

Practical Problem Solving

Revision & Self-Study Guide

Session 2

From understanding the problem to making it better

In the first session, we focused on understanding a workplace problem before trying to solve it.

You worked with a real problem from your own area of work and practised:

- defining the problem clearly
- distinguishing facts from assumptions
- identifying what you know and what you still need to find out
- looking for possible patterns

In this session, we continued the process.

We moved from:

Understanding the problem

to:

Understanding the causes → generating solutions → making a decision → taking action → checking whether it worked → preventing recurrence

This guide gives you an opportunity to revisit those ideas and apply them to the same workplace problem you used in your first assignment.

1. LOOK FOR PATTERNS

A pattern can help us decide where to investigate further.

When a problem happens more than once, don't automatically treat every occurrence as a separate event.

Look across the occurrences.

Consider:

- Where did it happen?
- When did it happen?
- What work was being done?
- Who was involved?
- Was the same material or equipment involved?
- Was the same drawing, instruction or revision involved?
- Had anything changed?

A pattern is **a clue, not a conclusion**.

For example:

“This problem seems to happen more often during a particular stage of the work.”

That is a possible pattern.

It does **not** yet mean:

“That stage is the cause.”

The pattern tells us where we may need to investigate further.

Remember:

A pattern does not give us the answer.

It gives us a better question.

2. INVESTIGATE THE POSSIBLE CAUSES

Once we have identified something worth investigating, we can start asking:

What could be causing this problem?

There may be more than one contributing factor.

Possible areas to consider include:

People

Knowledge, skills, experience, communication, responsibilities

Process

Steps, procedures, handovers, controls, sequence of work

Equipment / Systems

Tools, equipment, software, systems or technical issues

Materials / Information

Materials, specifications, drawings, instructions, information

Environment

Working conditions, site conditions, workload or other circumstances

Management / Planning

Planning, resources, priorities, supervision, coordination

These categories help us explore the problem from different angles.

They do not tell us what the cause is.

3. DON'T TURN A SUSPICION INTO A FACT

One of the most important habits in practical problem solving is being able to distinguish between:

What we know

and

What we think might be happening.

Ask:

What evidence supports this possible cause?

If we cannot support it with evidence, it remains a possibility or assumption.

Ask:

What would I need to find out before I could be confident?

Good problem solving does not require us to pretend that we know something we don't know.

If it is unknown, say that it is unknown.

4. GENERATE POSSIBLE SOLUTIONS

Once we have a better understanding of the causes, we can ask:

What could we do about it?

Don't automatically choose the first solution that comes to mind.

Generate several possibilities.

A solution should ideally address the cause, rather than simply treating the symptom.

For example, if the problem is caused by a weakness in a process, simply telling people to “be more careful” may not address the underlying issue.

Consider different types of solutions:

- reinforcing an existing process
- changing a process
- adding a control or verification step
- improving information or documentation
- changing responsibilities or handovers
- improving communication
- providing resources or support
- addressing an equipment or system issue
- providing training where a genuine knowledge or skill gap exists

Important:

Training is one possible solution. It is not automatically the solution.

5. DECIDE

Having several possible solutions does not mean we should choose one simply because it sounds good.

We need to compare the options.

Ask:

Does the solution:

- address the cause?
- reduce the likelihood of recurrence?

- work in the real workplace?
- require significant resources?
- create new risks?
- depend heavily on people remembering to do something?
- change the process itself?
- have consequences elsewhere?

Decision Matrix

A decision matrix helps us make our reasoning visible.

We identify:

Options

What are we considering?

Criteria

What matters when choosing between them?

Importance

Which criteria matter most?

We then compare the options against those criteria. The matrix does not make the decision for us. It helps us explain **why** we believe one option is stronger than another.

It gives us something specific to discuss:

- Why do you think this option is more practical?
- Why do you think this option creates less risk?
- Why is this criterion more important?

Good decision making is not:

“I just think Option B is best.”

It is:

“Option B is strongest because it addresses the cause, is practical to implement and reduces the likelihood of the problem recurring.”

6. ACT

A good solution is of little value if nobody knows what needs to happen next. Turn the decision into action.

Ask:

- **What needs to happen?**
- **Who needs to do it?**
- **By when?**
- **What resources or support are required?**
- **What could prevent the action from being implemented?**

A useful action plan makes responsibility and expectations clear.

7. CHECK

Did it actually work?

This is an important part of problem solving.

Taking action does not automatically mean the problem has been solved.

We need to check.

Ask:

What evidence will tell us whether the action worked?

This could involve looking at:

- whether the problem happens less often
- whether the original gap has been closed
- whether the required standard is now being met
- whether the same issue appears again
- whether quality, safety, time or other relevant measures have improved
- feedback or observations from the people involved
- records, inspections, reports or other evidence

Don't confuse activity with results.

For example:

“We briefed the team.”

That tells us that an action took place.

It does **not** tell us whether the problem was solved.

A stronger question is:

“After the briefing, did the problem reduce or disappear?”

That requires evidence.

The Check Question

Always ask:

How will we know?

If you cannot answer that question, you haven't yet defined how you will check whether the solution worked.

8. PREVENT RECURRENCE

Even when a solution works, ask:

How do we reduce the likelihood of this happening again?

Consider whether something needs to change permanently.

Could we:

- improve the process?
- strengthen a control?
- improve documentation?
- clarify responsibilities?
- change a handover?
- improve planning?
- share the learning with another team or site?
- build the learning into future work?

The goal is not simply to fix **this occurrence**.

The goal is to learn from it.

Ask:

What can we change so that we are less likely to face the same problem again?

And:

Could this learning be useful somewhere else?

THE COMPLETE PROCESS

You can now see the full journey:

DEFINE

What exactly is the problem?

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INVESTIGATE

What do we know, and what evidence do we need?

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ANALYSE

What could be causing the problem?

↓

GENERATE

What could we do about it?

↓

DECIDE

Which option makes the most sense?

↓

ACT

How will we put the decision into practice?

↓

CHECK

Did it actually work?

↓

PREVENT

What can we do to reduce the likelihood of recurrence?

POST-SESSION ASSIGNMENT

YOUR OWN WORKPLACE PROBLEM

You have now worked through the complete practical problem-solving process.

For this assignment, return to the **same workplace problem you used in your first assignment** and continue working with it.

Your task is to apply what you have learned across both sessions and work through the complete process.

You are not expected to produce a perfect answer.

The purpose is to demonstrate your **thinking and reasoning**.

If something is unknown, say that it is unknown.

If a possible cause is still an assumption, identify it as an assumption.

If your thinking has changed as you worked through the problem, explain why.

STEP 1 — DEFINE

- What exactly is happening?
- What should be happening?
- Where is the gap?
- What is the impact?

STEP 2 — INVESTIGATE

- What facts do you have?
- How do you know them?
- What are you assuming?
- What information is missing?
- Where could you obtain reliable evidence?

STEP 3 — ANALYSE

- What possible causes could explain the problem?
 - What evidence supports each possible cause?
 - Which causes are still assumptions?
 - What would you need to investigate further?
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STEP 4 — LOOK FOR PATTERNS

- What patterns, if any, did you identify?
 - What do the occurrences have in common?
 - What is different?
 - What did the pattern suggest you should investigate?
 - Explain why you believe this is a possible pattern rather than treating it as a conclusion.
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STEP 5 — GENERATE SOLUTIONS

What possible solutions could address the cause?

Generate several options before choosing one.

Consider whether each solution:

- addresses the cause
 - reduces the likelihood of recurrence
 - is practical
 - requires significant resources
 - creates any new risks
 - depends on people remembering to do something
 - changes the process itself
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STEP 6 — DECIDE

- Which option is strongest?
- Why?
- What criteria influenced your decision?
- What risks or consequences need to be considered?

If appropriate, use a simple decision matrix to compare your options.

Be able to explain **why** you selected your preferred option.

STEP 7 — ACT

- What needs to happen?
- Who needs to do it?
- By when?

- What resources or support are required?
- What could prevent the action from being implemented?

STEP 8 — CHECK

HOW WILL YOU KNOW WHETHER IT WORKED?

Do not stop at identifying the action you would take. Think about what would happen after the solution is implemented.

- What evidence would tell you that the problem has actually been solved?
- How would you measure or observe improvement?
- What would you look for?
- How long would you need to monitor the situation?
- What would tell you that the problem is still occurring?

Remember:

Taking action does not automatically mean the problem has been solved.

The important question is:

What evidence will show us that the action worked?

STEP 9 — PREVENT

If your solution works, what could be changed to reduce the likelihood of the problem happening again?

Could the learning be built into:

- a process?
- a procedure?
- a handover?
- a control?
- documentation?
- planning?
- communication?
- another area of the workplace?

Could the learning apply elsewhere?

FINAL REFLECTION

After completing the assignment, reflect on the process.

What did you understand differently about your problem after working through the process?

What assumption did you have to challenge?

What is the most important thing you learned about practical problem solving?

A final reminder

Good problem solving is not about having the answer immediately.

It is about being able to explain:

What is happening?

What do we know?

What could be causing it?

What could we do?

Why did we choose that option?

Did it work?

How will we prevent the problem from returning?

The process does not end when we take action.

We need to check the result.
