Introduction to Problem Solving Skills, Page 4

Video: Problem Solving: Process
Duration: 8 minutes, 31 seconds

WHAT IS YOUR PROBLEM SOLVING PROCESS?

LAWRENCE MICHALENKO: For my own skills, I mean, I will start to research and try to find out all the key points of the problem, which-- first identify what is the real problem? Because it's not always as it seems. And once I-- identify what the real problem is, I'll try to find some key points that I may not have any knowledge about and do a research.

An online search. I may talk with some of my colleagues, and I have quite a few business partners. So I may just pick up the phone and say, "Hey, I'm at the high school. We've got this problem. I narrowed it down to a certain aspect," and I'll call on somebody that has more expertise or more practice in doing that.

WHAT IS YOUR PROBLEM SOLVING PROCESS?

ANTHONY GIGLIO: The first thing about a problem is to make sure it's well-understood.

Questions, for example-- the problems-- maybe I should back up and say problems almost always are defects with products. Problems in manufacturing overwhelmingly are-- we can't make this product anymore. We can't make this product at the high-- at the quality level that we should be making it. So those are typical problems. So defining that problem really means understanding what it is that makes it a problem.

Is it a scratch that is now on a product that didn't used to be there before? Is it the chemical behavior of the product that's shifted from where it used to be? So getting a good definition of what you're up against for a problem is a very important first step.

And right behind that, in my opinion, is knowing things about the extent. When did this start? When in time did it start? Where in the process did it start? Do we see it well upstream in the manufacturing process? Do we see it well downstream in the manufacturing process? Where does it show up, and when did it start showing up?

So once you have that kind of information, data collection, data analysis are very important steps. Typically, there are all kinds of measurements made on products. Typically, there are raw materials that can be looked at, chemistry that can be looked at, the quality measurements that can be looked at. And those kinds of things-- looking at data, trending data, looking to see when things started, when things stopped, or what they align with-- is a very important piece of problem solving. The measure in DEMAIC really stands-- talks to that data collection pot.

I like to think that a very important part of problem solving is observing the process. You have to know enough about-- a problem solver really needs to know enough about how the products are made so that he or she can develop a theory about what's going on.

HOW DO YOU SOLVE PROBLEMS?

LEO GIBBONS: I guess it would be the plan-do-check-act cycle of problem solving where we plan out what we're going to do and we acknowledge we have a problem and something needs to be done. We decide, with the right group of people, what it is we're going to do.

And we implement the changes needed to correct the problem. And we check that we have corrected everything and that we're now in a good state and solved the problem. And we continue to act in the way that solved the problem, and we don't revert back to the equipment, the procedures that caused us to have a problem in the first place.

HOW DO YOU DIAGNOSE A PROBLEM?

JOHN WITKOWSKI: OK. When we have a situation that would happen on the floor, typically the first thing we do is we call a team of people together-- usually a subject matter expert in the area. And then really what I want to do is evaluate the data. You don't want to disturb things too much.

And one of the mistakes that people make right away is they think they know the solution, and they dive right in. That's one of the worst things you can do because you really need to control the variables and understand, if you're making a change, what the impact is. Some of the things that typically happen is people try to change four or five, and now you don't know which one made an impact and which one changed the situation. For really complex problems that we have, we'll organize a design of experiments. So we'll go in, do controlled variables and changes so we can know which ones are the real factors affecting the process and which ones aren't.

CAN YOU GIVE US AN EXAMPLE?

JOHN WITKOWSKI: We had a recent situation where we were producing product, and our customer called us up and said, "Hey, we've got moisture getting into the product." So we went through problem solving. First thing we started thinking was, well, potentially, that's the dryers. Maybe the dryers aren't functioning properly. And we went and brought a new dryer in, did a little drying upgrade, and we did that process, and then realized that, well, the condition's still existing.

So then we had to go a little bit deeper, and say, OK. Well, where else are the potential avenues for moisture to enter into the manufacturing process? One of the things we didn't realize was that it could be the corrugate boxes for shipping. So we typically double bagged the material

and put into a corrugate box, but that bag is not sealed. And because it's a medical device, you don't want to put things like desiccant and other stuff in the boxes.

So what we learned was, as the product would sit on the shelf, the outside environment, the corrugate would absorb moisture. And because the bags weren't double bagged-- or sealed, rather, the moisture was getting into the product. So now, we have a vacuum sealer, and we seal the product before we go in. So that was a pretty good example where what may have been obvious-- well, it must be the material because we use dryers because we have moisture there-- that wasn't it. And I credit the team with a lot of problem solving together as a group.

One of the things I really can't mention enough is team problem solving. A group of individuals is far smarter as a team working than one individual, and that's where all these solutions come from-- people getting together and throwing ideas out and working through it. That's powerful. So we do a lot of team-based approach to the work that we do.

HOW DID THE TEAM FIND THE ROOT CAUSE?

JOHN WITKOWSKI: Well, as the team was going through the problem solving, someone mentioned, well, what are the possible avenues that this could happen? So you kind of go through a process of elimination as they list things through. It's almost like a risk assessment, if you will. You go down, and you start laying down the possible causes of what could happen.

And then you go through the likelihood-- what's the likelihood that this could happen? What's the risk of recurrence that this could happen? And you put yourself through a methodical problem solving process, and then you start limiting yourself down to the critical few. And then the thought came, hey, let's check on this, and let's run a test. So then you go and do a test case where you put some product in the environment without being vacuum-sealed and you put some product in with it, and then you do a test afterwards. And that was the result.

WHICH IS YOUR FAVORITE TOOL?

JOHN WITKOWSKI: I kind of like doing a process map because, a lot of times, people think they know the process. And it's really surprising to them when you lay down and you start to realize, wow, there's a lot more steps in here than I thought.

And it's also critical when you're trying to do lean projects as well. Because when you lay all those steps out, you can start going through your mind. What are steps that I might be able to combine? What are steps that we might even be able to eliminate or improve?

And you really can't do that until you really know what the whole process is, and it's a very critical aspect as well to problem solving. Because again, people jump to conclusions, and it's like, nope. Process map tells you exactly what we're doing. Then you can know better how to solve those problems.