

Problem Solving

Problems are part of everyday life and very much the focus of what many of us do at work every day. Whether highly complex and involved, or whether it's about undoing those little knots that get in the way of completing simpler tasks, there are some basic tools and techniques that can help you to get started in battling through most problems.

What is it?

Think about problem solving as having four basic steps:

1. Definition: what is the (real) problem?

Start by stating what appears to be the problem. Gather facts, feelings and opinions about it to find out what's going on under the surface. Then re-state the problem, which may well be something that was hidden at first.

Useful Tools:

- 5 Whys?
- Root Cause Analysis
- Fishbone Diagrams
- Affinity Diagrams
- Cause and Effect Analysis
- Process Flow Charts

2. Options: what are the range of options are in front of you?

Because of limitations and constraints, sometimes the options can be very clear. However, often it will be valuable to be creative in generating options and this is where working with others can be particularly rewarding:

Useful Tools:

- Brainstorming
- Creative Problem Solving
- Mind-mapping
- Rules-of-thumb

- Thinking Hats
- Means-End Analysis and Process Approaches
- Research techniques

'We cannot solve our problems with the same thinking we used when we created them'. - Albert Einstein

3. Choice: evaluation and selecting the best option

Leaping into making swift choices can be counter-productive in the long run. Proper evaluation of the options can inform you to make sound decisions that you can be sure are going to tackle the root cause of your problem without setting off other problems in doing so. Many problems and choices in life can be complex and it is usual for some decisions to be made carrying some degree of risk and uncertainty - sometimes there just isn't a single right answer.

Useful Tools:

- Risk assessment
- Consensus-building
- Cost-benefit analysis
- Classical and Behavioural Decision Models
- Piloting and simulation

4. Implementation: doing it and checking that it fixes the problem

Just as problems can be complex, implementing solutions can also be challenging and will often need a good deal of planning. It is vital that throughout the implementation phase, control loops are built in to enable you to monitor and evaluate the success of the chosen solution to make sure the original problem has been resolved and that any side-effects have been dealt with.

Useful Tools:

- Plan-Do-Check-Act Cycle
- Continuous Improvement
- Project Management
- Change Management

Why is it important to me?

Problem solving is a fact of everyday life. In a work setting, being able to find solutions to both day-to-day and long-term problems is a very important part of being an effective employee, whatever level you operate at within your organisation.

IQ believes that being able to be aware of, identify problems and solve problems on your own or as part of a team is an important skill for professionals working in the quarrying and minerals products industry. It features on our **Skills Wheel** which captures all the key skill and knowledge areas we believe are vital to successful career development in the industry.

Where Next?

There are plenty of resources available to help you develop problem solving techniques. A great resource to start with is at Mind Tools who have a whole host of free tools, including some more information on tools listed on this factsheet:

www.mindtools.com/pages/main/newMN_TMC.htm

Institute of Quarrying

IQ supports professionals working within the quarrying and minerals products industry through membership and training. These factsheets are produced across a range of topics to share ideas and best practice. Further information can be found via the resources section on the IQ website www.quarrying.org.