5-Whys: A Simple and Effective Problem Solving Tool

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How many of you deal with problems that need solutions as part of your job function?
The Truth about Problems….

- “No one has more trouble than the person who claims to have no trouble.” (Having no problems is the biggest problem of all.)

  - Taiichi Ohno, father of the Toyota Production System

At Toyota:

- A problem is defined as the gap between the current situation and the ideal situation

- The 5-Why analysis is the primary tool used to determine the root cause of any problem. It is documented in the Toyota Business Process manual, and practiced by all associates
5 Why Training Objective

**Objective:** To provide a simple, but effective problem solving methodology that will result in identifying the true Root Cause and appropriate Corrective Actions for significant quality issues.

**When to Use 5 Why:**
- When the problem and root cause is not immediately apparent
- When you want to prevent the problem from occurring in the future

- When analyzing a formal customer complaint
- When an Imperative or Departmental metric is RED
- When a Significant Quality or Delivery Incident (SQDI) has occurred
- When working to resolve an internal audit finding
- When a problem has gone unresolved for over 3 weeks
- When the problem appears to be a “repeat issue” for the department
What 5 Why Is NOT

5 Why analysis is NOT:
- Magic or a difficult process
- A way to find root cause without conducting a proper investigation
- A list of five perfect questions, all of which begin with WHY
- An absolute number of questions
  - 3 is OK if that gets to the root cause.
  - 7 or more is OK if it takes that many
- A reporting tool to be filled in after you’ve figured out root cause
- A problem solving tool that only applies in the manufacturing environment
5 Why is a structured approach in which you repeatedly ask WHY? to understand the underlying causes of the issue, **AND** to generate an effective corrective action to mitigate the incident, and prevent future occurrences.

5 Why analysis is used to identify and/or document the cause/effect relationships associated with a problem/error and its root cause.

5 Why analysis is based on “hands on” observation/investigation, **NOT** deduction, opinion, or folklore.

- “Understand the process”
- “Talk to the appropriate member or staff personnel”
- “Without data, you are just another person with an opinion”

Don’t just “Fix it and forget it”

It is a widely used tool used by Lean and Six Sigma leaders.

Get to the true Root Cause
5 Why – Your first introduction?

Remember back to when you were 5 years old? You asked “why?” Every answer triggered another “why?”

– Why do leaves change colors?
  » They stopped making chlorophyll, which is green.
– Why did they stop making chlorophyll?
  » There isn’t as much sunlight in the winter and trees need sunlight to make chlorophyll.
– Why isn’t there as much sunlight in the winter?
  » The days are shorter and sunlight isn’t directly overhead.
– Why are the days shorter and the sunlight not as directly overhead?
  » The earth rotates on an axis that isn’t straight up and down.
– Why isn’t the earth’s axis straight up and down?
  » Hey, I’ve got an idea! Would you like me to get you some ice cream?
A Better Example: “5 Why Story”

The Jefferson Memorial was crumbling to the point that it came close to seriously injuring a tourist.

Groups Involved:
- Congress
- Park Service
- Public

Solutions considered:
- Cover the monument! — (acid rain)
- Move the airport away from the monument! — (jet exhaust)
Problem Statement:
Bird Droppings On The Jefferson Memorial

- **Why?** – Lots of birds were perching on the roof
- **Why?** – They came for the food – lots of spiders
- **Why?** – Spiders came to eat the moths
- **Why?** – Large number of moths accumulate at the Memorial during the early evening (at dusk)
- **Why?** – Moth’s are attracted to light. The flood lights for the Jefferson Memorial were programmed to be turned on 30 minutes earlier than any other monument. (root cause)
Problem Solving 5 Why Funnel

Grasp the Situation

PROBLEM IDENTIFIED (Large, Vague, Complicated)

Problem Clarified

Area of Cause Located

Point of Cause (PoC)

Why? 1 Cause
Why? 2 Cause
Why? 3 Cause
Why? 4 Cause
Why? 5 Cause

Root Cause

Corrective Action

Systemic Correct Action

Basic Cause/Effect Investigation

Where in the process is the problem occurring?

“Go See” the problem.

5-Why Analysis
Investigation of Root Cause

Why did we have the problem?
Why did it get to the customer?
Why did our “system” fail?
Problem Solving 5 Why Funnel

1. Clearly state the problem.
2. Write it down on a flip chart.
3. If there are multiple problems, write each of them down, and address separately, but choose the most critical.
Problem Solving 5 Why Funnel

1. Gather a diverse team.
2. Gather information.
3. Review the process itself and all related documentation.
4. Educate yourself and the team.

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Investigation of Root Cause

Why did we have the problem?
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Root Cause

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Systemic Correct Action
Problem Solving 5 Why Funnel

1. Determine the first Why?
2. Discuss and review with the team.
3. Ask if you are looking at the problem from all aspects.
4. Avoid assumptions!
1. Repeat the process for the remaining Whys?
2. Keep probing until you come to an answer that you can control.
Problem Solving 5 Why Funnel

1. Agree to root cause.
2. Define the short-term and long-term corrective action.
3. Investigate the "Systemic Issue".
1. Investigate the “Systemic Issue”.
2. These three boxes represent the 3 legs of a 3-legged 5 Why analysis
In order to clarify the root cause, thoroughly investigate the process involved.

- **Problem to Pursue**
  - Cause
  - Cause
  - Cause
  - Root Cause

  **“WHY?” (Speculate Causes)**
  - Confirm facts, and if there’s no cause-and-result sequence in the cause, stop asking “WHY?”

  **Repeatedly ask “Why?”**

  **If an item is not a Root Cause, do not focus on Countermeasures or corrective actions**
Figure B-1. Full Fishbone Diagram
Validate your Root Cause....

1. Can you recreate the Problem, or turn it “ON” and “OFF”?
2. Are the problem and root cause clearly connected?

Use the “Therefore” test as a check

Root Cause Analysis:
Prioritized Problem: therefore therefore therefore therefore therefore therefore
why why why why why why

“Therefore” logic fails if the analysis:
1) Skips a step
2) Jumps to a conclusion
3) Tries to fix a “known issue” into the flow
Therefore Test - Applied

To test the logic start with the root cause and work backwards to the problem statement

1. There’s a hole in the water pipe
   2. Because a nail has been hammered through the pipe
   3. Because the carpenter was not aware of the pipes position
   4. Because the carpenter had not examined a drawing showing the pipes position
   5. Because this is not part of the carpenters standard work to examine a drawing

5. It is not part of the carpenters standard work to examine the drawing
   4. Therefore the carpenter had not examined the drawing showing the pipes position
   3. Therefore the carpenter was not aware of the pipes position
   2. Therefore a nail has been hammered through the pipe
   1. Therefore there is a hole in the water pipe
Remember to document all causes investigated, along with the Root Cause. Work backwards from the Root Cause asking “Therefore” to confirm your thought process.
5 Whys – Points to Remember

**Processes**

1. Clearly define the problem. Consider causes without prejudices

2. Based on facts gathered during the investigation, keep asking “Why?”

3. Specify the root cause(s)

**Learning Points**

1. Do not assume anything...

2. Thoroughly investigate the process and clarify the work flow; was the process followed?

3. Follow the data to determine the root cause based on “facts”

4. Check if one more “Why?” is needed, be logical: don’t over or under analyze ...the final number may not be 5

Root cause should not point to an individual

Focus on the process not a person
3 Legged 5 Why

Investigate the causes of each leg of the 3 Legged 5 Why

Leg 1) Why did the error occur, or why did we have the problem?
Leg 2) Why did INPRS fail to protect the member, or fail to detect the error internally?
Leg 3) Why did our business system fail to prevent the error?

- Should be completed in the sequence listed
- Each leg may require different teams, or different expertise

- Leg 1
- Leg 2
- Leg 3

Shift from “fire fighting” to “problem solving”

- Error
- Detection
- Prevention
Every root cause needs a corrective action! Only root causes need a corrective action!
5 Why Guidelines

Problem Definition
– Ensure the analysis is based on the problem as the **Customer** sees it
– **Thoroughly** familiarize yourself and your team with the current process prior to completing the 5 Why analysis

3 Legs
– Does the evidence and **documentation** support the validity of the cause and effect relationship? Don’t base your analysis on folklore or opinions!
– Are the causes easily understood?
– Is there a true cause-and-effect path from beginning to end of each path?
– Does the path make sense when read in reverse from cause to cause? (e.g., We did this, “**Therefore**” that happened)

Corrective Action
– Does the evidence and documentation support the validity of the corrective actions?
– Does each corrective action address the root cause from a path?
  » Did you consider more than one corrective action for each root cause?
– Is there a separate corrective action for each root cause? If not, does it make sense that the corrective action applies to more than one root cause?
– Are the corrective actions irreversible?
# Root Cause – Reflection Points

<table>
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<th>Reflection Points</th>
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<tr>
<td>Ask yourself, “Will implementing the Systemic Corrective Action prevent the next</td>
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<td>failure?” If the answer is “NO”, you must understand the deeper WHY.</td>
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<td>If human error is identified, you must understand why the human committed the error.</td>
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<td>What management controlled factor impacted performance? What system must change</td>
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<td>to eliminate (or significantly reduce) the chance for error? “Training the Operator”</td>
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<td>is rarely the best response .......... Why was the operator not trained properly?</td>
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<td>Why was the training not effective? What environmental factors caused the operator</td>
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<td>to not do his/her best work? Did he/she have to go around the system due to other</td>
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<td>issues or pressures? Can the system be error-proofed?</td>
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<td>All root cause analysis must include a look at the associated Management Systems</td>
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<td>For virtually every incident, some improvement(s) in the Management Systems could</td>
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<td>have prevented most (or all) of the contributing events --- ASQ estimates 82-86%</td>
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<td>Correct the process that created the problems</td>
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<td>During the 5 Why analysis, you should ask yourself if there are similar situations</td>
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<td>that need to be evaluated .......... perform a “Look Across” the organization. If this</td>
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<td>situation could apply to multiple funds, then the corrective action must address all funds</td>
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5 Why’s – Final Thoughts

How could this problem/error have been foreseen? Or how could we have protected the member? Do we have the right controls in place?

How will this information be incorporated into our systems?

Are there lessons learned that could impact the Customer? How can these lessons learned be communicated and investigated in other areas (Look Across)?

5 Why analysis can be used to demonstrate and clarify the linkage from the top-level problem down to the underlying root cause. Use the 3 Legged 5 Why to also understand the poor detection as well as systemic issues that allowed this event and similar events to occur. Management is usually in the best position to know whether an event may be another example of a systemic problem.
# Another format:

## Quality Tools

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<tr>
<td><strong>Title:</strong> 5 why Analysis</td>
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### 5 why

**Description:**

This is a 5 why template. A detailed discussion of the 5 why tool can be found at www.asq.org.

**Instructions:**

1. Enter the date.
2. Enter the problem statement in the text box.
3. Answer the problem statement by asking "Why". Then enter the answer to the first "Why" in the box provided.
4. Ask "Why" to the first answer and enter that answer in the text box for the second "Why".
5. Continue asking "Why" and entering the answers until you get to the root cause.
6. Add additional "Whys" if required.

**Learn More:**

To learn more about other quality tools visit the ASQ Learn about Quality website.

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