instead he might think that the best approach is to arrange a meeting with the Branch Manager. This would allow him to brief the manger fully, and talk through any problems that he may be facing.

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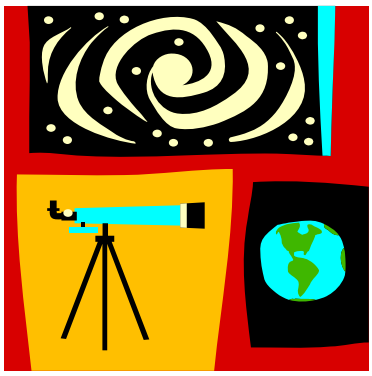
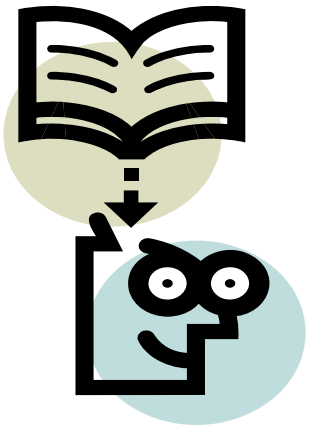
Key points:

Cause & Effect analysis (or fishbone analysis) provide a structured way to help you think through all possible causes of a problem. This helps you to carry out a thorough analysis of a situation.





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