Needed Skills for Investigators

As long as there are problems, there will need to be trained and capable investigators to find what caused them, and then to fix them. If only investigations were as easy as TV makes them look. Imagine that you could find the root cause to any problem in 48 minutes (with 12 minutes of commercials)! The truth is that all those TV investigators follow a similar process that can be easily duplicated using a skill set that most anyone can have and improve upon. But it does take practice. This purpose of this whitepaper is to highlight those skills of a successful investigator. Since it's difficult to discuss them outside the context of an investigation, I will use a simplified investigation process and discuss the application of common quality tools. This paper assumes the reader knows how to use these tools.

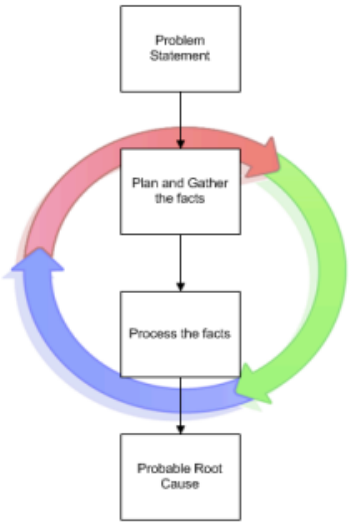

Figure 1

An investigation has four basic parts (figure one). You must identify the problem, plan the investigation and gather the facts, process those facts and reach a probable root cause. Because an investigation is a living entity, you will likely cycle through the middle parts frequently as you gather facts and learn new information. When you follow this basic process, and think like an investigator, you will be more successful at finding root cause.

Let's look at those skills and how we use them to facilitate a good investigation process. Too many investigations end up poorly because they start poorly. Be absolutely certain that when you start an investigation you and your team are clear as to what the problem is. We put a lot of effort in root cause training to help trainees understand the importance of, and how to develop, a good problem statement. A good problem statement is a succinct description identifying what has a problem – the object – and what is wrong – the defect. A good investigator will cut through the noise and clearly identify the problem. Remember – it's a problem statement – not a description of the problem.

Before we talk about the second part it's important to recognize there are several variables that should drive the scope and complexity of your investigation plan. Those variables (danger to people, magnitude of the problem, and (sometimes) detectability) are components of risk. A risk analysis will provide a measure of how "wide and deep" your investigation must be.

Rookie investigators often jump over the "planning" part of this step. Good planning skills will pay big dividends. Start by generating all the relevant questions you can about the problem. This is where you can use your brainstorming skills. If you have a team, bring them together and ask "given this problem statement, what questions should we ask?" If you are a lone ranger investigator, invite your colleagues to a working lunch and ask the question about what questions to ask! Such as: what information is necessary? Where did this problem occur? Who has information about it? When did it begin? How big is it? What data is needed? Where is the data? Who has it? Do we need to collect any additional data? Who has seen it? If you want to make this information deeper and better, bring at least one person into this exercise who doesn't know your product, process or problem. They will likely ask the best questions and challenge assumptions. All these questions provide the basis of your plan. Remember, this is neither the time nor place to answer these questions. And it sure isn't about finding root cause yet!

Now you can plan your investigation. Think of it as a project. Your tasks will be developed primarily around the questions you've brainstormed. Now you are going to assign tasks to team members as to who to interview, where to collect data or other evidence, or find SOP's, etc. As investigations require interviews, good questioning and listening skills are critical. Once you've developed the plan, before you go out to gather information, spend a few minutes to clarify exactly what you need from each person or process. What specific questions will you ask? How will you know when you have the necessary data? Good investigators use mostly open-ended questions to gather information. Closed questions are used more for clarification. The flip side to this is listening. As a good investigator it's

critical to listen with intent. That involves hearing, understanding and evaluating. Part of evaluating is to listen with your eyes – that is to read body language. You are gathering facts here. There is no room for guesswork, opinions or perceptions.

Now that you have this plethora of data, it needs to be processed. Here you may find that putting your data into pictures is helpful. Process maps, run charts, check sheets and mind maps are just a few of the useful quality tools you might use. A storyboard is a great way to visualize a complex investigation. A good investigator will recognize which quality tools are best to use to understand and present the data. Also, as you process the data, it typically causes more questions that will create more information. That's not at all bad as investigations are not linear processes. As those questions arise, add it to your plan and gather the information – just like they do on TV.

Your data is telling you a story. That story concludes with you identifying the probable root cause. There are two tools that are often used to capture and process investigation facts. (You typically use these tools beginning in the second part). A fishbone, or Ishikawa, diagram is very useful to organize your facts. Your problem statement goes on the spine and you can label each fishbone with categories that make sense to you. Often we see Four M's (material, measurements, manpower, and machinery) or PEMME (process, equipment, material, manpower, and environment) used to organize data. Team members hypothesize the probable root cause based upon the information. 0P----The other tool used for large investigations is the IS/IS Not diagram. This fine tool provides a framework for capturing and categorizing the information you collected in your investigation plan. It allows for identifying clues from the data, and then identifying probable root cause.

With either tool, you should arrive at a probable root cause. What that means is that based upon the evidence of your investigation, you believe that you have identified the root cause of your problem. If there is a way you can conduct testing and turn the problem on and off, you have scientific proof. Nothing could make your case stronger. But as we know the real world doesn't often provide that degree of confidence. The defense of our probable root cause is based upon testing it against our investigation facts (this is why it's

critical that our investigations contain ONLY factual data). Do the facts explain your conclusion (ALL your facts)? If yes, then congratulations! If no, you need to go back into the investigation –you missed something. Often, the test will often guide you to the area(s) where you need to go back and investigate further.

Let's review. Good investigators:

- Clearly identify the problem and keep the team focused and on track.
- Make sure there is robust investigation plan and the tasks are completed. No shortcuts. Ensure that all information and data is factual.
- Challenge assumptions and opinions.
- Have good team building skills.
- Master the art of questioning.
- Listen with intent.
- Understand the value of quality tools and when and how to use them in an investigation. Are logical thinkers with good reasoning skills.

As a bonus, the better you are at planning and leading an investigation to find root cause, the easier you'll find the last dreaded task to complete – the Investigation Report. An investigation report is the story of your problem. How you found it and the risk it presented. It includes your problem statement and what you did in planning to find root cause. It will tell what data you collected and include the causes you rejected. Everything you need to write a logical, thorough, fact based, timely report will already exist from your investigation.

Best wishes Investigator! Using sound tools, techniques and people skills, you will find success in your investigations. Like any competency of value, it will get better with use.

ABOUT THE AUTHOR: G. Herbert 'Herb' Miller has over 15 years of success in making training 'stick'. His Training & Development experience includes assessment, design, development, and delivery. His ongoing learning as a TQM practitioner, along with those training experiences have inspired 'customer focused' training that adds value to organizations. Herb's 30 years of organizational experience has provided him invaluable experiences and perspectives for crafting relevant and effective training events.