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Problem-Solving PDCA

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Albert Einstein has been attributed to having said, "We can't solve **problems** by using the same kind of thinking we used when we created them."

DEFINITION

Simply defined, a problem is a deviation from a standard. Failing to see the elements that are intrinsic to a problem can cause us to lose focus on how to solve the problem. For example, a common step to most people is to jump into a solution before analyzing what is really causing the problem. Another mistake is not identifying the standard or not understanding its deviation. Typical assumptions like these can cause the best-intentioned team to lose focus and get lost along the problem-solving effort.

WHY PROBLEM SOLVING IS SO IMPORTANT ALONG A LEAN TRANSFORMATION

When introducing and implementing Lean techniques, a set of challenges inevitably comes attached. For example, we cannot connect processes without hitting several problems; we cannot lower inventory levels without unveiling new problems each time we try.

   With so many new problems being created so fast, solving them in an effective way becomes vital to solidify the success of each step in the Lean journey. Adopting early a methodology that has been proven effective can avoid the frustration of the constant hitting or missing. In today's

competitive environment, the winner is whoever misses the least, and thus the need for a proven scientific method to solve problems.

I received one of those chain e-mails recently with the following methodology to find the root cause of a problem. The person who sent me that e-mail said: Here is a "scientific method" to problem solving. The e-mail read as follows:

> "FACT: England and the US have the highest rates of heart attacks
> The Japanese eat very little fat
> The French eat a lot of fat
> They suffer fewer heart attacks than the British or the Americans
> The Japanese drink very little red wine
> The Italians drink excessive amounts of red wine
> They suffer fewer heart attacks than the British or the Americans.
> CONCLUSION: The Root Cause of Heart Attacks
> Eat and drink what you like. It's **speaking English** that kills you."

Jokes aside, that e-mail made me pose two questions: First, how well are we using the problem-solving methods that are widely available and have been proven effective? Sometimes the impression is that we overlook the connections between the facts and always end up with the solution we had preconceived way before we started.

The second question: Why are we so afraid of problems? In many organizations I work with, they simply abolished the word "problem." This forbidden word has now officially been replaced by "opportunities." And shame on you if you still use the old-fashioned word "problem." This attitude tells me that people really have a great fear of problems.

My colleague Darril Wilburn always tells his class that "Problems are NOT opportunities. Problems are problems!" He explained to me that his Japanese Sensei (EVP Nate Furuta at TMMNA) used to say that to make sure people understood that there is a totally different sense of urgency and importance depending on which word you use.

I had to meditate more on that as I too became used to calling problems opportunities. It took me a while to get back to the original terminology.

Human nature has a tendency to disguise words so that they become appealing. It happened with words such as "used cars," which became "pre-owned" (same thing, more appealing); and if you put the word "certified" in front of it, it is almost better than new. In the corporate world, the "inspection" department became "quality control," then "quality assurance" department, and it is still changing.

Today, when I hear the word "opportunity," I always think of those people selling time-share resorts. Not only do they use the word "opportunity" every few minutes, but they also make it sound like there is a sense of urgency: If you do not buy it now, you will be forever frustrated; you will be the only loser around.

I think the point is exactly that with opportunities. It may even sound like there is a sense of urgency, but there is not. An opportunity—you can choose to take it or leave it. Thus, some people choose not to buy the time-share, regardless of how good the sales pitch was.

A problem, on the other hand, does not leave room for choice. You must solve it because if you don't, it will only grow bigger and more difficult to face. A problem does not leave you a choice of running away, no matter how bad the sales pitch was.

Do you really want to disguise your next problem? Are you that afraid of it?

Before switching gears, we still have to figure out why we are so afraid of problems (Figure 5.1).

Let's ponder: For one, the concept of problem itself tells us it is not a good thing. We always relate problems to very visible and negative consequences whenever there is one occurring: low morale, high pressure, time consumption, and so much more.

FIGURE 5.1

Another reason for the fear of problems is the frustration of having them come back constantly. Former Secretary of State John Dulles once said, "The measure of success is not whether you have a tough problem to deal with, but whether it is the same problem you had last year." In other words, what makes your mechanic good is not how many times he has fixed the same problem in your car. Perhaps by solving problems, we mean that the same problems will not come back the same way again.

So, if people are afraid of problems because they keep coming back, what would it be like if they could solve problems once and for all? Would people lose their fear and become problem seekers?

There are certainly other reasons why we are afraid of problems (some will stem from punishment from the boss, retaliation from customers, etc.); however, at least we can eliminate one of the reasons if we use an effective problem-solving method—one in which problems can be solved once and for all. One that ensures a thorough application of a key element called root cause analysis.

Of course, a good and proven scientific method to solve problems will prevent the same problem from happening again. But finding such a method among so many others available may sound like a daunting task.

WHAT IS PDCA?

PDCA is one of those methodologies that has been proven effective by world-class organizations. The letters stand for Plan-Do-Check-Act. Used correctly, it can ensure that you never have the same problem again. Used wrongly, however, and it may lead you to trying to banish the English language from the planet in the name of preventing heart attacks. For even a scientific method can be applied in the wrong way.

DO YOU REALLY NEED A METHOD?

We have been solving problems since we were babies. During this period, we solved problems such as hunger, pain, and tiredness just by adjusting our crying volume and frequency. We grew a little older and started playing with toys that stimulated trial and error; we had to pass geometric shapes

FIGURE 5.2

through holes that resembled a star, a hexagon, and a circle (Figure 5.2). A little later in life, we came across real problems at school, work, and in other situations. We may not realize it, but what we have been using to solve today's problems are the same techniques we learned in our early lives, namely, trial and error, forcing a result, and in a more adult version, crying at times. This is what inspires many of us to look for the best methodologies or techniques to solve a problem.

HOW AND WHERE TO FIND PROBLEMS

We tend to solve problems that are imposed on us via a crisis: the equipment broke, the material is defective, the delivery is late. Out of curiosity, what is really the proportion of problems that we need to solve right away against those that we can solve in a proactive mode?

At Toyota, many of its problems come from internally created crises. From corporate tops to local departmental supervisors, each level creates higher standards that they want to meet each year. To close the gap in all levels, smaller teams are formed to attack the problem. This methodology of continuously improving standards has been largely studied under the label of "Policy Deployment."

This approach allows, to a certain extent, proactivity within teams and establishes a culture of working ahead of the problems to prevent them

from becoming problems. So, it is natural to say that if you are bad at finding problems to solve, policy deployment will help you find several.

But never mind if you still do not have a Policy Deployment approach in practice at your organization. There are other ways to find problems, and an easy one is when you stop running away from them. When you stop neglecting them, you start seeing them as problems rather than as a time-share opportunity that you can pass if you do not want it.

THE MOSQUITOES CASE

When I was an intern at Toyota, based out of Honsha headquarters in Japan, I was assigned to work for a few years at the Overseas Planning Engineering Division. Our division had Toyota transferees from more than twenty countries, and many of us became quite good friends.

A vivid example from those days that my colleague Bunchai-san, from Toyota Thailand, shared was how they used PDCA to reduce the number of mosquitoes in the plant. Although this happened in late 1993, the structured method made such an impact on me that I still think of that example when tackling highly technical problems.

I use this example to point out how I solidified my PDCA understanding. I hope it has the same effect on you.

HOW WELL DO YOU UNDERSTAND THE PROBLEM?

Toyota Thailand, also known by the initials STM (Siam Toyota Manufacturing), is located in a country with a tropical climate, and mosquitoes are a common nuisance.

Through employee surveys, STM found out that 65% of the employees were complaining about the high incidence of mosquitoes in the factory (Figure 5.3). Compare that to the second-highest problem—noise in the factory—with a mere 24% of the complaints, or the third one—too much dust—at 8% of the complaints.

The first thing they did after realizing the magnitude of the dissatisfaction was to form a PDCA team comprised of people who could add to the

FIGURE 5.3

scope of control over the problem—the people related to employee relations, to environmental affairs, and to facilities. Although they did not enlist a mosquito expert to be part of the team, they invited such an expert for a small lecture and Q&A session.

They chose a fun name for the team: Doctor Smile.

They also investigated the point of cause.

GENCHI GENBUTSU: THE POINT OF CAUSE

In Japanese, Genchi Genbutsu roughly translates to "real place, real stuff." Only by going to where the problem is really happening can we thoroughly understand it.

Point of cause helps to understand the what, where, when, who, why, and how of the problem:

- Where mosquitoes would be more common (a few areas were more prone to mosquitoes than others).
- What types of mosquitoes were there, and which ones would bite (it turns out that only female mosquitoes bite).
- When the mosquitoes were more active (from July to November, the rainy months for that region).

- How they bred (that type of mosquito had a fast life cycle, where, in just a few days, an egg would become a mosquito and lived for just a few weeks).
- How they lived, entered the plant, bit employees, etc., etc. (the findings were too numerous and could fill this chapter).

The team even set up a sticky screen that would enable them to count how many mosquitoes were caught in each area and when. This screen proved essential to do a later checkpoint and compare the results of each of the countermeasures they were testing.

All these answers together directed everyone's attention to the right places. I learned that planning to solve a problem was a critical step. If they were not capable of counting mosquitoes, how would they know if their solution was helping the problem or making it worse? And if it was helping, by how much was it helping? Imagine them adopting some solution that was, in reality, not affecting the real problem. For how long would they keep that fictitious solution given the not-so-fictitious cost to keep them?

Sometimes, we get caught in the fast lane and do not plan how we will solve the problem. We end up shooting in all directions very fast, hoping that one of the bullets will hit the mark.

The point of cause, or Genchi Genbutsu, will determine how well your problem will be solved. Therefore should never be replaced with other artificial methods such as collecting information from your computer screen, reports, phone calls, hunches and guesses. You must go to the floor; there is no substitute for it.

HOW WELL CAN YOU STATE THE PROBLEM?

The planning phase continued. Because they took serious care as to how the problem would be stated, the problem statement kept everyone's efforts focused on the single problem.

A good image to remember is of a mountain that we must climb (Figure 5.4). But there is so much clutter, fog, and many obstacles that we are discouraged from taking on the journey. Now imagine that on top of it all, we cannot even distinguish what is the real mountain that we will climb.

A problem statement can be compared to a flag on top of the mountain, very clear and visible so that all of the members of the team will be clear as to where to go, joining forces instead of dividing and getting lost.
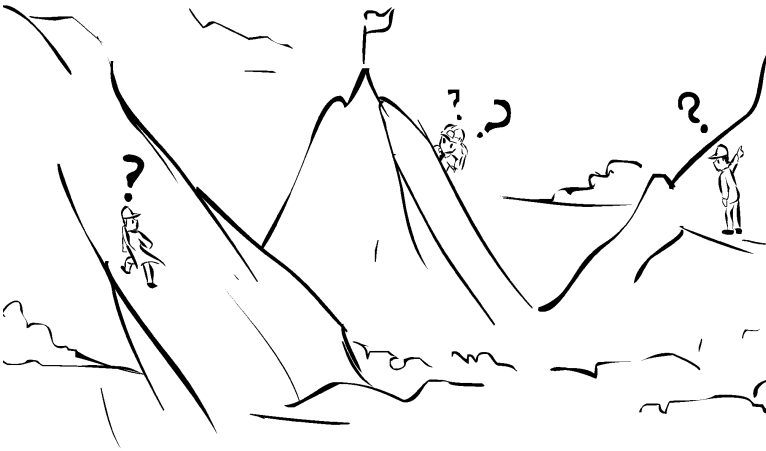
FIGURE 5.4

A problem must be stated clearly, accurately, concisely, and in such a way that it can be measured. Having met these criteria, the entire team will be able to attack the same problem, or in this analogy, climb the same mountain.

Another benefit to having a clear statement is that it removes clutter from the long path of solving a problem; on the other hand, a mountain path that is full of obstacles will discourage and distract people on the team.

An example of clutter that can harm this first step is when there is what I use to call "junk words" (I substantiate this concept in an experiment that I share in the following pages). Some well-intentioned problem solvers may get intimidated just by the amount of clutter (or complexity) that appears to be on that mountain. They also get discouraged and, therefore, disengaged in the problem.

I have seen problem statements that simply read "too many customers complaints. We need to pay more attention when we take the orders and deliver the products."

Let's review the issues with such a statement:

It is too broad a mountain to allow anyone to focus on what the issue really is. Remember that if the team cannot clearly see the mountain they have to climb, then they may be all climbing different mountains. And dividing people on the team in these early steps means dissolving the brainpower needed to pursue the one problem you want to solve.

Another typical aspect of this problem statement is that it thinks it is bringing the solution already. Interestingly enough, even good managers still think that problems can be solved by this magic command: "Pay more

attention." They have been trying that command for centuries; it has not worked well, but they just keep insisting on it.

One of the toughest aspects of following scientific methodologies to solve problems is that most of them require you to collect data and information to a great extent before you get into the solution phase. They forget that we are wired to always be a step ahead and ready to implement something fast. This is because we need a sense of accomplishment, and collecting data for hours on end does not give us that sense. Remember how successful that motto of Nike was? "Just do it." I think it would not be too successful if it said, "Just plan first."

Another aspect of that statement is the clutter that I mentioned earlier: The term "too many" is formed by junk words. Here is my take on junk words:

I did an experiment in my classes where students had to answer how much is an expensive car. The only thing I said was, "Luxury cars are just too expensive."

Answers varied from $35K to $150K. A factor of five times, huge variation especially considering it was a class of well-educated Lean practitioners from the same country and exposed to the same markets.

When hearing that sentence, nothing struck us as weird or odd. As a matter of fact, it is such a common communication pattern that I took that one straight from the headline of a leading newspaper that distributes almost two million copies.

Junk words can be identified by their effects on the statement. They add to the length but do not add to the value of the sentence. In the case of the car, we can eliminate the word "just" or "too," and chances are we still have the same variation in the answers. How about if we switch the word "expensive" to "cheap"? Will the variation still be there? (The answer in my experiment is yes). And note that we switched the word not with a synonym, but with something exactly the opposite. How about if we eliminated the word "luxury"? Would the answers change much?

The experiment indicated that for some people what can be a real bargain, such as a $35K luxury car, to others can be "just too expensive."

What would have happened if we had just eliminated everything that is not adding value to the sentence? Would we still have variation? (Again, yes and high.)

Does that not mean that we can eliminate three quarters of the sentence and still get the same flawed perception? Perhaps this is the reason our problem-solving meetings are taking sixty minutes while we could do them in only fifteen minutes. Perhaps this is the reason why problems are

difficult to solve; the thinking inside the head of each team member can vary by factors of several times.

We all have our own perceptions and that is not going away anytime soon as our perceptions come from personal experiences, expectations, education, values, gender, age, and the list goes on. Still, by being aware of that can help us improve the way we approach a problem. Eliminating such "junk" is crucial to bring everyone to the same mountain; it is like eliminating the obstacles on the way so they can all join the hike.

Being measurable in a problem statement can eliminate this variation in perception. On top of that, it will allow you, in the progress of solving a problem, to check against the initial condition to see whether or not you are closing the gap between the current and ideal situation. Finally, combining a measurable statement with all the data (exhaustively collected during our point-of-cause phase) will let you establish what a reasonable goal can be.

GOAL: A plan with a deadline. A common practice in solving problems is that goals are set by the "bosses" according to factors totally disconnected to the problem, such as quarterly numbers and other metrics for their managerial performance report. Rarely do we see goals being set by people who did diligent investigation of the problem. The farther away you are from the point of cause, the more unrealistic the goals tend to be. This may be the reason why Toyota lets teams that are actually hands-on solving the problem, establish their own goals. Naturally, those teams will know what is realistic after they have been through the Genchi Genbutsu exercise.

The goal statement always carries a strict deadline and consequently it keeps the team focused on the climbing of the mountain.

To me it still sounds weird to put the word "strict" together with the word "deadline" as I just did, but I use that redundancy on purpose. You will see why on the quick note about deadlines in a few pages.

HOW WELL DO I UNDERSTAND THE CAUSES?

The planning phase still remains crucial when you start pursuing the possible causes of the problem. A fairly simple method to dig deeper into the causes and get to the root cause is the Five Why's. By simply and continuously asking "Why?" to a cause, we can explore the causes down to their roots—the cause behind the cause.

Back to our example from Bunchai-san, his team first asked why people were complaining so much about mosquitoes. The obvious answer came from their trap device: there were too many mosquitoes inside the plant. But, why? The answer was because they bred too fast during the rainy season. But the team, knowing that this was a superficial cause, asked why they bred so fast. Among other logical answers, one was that there were too many breeding spots near the factory. A few more "whys" later, they identified the main breeding points as being some of the gutters as well as a small pond behind the building.

My colleague at STM mentioned the long ordeal, preparing to prove (or disprove) the root causes; after all, going after the wrong lead could end up being costly and useless.

Their PDCA mentality drove them to do small checking events after testing localized solutions. By temporarily deactivating some gutters, they evaluated the effectiveness of that countermeasure.

By checking the amount of mosquitoes close to the pond, they evaluated how much evidence there was that would prove this to be a real breeding site.

Another critical element in describing the problem and its causes lies in how we display the findings from the extensive data collection/Genchi Genbutsu. Contrary to traditional beliefs that a good report is a thick one, the PDCA method forces us to weigh in on the importance of each contributing factor to then decide what to leave out and what to make it part of the vital few indispensable pieces of data.

Something I really learned to appreciate was how effectively Toyota can communicate via charts, diagrams, and graphs; provided of course that you have good data, charts are a much faster and accurate means to convey information. They also help eliminate misinterpretation, which is so common when working in a diverse team. And their objectivity helps condense lengthy explanations of the data.

My colleagues from STM used Pareto charts to show the quantity of mosquitoes per area. The Pareto chart makes it easy to distinguish the areas that had more mosquitoes, thus helping them decide where to tackle first. They believed that by attacking 20% of the areas with more mosquitoes, they would be reducing by 80% the number of complaints. Their belief was derived from the Pareto law, which states that 20% of the causes are responsible for 80% of the problem. They also used trend charts showing when along the year mosquitoes would be more active. This gave them a clear indication as to the best time to test their countermeasures. It also helped them determine breathing cycles and elements that could

affect the incidence of mosquitoes in the factory, such as weather and factory conditions.

Another chart they had was called the cause-effect diagram, commonly known in Toyota as the Ishikawa diagram (probably because the person who popularized this diagram was Mr. Kaoru Ishikawa—not Mr. Fishbone as some might think). They used the Ishikawa diagram to plot the results from their extensive brainstorming session where they asked the five whys. Once neatly distributed across the diagram, it was easy to understand the probable root causes for the mosquito infestation. I learned that brainstorming for causes can only be effective if the people participating in it have been through their Genchi Genbutsu (yes, to the point of cause). How else can they contribute to the "whys" if they do not understand the what, when, where, how, and who? (Figure 5.5) Brainstorming for innovation and revolutionary ideas may benefit from the wild guesses of diverse contributors. But the same thing is not true when you want to collect probable causes of a problem. As a rule of thumb, if you want to participate in a 5 whys session, you must first perform a proper Genchi Genbutsu.

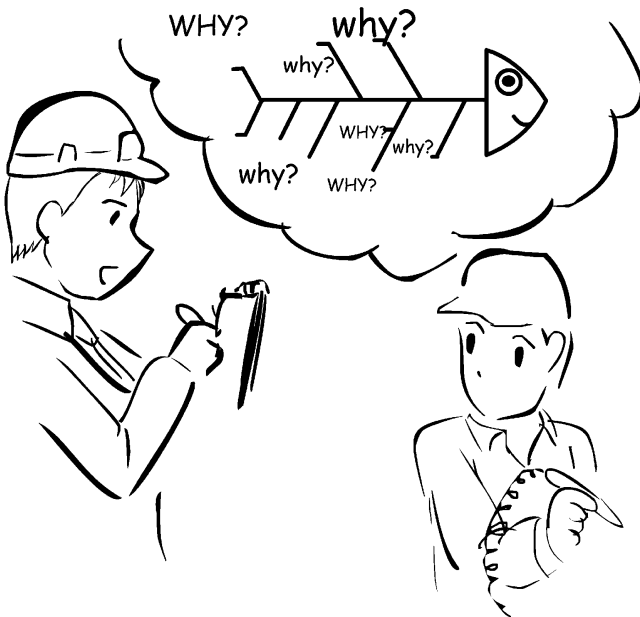Only after the extensive checking stage did they take the next step: Implementation, the "Do" part of PDCA.

FIGURE 5.5

Doing Well What Does Not Need to be Done

The "D" part of PDCA. Trystorming, the hands-on version of brainstorming.

Our human nature brings satisfaction when we see things getting done. It is that pursuit of a sense of accomplishment that many times supersedes the inquiries to check and evaluate if what we did had a positive and sustainable effect. As most brainstorming sessions, theirs generated several potential root causes and I guess this can be seen as the good news. The bad news was that there were several potential root causes. Yes, too many root causes can cause overwhelming workloads involving the selection, prioritization, proving and disproving them, etc.

In our story, they used a mini-PDCA method, testing out their root causes until they could prove or disprove each of them. Their proven root causes led to testing some countermeasures that included these three: (1) installing fly traps in the entrances to each of the buildings, (2) weekly application of an insecticide in certain spots, and the one I liked the most, (3) contemplated bringing fish and raising them in the pond behind the plant so they could eat the mosquito larvae before they hatched.

Each of their countermeasures was proven on a small scale prior to execution and next I use the three countermeasures I described above to show what I mean by small scale. I call it trystorming, which is trying quickly several countermeasures, almost as if you are in the middle of a storm.

Trystorming is the antidote when team members are already exhausted from meticulous and thorough brainstorming and they are borderline becoming too comfortable in their chairs. I think there is some truth to the adage "analysis paralysis," in that after some time sitting, thinking, and talking, we become paralyzed by the inertia and our bodies are numbed up like zombies at the end of a long movie.

That is why, back in our example, their trystorming occurred quickly with several trials at the same time. Needless to say, they took good care not to cross-contaminate their results with the results from parallel experiments. The way they used the trystorming concept on those countermeasures I cited included them installing one fly trap first, and checking results before they bought several more for all buildings. The next one, they checked the effectiveness of different brands of insecticide and applied them in different corners of the plant to see how they worked before they made it a weekly practice. The final one, they checked if the fish would really eat that type of larva and survive that type of water before they bought and released 200 fish in the pond.

It becomes clear that the implementation phase must be done in a way such that it constantly checks for the effects of what is being implemented. Imagine what it would be like bringing hundreds of fish to the pond all at once, only to later find out they could not survive that new condition. Chances are that dead fish would attract even more mosquitoes and other insects.

This careful process of planning, testing, and checking for results before standardizing a solution is exactly like having mini-PDCAs within a PDCA.

PROJECT MANAGEMENT

Once the team had a consensus on what had to be done, they distributed those countermeasures among themselves and each responsible team member established his or her own timeline, always observing the deadline in the goal statement.

Although each team member is responsible for implementing and checking the effectiveness of their own countermeasures, once they are all implemented, they collectively check the results against the goal.

In this case, the goal was not to reduce the number of mosquitoes—or mosquito bites for that matter; It was just to reduce the number of complaints from workers by August 1994. And that, they did!

A QUICK NOTE ON DEADLINES

When a team commits their goal to a deadline, it should mean that they would do whatever it takes to keep to what they committed to. I hear frequently a variation of that term as the "drop dead date."

It is funny to me to see so often people misusing the term "deadline." Sometimes they even use the term "strict deadline," as if there was another type. They commit to one but when it is the due date, they justify their missing the date and propose a new "deadline." But is a deadline not something definite? Finite? Does it not imply an end to it? As many other things that are about to die, you can do whatever it takes to prevent it from dying but once they are dead, they are dead. You mourn the loss, you learn from it, but normally you do not resuscitate a dead pet, person, or line. I mean, a line for some reason is often resuscitated in many organizations
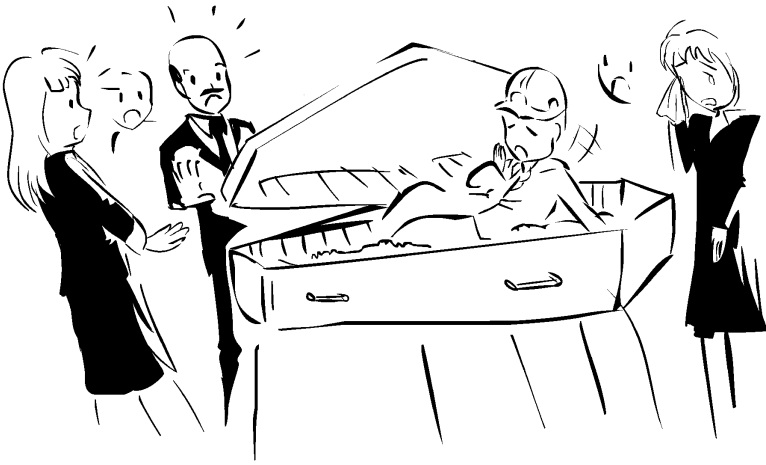
FIGURE 5.6

out there. I wonder if people do not respect deadlines just because they know they can keep postponing them. Should that date then not be called "faintline"? If you cannot make it, you can still keep coming up with new dates; after all, that date is not really dead, it just passed out for a while (Figure 5.6). What would it be like if we all started calling those dates what they really are, faintlines? When they are to be seriously respected, then we can call them deadlines. No need to distinguish deadlines as "strict" and "flexible."

Continuing with our case, their after-PDCA survey showed a drop from sixty-five to twenty-one complaints in the same time period. Quite an impressive number, judging by the fact that this had been a problem plaguing that site for so many years.

STANDARDIZATION

One thing that still fascinates me in every Toyota site I visit is their level of standardization. I see that as one of the keys to Toyota's success.

STM used standardization in several ways to ensure maximum return on their PDCA as well as to pave the way for the continuous improvement cycle.

For example, to make sure that the insecticide countermeasure would be consistently applied, they created a chart showing where to apply and with what frequency, depending on the time of year. To make sure the fly

traps never lost their effectiveness, they had a calendar reminder showing when and who should be emptying and cleaning the trap. In addition to that, there was a standardized instruction sheet showing how to clean and hang the trap.

Also, to maximize their gains, they presented their PDCA to the neighboring plants: an electronics manufacturer, an engine plant, a consumer goods plant, etc.

I am not sure how much further they could have driven down the number of mosquitoes, but it is reasonable to expect more positive effects for STM and for the entire region once the other companies implemented Toyota's solutions.

The standardization is the "A" part of PDCA, and we can only standardize what has been validated along the implementation-check phase (or "DC" part of PDCA). Standardizing without checking for effectiveness is a mistake that, if ignored, can perpetuate bad practices for a long time.

RECOGNITION

Rewards and recognition is a two-word term that I rarely heard being used together in Toyota. Perhaps this is because they perceive these words as not being related to each other, or perhaps because they think rewards reach the intellect and recognition the soul (I heard that one from my first Toyota Senseis, Mr. Sakuta, in 1986; he is no longer with us but his teachings impacted several lives in our production engineering division). What I noticed about rewards is that there is a huge difference between monetary rewards at Toyota and that of other big companies. While most companies reward employees with enticing monetary prizes, sometimes proportional to the amount of money they saved, in Toyota the rewards could many times be less than a fraction of the huge savings. Often, the rewards would even be the same for a $1000 savings and for something twice or three times as much.

It seems that what they would consider more was the effort, the teamwork, the correct use of concepts such as standardization and Yokoten (which is explained next).

The result of this was a reward amount that seemed just symbolic compared with other companies. With that, they created a culture where money (or reward) is no longer the major goal in improvement efforts.

Now on to the recognition aspect. In a highly standardized environment, it is easy to identify changes; no matter how small they are, they stand out. Add to that the culture of Genchi Genbutsu where leadership is on the floor frequently, and they can observe those improvements within the day, if not in real-time.

This combination of improvement visibility with the constant presence of leadership on the floor allows for prompt and frequent recognition from the manager to the person executing the improvement.

Immediate recognition methods vary from public praise all the way down to positive coaching where the operator is asked why she did it the way she did it, what kind of waste she thought she was eliminating, how she would ensure that the improvement stays in place, etc.

At least from my own experience with my Sensei, the Socratic coaching was more common than the praises. Very early in my career, I had to learn to be prepared for the series of questions my Sensei would challenge me with, and the best way to be prepared was to anticipate the questions and have the answers built into the improvement I was implementing. So instead of letting him ask me how I would ensure consistency in that new process, I would have already created a standardized document for him to see. Instead of waiting for him to challenge me with the "whys," I had already prepared the "becauses." Sometimes I wonder if they perpetuated this practice to create a culture of thinkers, because it really does increase the sense of preparedness in the workforce.

It is interesting to me that well-schooled managers sometimes fail to understand that if they do not recognize the efforts of their people, their people will fail to understand what is important to the manager and consequently to the company. Culture is only reached when values are shared, and how in the world will the masses share the same values of the company if their leadership does not recognize what is valuable? By the same token, praise is often mistaken as the only means of recognition, and managers do that often to motivate their people. The key mistake is that they miss great opportunities to develop their people through good coaching.

A HIGHER LEVEL OF RECOGNITION

In addition to instant and constant recognition, Toyota also excels in the higher levels of recognition, the other end of the spectrum.

One of the ultimate ways to recognize a good PDCA project, such as the mosquito one, is to bring them to Toyota Headquarters in Toyota City. Every year, Toyota sponsors the annual Kaizen and PDCA convention, where only the best PDCAs from each plant around the world is presented before the highest executives in the company.

Those ten minutes of fame are so coveted that teams go beyond their regular functions to win a ticket to present their projects. I frequently have seen teams meeting on weekends at someone's house, or taking evening classes to better understand the details of their projects. I am not sure the team at STM took classes, but I know they found an insect expert and got a few learning sessions from him.

This annual event in Toyota City has been happening at a global level since 1986, and I think it was easy to understand why it became such a desired event to attend.

Right when you enter the Toyota Hall where the event takes place, you can see the amount of planning and importance they put into this single day. You can see the signs and distribution materials exclusively prepared for the convention, the staff impeccably rehearsed to make this a flawless event, the agenda detailed down to the minute of each presentation. By the way, STM's presentation was scheduled to start precisely at 10:23 a.m. and finish at 10:39 a.m., including a time for comments from Toyota execs and hand-off. The commemorative photo was planned from 4:08 p.m. to 4:13 p.m.

Everyone knew that that day would not bring in more business to Toyota, nor would it increase its sales or benefit the bottom line. In reality, it is a day devoted solely to recognition. Toyota could easily save a lot of money by not bringing so many people from all over the world and tying up so many executives for the entire day just to listen to what had been done, for something they had already capitalized on.

The constant coaching leading to that one day of recognition was a clear demonstration of how much Toyota cared about the development of its collaborators.

Now, make no mistake, STM did not get to that ultimate recognition point without a lengthy process of instant recognition sessions. For several months and iterations, the team probably had to hear constant questions such as: What did you do to prevent mosquitoes from coming back? How will you spread this learning to other companies and also to other Toyota plants? Needless to say, Senseis do not expect verbal answers but, rather, concrete displays that all challenges have been satisfied.

This solid demonstration of value and care can be summarized as genuine recognition and not just as a "feel-good" event.

YOKOTEN: SPREADING THE LEARNING LATERALLY

Very common to companies that are bigger, we see the same processes done differently depending on the person, department, site, etc. The bigger the company, the more different ways of doing the same thing. One of the smallest companies I worked with had only fifteen employees. It was a surfing school in San Diego where, in addition to the owners, everyone else was a surfing instructor. After a day of learning their procedures, I came to realize that all the instructors did exactly the same thing, just in different ways. They had fifteen different ways of conducting the warm-up exercises, of teaching the hand signs, of covering the land lesson, of coaching students in the water, of repairing a board, of… you name it; in all cases, there was no reason why they needed do it in different ways. They just did not know any better. But a reasonable assumption is that among those fifteen ways of conducting a class, there would be an optimum one, perhaps combining the warm-up from an instructor with the coaching from the other and at the end, you would have the standardized module with the best timing, customer satisfaction, cost, quality, etc.

Worthy of pointing out, even in a micro-sized, single-site business, there are difficulties in adopting a standard procedure. Now imagine scaling up that size a few thousand times.

A company as large as Toyota, with full plants located all over the world has a much more intimidating challenge. To capitalize on the efforts of one improvement in the welding of a bracket for the Corolla in Turkey, they would need to report that to all plants that use the same process and produce the same vehicle.

The same thinking goes for the PDCA on mosquitoes. Once STM's PDCA had concluded (which means tested and validated), STM sent its report in A3 format (approximately our 11×17 paper size) to Toyota headquarters in an overseas department that could identify what other locations could benefit from such an initiative. Also, those neighboring plants that received STM's A3 were also part of the Yokoten activity. Sharing the learning was done on at least two levels, wherein STM independently

helped local companies and also at the corporate level where Toyota would help them spread the word to other sister plants.

Yokoten is key in implying a faster speed in Lean transformation. The efforts invested in the sharing of best practices in a Yokoten fashion will pale in comparison to the benefits from the accelerated learning.

WHAT IS NEXT?

When referring to PDCA, we always do so as if it was a cycle, something that never ends. So it would be natural to think that we should do another PDCA on the mosquitoes so we lower the complaint to a better level.

Because the metric chosen was not number of mosquitoes, but the number of complaints, in this case the complaints about mosquitoes became second to complaints about noise level.

The PDCA cycle continues, and it is still attacking the same metrics: Complaints.

The major cause for complaints has now become the noise level, at twenty-four complaints. Time to start the cycle all over again.

Well, that is how I learned the essence of PDCA. Thanks for letting me share this with you, and I hope you learned something new too.