

# Practical Problem Solving

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*Revision & Self-Study Guide*

*Session 1 → Session 2*

## **How to use this guide**

Use this guide to revisit the ideas covered in Session 1. It is not a test and you do not need to memorise a process word-for-word. The aim is to strengthen the way you think when something goes wrong at work.

## 1. What this programme is about

Problems are part of working life. A quality finding may be identified during an inspection. A safety concern may arise. A process may not be working as expected. A document may be incomplete. Equipment or systems may cause difficulties. A team may not be following the expected process. A problem that was thought to be fixed may appear again.

Good problem solving is not simply about finding a quick fix. It is about developing a disciplined way of thinking when something has gone wrong.

### The mindset

Don't rush from "something went wrong" to "I know why it happened." First understand what happened. Then investigate. Then decide what needs to change.

### The thinking journey

- Define the problem.
- Separate what we know from what we assume.
- Identify what we still need to find out.
- Look for information and possible patterns.
- Only then begin explaining causes and deciding what to do.

## 2. Problem or symptom?

A symptom is something we can see has happened. It is not necessarily the underlying problem.

For example:

- The inspection failed.
- The installation does not match the drawing.
- The report was late.
- The work had to be redone.

These describe events or outcomes. They do not automatically tell us what caused them.

### Ask before deciding

What exactly happened? What do we know? What else could explain what happened?

## 3. Define the problem properly

A vague statement is difficult to investigate. Statements such as "quality is poor", "people don't follow the process" or "the contractor keeps making mistakes" may express frustration, but they do not give us enough information.

A useful problem statement should help us understand:

- what is happening
- where it is happening
- when it is happening
- how often it is happening
- what should be happening
- what the impact is

### Example

Weak:

**“The installation is wrong.”**

Stronger:

**“During inspection of the completed installation, the installed configuration did not match the approved drawing, resulting in rework before the work could be accepted.”**

#### Principle

Don't solve a vague problem. Define it first.

## 4. Investigate before you explain

Once a problem has been defined, it is tempting to explain it immediately. Resist that temptation. Before deciding what caused the problem, establish what the evidence tells us.

**What do we know?**

**How do we know it?**

**What don't we know?**

**Where can we get reliable information?**

### Facts, assumptions and questions

Keep these three categories separate.

| FACT                                             | ASSUMPTION                                                  | QUESTION                             |
|--------------------------------------------------|-------------------------------------------------------------|--------------------------------------|
| Something supported by evidence or records.      | Something we believe may be true, but have not established. | Something we still need to find out. |
| “QC identified a discrepancy during inspection.” | “The installer made a careless mistake.”                    | “Which drawing revision was used?”   |

#### Important

A plausible explanation is not automatically a fact. Ask: “How do we know that?”

## Possible sources of reliable information

- relevant drawings, documents and revision information
- inspection, quality, safety or other relevant records
- previous findings or records of similar problems
- photographs or other evidence
- specifications, procedures and work instructions
- material, equipment or system information
- relevant test results
- document-control or communication records
- people directly involved in the work

## 5. Look for patterns

When the same or a similar problem occurs more than once, do not automatically treat every occurrence as a completely separate event. Look across the occurrences and ask what they have in common.

Depending on the problem, we might compare:

- where it happened
- when it happened
- what work was being done
- who or which team was involved
- materials or equipment involved
- the drawing, instruction or revision being used
- what had changed

### Remember

A pattern is a clue, not a conclusion. If several problems share something in common, that gives us somewhere to investigate. It does not prove that the shared factor caused the problem.

## 6. Between-session individual exercise

You now have two weeks to apply the thinking from Session 1 to a real workplace situation. Bring your completed exercise to the next session on Friday, 11 September.

### **This is not about finding the perfect answer**

The purpose is to practise the thinking. You are not expected to prove the cause of the problem. If something is unknown, say that it is unknown.

### **Choose one workplace problem**

Choose one real problem you have encountered or observed at work. It could be a quality problem, inspection finding, rework issue, documentation problem, installation issue, material issue, equipment issue, communication problem, or another recurring problem. Choose something you understand reasonably well and are comfortable discussing in the next session.

### **Step 1 — Describe the problem**

What happened? What was the problem?

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### **Step 2 — Define it more clearly**

**What exactly is happening?**

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**What should be happening?**

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**Where/when/how often does it happen?**

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**What is the impact?**

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### **Step 3 — Investigate**

**What do you know?**

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**How do you know it?**

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**What don't you know yet?**

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**Where could you get reliable information?**

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#### **Step 4 — Look for possible patterns**

If this problem has happened more than once, or there are similar examples, look across them. What do the occurrences have in common? What is different?

**Possible pattern(s):**

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**What would you investigate first?**

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**Why?**

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#### **Step 5 — Check your thinking**

- Have I clearly separated facts from assumptions?
- Have I accidentally treated a possible cause as a fact?
- What information would I still need?
- What would I want to check before reaching a conclusion?

#### **Bring this with you**

You will use your completed exercise in the next session. You will swap your work with another participant and use it to practise questioning the problem, the evidence and the possible pattern.

You do not have to solve the problem before you arrive. Your job is to arrive with a problem you have thought about carefully.

## **7. Key takeaways from Session 1**

- A symptom is not necessarily the underlying problem.
- Define the problem before trying to solve it.
- Separate facts, assumptions and questions.
- Ask how you know what you think you know.
- Don't turn a plausible explanation into a fact without evidence.
- When problems recur, look across them for possible patterns.
- A pattern gives you a direction for investigation. It does not prove the cause.

**Good problem solving  
starts with good thinking.**