CHANGES THAT RESULT IN IMPROVEMENT

Most people at one time or another have thought about trying to do something better. It might be at home or at work, in recreation or business, for friends or customers. Thinking about doing something better is often easy; actually making a change usually is not. What is the best way to approach trying to make a change that results in improvement?

Principles of Improvement

Fundamental to the success of any improvement effort is the understanding that improvement requires that change occur. Unfortunately, not all changes result in improvement. It is this focus on change and an understanding of basic principles of improvement that leads to efficient and effective improvement efforts. In this chapter, we explore these two basic areas:

- What is a change? More specifically, what is a change that will result in improvement?
- What are the fundamental principles of improvement?

What is a change that results in improvement? Is fixing a burnt-out light bulb a change? Is fixing a flat tire a change? Yes, of course these are changes, but they are

not the type of change that leads to improvement beyond what has been seen before. These types of changes simply reset things back to where they were. A broader definition of a change that results in improvement is needed. Think of a situation you have experienced recently where improvement occurred. Were you able to recognize the change that led to the improvement? Could you describe it? Could you "see" what was different? How did you know the change resulted in improvement?

What is meant by the term *improvement*? Improvement has meaning only in terms of observation based on given criteria. In other words, improvement is a useful concept when it is defined by characteristics such as faster, easier, more efficient, more effective, less expensive, safer, cleaner, and so on. Sometimes it is enough to observe the impact of a change on these characteristics, but usually it is best to document the impact (collect data).

Because the concepts of improvement and change are tied together so strongly, it is more useful to define them together. Fundamental changes that result in improvement:

- Alter how work or activity is done or the makeup of a product
- Produce visible, positive differences in results relative to historical norms
- Have a lasting impact

An example of an improvement effort helps explore these concepts and the fundamental principles for successful improvement.

CanDew Cleaning Services, a company devoted to cleaning homes and small businesses, was started by two sisters six years ago. In that time, the company has grown from the two of them cleaning eight to twelve houses per week to an organization with four "crews" of workers cleaning approximately sixty houses and fifteen small business offices per week. Six months ago, just after bringing on their third and fourth crews, the sisters began to hear complaints from customers. In addition, two of their long-term customers stopped using their service. When they looked into the complaints, they found a number of problems, but poor cleaning of restrooms seemed to be a repeating issue.

The first two central principles of improvement are (1) knowing why you need to improve and (2) having a way to get feedback to let you know if improvement is happening. The first is sometimes referred to as the aim or purpose of the improvement effort. The improvement aim of CanDew Cleaning Services was clear; they first needed to make changes to how their crews were cleaning the restrooms to deal with customer complaints. Unfortunately, their only feedback loop was from customer complaints. Waiting to hear about quality problems from your customers will typically cost you customers.

The sisters turned their attention to developing specific changes that would address customer issues and produce better results. They knew, from customer complaints, there were problems with the cleaning of restrooms. However, they did not have enough information to know the origin of the perceived problems. The sisters decided to select one cleaning job from each of the four crews to inspect and photograph the restrooms. What they saw surprised them. Despite the initial training they had given to all of the crews, the cleaning of restrooms varied from crew to crew in significant ways (variation in order of steps or tasks, different supplies, level of completeness, and so on). The photographs allowed them to "see" the resulting differences in outcomes.

The sisters realized that their knowledge of the apparent quality problems was based solely on customer complaints. They needed a better way to see the quality their services were delivering. By picking a small sample of restrooms to observe, they were able to add to their knowledge about the quality problems. They saw specific areas where changes were needed.

Now that they had some feedback, the sisters were faced with the critical question: What changes could they make that would result in improvement? Of course, they had some ideas, such as getting all the crews to use the same, effective cleaning process and to use the same cleaning supplies. However, because they did not know why that was not already happening, they chose to have a meeting on the following Friday, at the end of the work day, with the four crews to discuss ideas for changes. More surprises were in store for them at the meeting. They found out that their original training of the crews had left many of the workers unclear about the work—for example, which cleaning materials to use on which surfaces or the order of the cleaning steps. They found that one crew had purchased some cheaper cleaning supplies to save money.

One crew member asked for a checklist for the cleaning steps, with all the steps in the "standard" order. This struck the sisters as a specific idea that they could develop and test very quickly. After the meeting, the sisters drafted a list of specific steps for cleaning a restroom, on the basis of their experience and knowledge.

The third central principle of improvement is (3) developing a change that you think will result in improvement. The sisters used the meeting with the four crews to generate ideas. The ideas for change have to be specific enough so they can be described and planned for.

Having a specific idea for a change is not enough. The change must actually be made and sustained. However, as was said at the beginning of this chapter, not all changes result in improvement. There is a tendency in all of us to jump

straight from an idea for change (for improvement) directly to implementation. This is normally not a good approach. In fact, it can be said that for most changes going directly to implementation (that is, making the change permanent) without first testing the change idea in some way usually leads to making things worse.

The fourth central principle of improvement is (4) testing a change before any attempts to implement. Testing is a way to find out if the change is really a good idea or not. Testing, if done well, offers a way to learn about the impact of the change without risking uncalled-for damage to the system. Can you imagine the types of damage that might occur to their business if the sisters simply decided that everyone would start using checklists for everything starting on Monday? Here are a few questions they might learn the answers to by testing:

- Will the use of checklists lead to better-quality cleaning?
- For which operations do we need checklists?
- How detailed should checklists be?
- Will the use of checklists slow down the cleaning work?

Through testing you can learn about aspects of the change, so when you are ready to implement, the change is understood well enough to be implemented correctly and sustained. The first step to test a change is to *plan the test.* Planning should include the who, where, when, what, and how of the test and should include the collection of information during the test to let you know what happened.

> The sisters needed a plan for testing the use of the checklist. They decided to keep the test very small and use only one crew for one day. The plan included using the last half hour of the day for a review of the test results with the crew. They created the test checklist so that it fit on one piece of paper, with a place to write the time (hour and minute) each step was started and stopped. To begin the actual test, on Monday morning they met with the crew to explain the form and how to use it. Questions arose during the Monday morning meeting about the specifics of some of the steps in the checklist. They gave some guidance during the meeting, but they also noted the questions so they could deal with them more thoroughly later (and with all the crews). Several workers thought the checklist would slow them down. The sisters reminded the workers that data concerning time would be collected on the checklists.

The second step of testing a change is to actually *run the test.* This, of course, means putting the plan into action. A key to successfully running a test is to be ready to learn from the unexpected results of the test, as well as the planned ones.

> On Monday evening, they met with the test crew as planned. The workers shared this information:

The checklist form was hard to use in a number of ways:

- Got wet from being placed on damp counter.
- Took too long to fill out, with all of the times that had to be entered.
- Hard to write on some surfaces (for example, tile).
- Had to stop several times to find a writing utensil.
- Several steps did not apply to the specific job (for example, steps for cleaning a shower or bathtub did not apply to the one business job they had that day).

It helped to have the list; nothing was forgotten and rework due to wrong order was eliminated (for example, cleaning the counter top before the mirror resulted in cleaning liquid being spilled on the counter while the mirror was being cleaned, which meant the counter had to be wiped down a second time)

Two customers were impressed by the use of the checklist form

The third step of testing a change is to take time after the test to review and *summarize what was learned.* In this way, the actions that follow the test (especially the implementation of the change) will be based on knowledge maximized from the test.

The sisters talked about the meeting Monday evening and summarized things they had learned about the use of a checklist:

- The workers would need a better way to handle the checklist, to keep it dry and protected.
- A writing utensil and the checklist had to become inseparable.
- It did not make sense to collect the beginning and ending time for every step.
- The checklist needed more instructions to make it more self-explanatory during use.

The fourth step of testing a change is to decide *what action is warranted,* on the basis of the learning from the test. The action might be to implement the change, it might be to refine the change and test again, or it might be to abandon this particular change and look for others. In this case, the sisters decide to refine the checklist and the process for using it, and to test the refined checklist. The next few paragraphs describe their experiences through their second test of the use of the checklist (all four steps for testing a change are employed: planning, running the test, summarizing what the test taught them, and then deciding on the next action).

The sisters were pleased with the knowledge they gained from the test of the checklist, but they were concerned that there were too many problems during

the test to begin using it with all jobs. They decided to refine the form and test it again. The changes they chose to test were to:

- Give every crew a clipboard for the checklist with a pen attached
- Group the steps into sections, so that only the beginning and ending times for each section were required
- Use simple checkboxes for all the steps (instead of beginning and ending times)
- Include some instructions in the form about skipping certain steps if they did not apply (such as no shower or bathtub)

They decided to test the new form on Wednesday with all four crews. Again, they had an early morning meeting to explain the use of the checklist and hand out the clipboards and forms. Many people at the meeting thought the use of the checklist would cause the cleaning to take more time, but most agreed it would be useful. Crews were scheduled so that they could meet for thirty minutes at the end of the day.

At the Wednesday evening meeting, this is what they learned:

- The crew who had used the earlier checklist on Monday said that the new system (clipboard and pen attached) and checklist form were better than what they had used on Monday.
- Again, several customers were impressed with the checklist.
- Contrary to predictions, the crews felt the restroom cleaning actually took less time using the checklist than when they did not use the form.
- Workers suggested several refinements to the checklist (clarifying two steps and adding one new step).
- The sisters were surprised by the positive attitude and reaction of their crews to the use of the checklist. They decided to implement this change for all cleaning jobs. Also they realized they should expand this idea to other cleaning areas.

The fifth central principle of improvement is (5) implementing a change. Implementation is different in that the questions being asked and hopefully answered during implementation are no longer about the goodness or appropriateness of the change, but rather about how to make the change permanent. The biggest risk with implementation is that the change will not stick.

To implement the checklist, they:

1. Edited the form to incorporate the suggestions made by the workers in the Wednesday evening meeting.
2. Had the checklist form polished up by a friend who is a technical editor and good with computers.

3. Had a supply of the checklists printed up (and purchased some backup clipboards).
4. Had a formal kickoff meeting the following Monday morning, where the final checklist form was explained and discussed. The process for using and filling out the checklist, as well as the sisters' plans for using the data from the checklists (times and items not checked), were presented.
5. Added a discussion of the use of and results from the checklists to their weekly Friday meeting with all crews.
6. Developed a short training program for new employees on the use of the checklist.

The implementation of the use of the checklist went well until a problem arose three weeks later. Three customers called and complained about the cleaning at their homes. The complaints were all from jobs done by the same crew. In fact, this crew had been considered the most reliable! On investigation, it turned out one of the crew members (the most experienced worker from all the crews) was sick that day. When the sisters asked about the use of the checklist, it turns out the crew had not really adopted the use of it but rather had relied on the knowledge of the experienced worker.

The sisters learned that making changes resulting in improvement is not a mechanical process. People are involved, and therefore people's motivations for improvement have to be considered. As part of testing and implementing a change, the reason for the improvement effort should be made clear to everyone involved. People need an opportunity to participate in the development and testing of the changes. After implementation, activities are needed to prevent the change from lapsing.

The sisters met with the crew having the experienced worker and talked about the importance of maintaining a standard of service that could be followed no matter who was working with whom. They also explained that they had larger plans for the checklists, whereby the checklists would become the pricing and bidding tool for new work, and that they would need this worker's help in testing these new ideas. The experienced worker was excited about this opportunity and assured the sisters that his crew would be using the checklists from now on.

Once people get a taste of successful improvement, they want more. It can be exhilarating to consciously and purposefully change something toward a particular aim. This is a good thing. The only danger is that the improvement effort may outgrow the original aim and feedback loops. Revisiting the aim and feedback loops may result in expanding them (as we will see, the sisters did this for the scope

of improvement they wanted), or it may result in abandoning the specifics of one aim and creating a brand new one.

The sisters decided they needed to focus their attention on a more general approach to improving their company's services. To begin with, they formulated an aim for the improvement effort. They hoped that this would ensure consistency and communicate their intentions to their employees and customers. Here is the original statement of their improvement aim:

"In order to become the best cleaning service, CanDew Cleaning Services will continuously work to improve their services. We will do this by working to match our cleaning services to the needs of our customers. Our focus will be on cleanliness and reliability. We want our customers to know that they can rely on our services."

They went on to state several goals:

- "Our customers will be satisfied with the cleanliness of their house or business when we finish a job, and
- We will arrive on time and
- We will finish on time."

To support their improvement efforts, they started regularly collecting data from their customers. After each job, the customer was given a short survey to fill out. The survey was put on a self-stamped postcard, which the customer could easily put into the mail.

The Survey Postcard:

Date: _____ Location:_____

Did the cleaning crew arrive on time?

Were the floors and surfaces cleaned to your satisfaction?

Were the restrooms cleaned to a sanitary level?

Were your things left in an appropriate way (where you wanted them, in good condition, etc.)?

Did the crew communicate with you about any issues that needed discussion?

Was the job done on time?

The sisters went on to adopt quality improvement as a theme for their company. It was clear to all their employees and to all of their customers that change was a constant focus, but that the change always had a specific aim: improved quality of their cleaning services.

What if the sisters want to expand their services to include basic household repairs and handyman work? What if they want to add twenty new crews in two cities? Clearly they will need to adopt a more formal approach to their improvement efforts. Later in this book, we present methods that furnish this structure and formality, as needed. For example, there is a chapter each on the topics of testing a change, implementing a change, and spreading a change.

This chapter introduced principles of improvement that have been shown to maximize the results of improvement efforts:

Document an aim for your improvement effort, one that is clear enough to guide the effort over unknown territory and yet grand enough to excite the participants.

Make sure you have (or create) a feedback loop that can let you know if the improvement effort is actually moving results toward your aim.

Develop a change that you have reason to believe will result in improvement. The change has to be specific enough so that tests of the change can be conducted quickly.

Test the change(s) before you implement. Testing a change has four parts:

- Plan the test
- Run the test
- Summarize the learning from the test
- Take action that is based on the learning from the test

Implement the change(s).

In most business-related improvement efforts, there is a need to use a common framework for the improvement work. A common approach promotes increased effectiveness and efficiency in both the impact of the changes and the learning (for the individuals and the organization). The framework, called the Model for Improvement, imparts a structure for the five principles of improvement presented in this chapter.

The Model for Improvement

The Model for Improvement is made up of a set of fundamental questions that drive all improvement and the Plan-Do-Study-Act (PDSA) Cycle. Although the term *PDSA Cycle* may be familiar to many people, it is, unfortunately, widely misunderstood

FIGURE 1.1. THE MODEL FOR IMPROVEMENT.
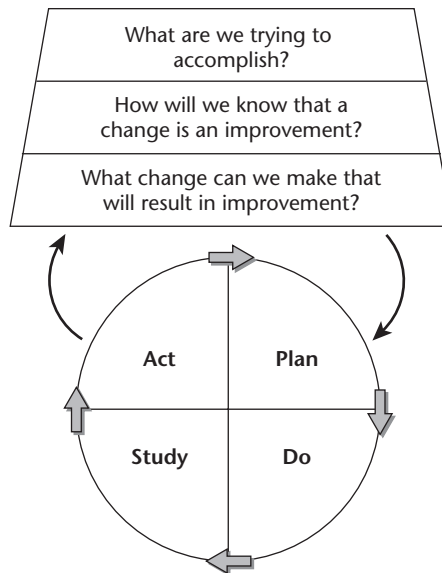
and misused. In Part Two of this book, the misconceptions and appropriate use are addressed. Combined, the three questions and the PDSA Cycle are the framework called the Model for Improvement (see Figure 1.1).

The three fundamental questions, the answers to which form the basis of improvement, are:

- What are we trying to accomplish?
- How will we know that a change is an improvement?
- What changes can we make that will result in improvement?

These three questions parallel the first three principles of improvement introduced in this chapter. For ease of reference, the three questions will at times be referred to as the first, second, and third improvement questions. In practice, the questions can be answered in any order. Although the chapters in Part Two focus on using these questions to guide improvement efforts, it is worth pointing out that many people have also found these questions useful in performing their day-to-day work. For example, managers often give their employees assignments that are not clearly defined. The manager assumes that the employee understands the aim and the expected results. Giving or receiving assignments by supplying answers or partial answers to the three questions would improve managerial processes.

To help people develop tests and implement changes, we suggest the use of the PDSA (Plan, Do, Study, Act) Cycle as the framework for an efficient trial-and-learning

methodology. The cycle begins with a plan and ends with action according to the learning gained from the Plan, Do, and Study phases of the cycle. As demonstrated by the improvement work of the CanDew Cleaning Service, multiple PDSA cycles are often needed to make successful changes.

The use of the word *study* in the third phase of the cycle emphasizes that the purpose of this phase is to build new knowledge. It is not enough to determine that a change resulted in improvement during a particular test. As you build your knowledge, you will need to predict whether a change will result in improvement under the diverse conditions you will face in the future.

The model is an improvement framework, both widely applicable and easy to learn and use. As an introduction to a framework for improvement, the Model for Improvement has been found to support improvement efforts in the full range from the very informal (for example, the sisters working together to improve their cleaning business) to the most complex (introduction of a new product line or service for a major organization). Efforts may differ with the complexity of the product or process to be improved, in terms of whether the effort is focused on a new design or on a redesign, on the basis of the depth of knowledge possessed by those people closest to the process or product, or because of the number of people involved in the improvement effort.

To support these potential differences in improvement efforts, applying the Model for Improvement will vary in terms of the formality of the approach. A more formal approach might increase the amount of documentation of the process, the complexity of the tools used, the amount of time spent, the extent of measurement, the degree of group interaction, and so on. Part Two of this book (specifically Chapters Five through Nine) discusses how the application of the model can accommodate these diverse activities.

Key Points from Chapter One

- Improvement comes from the application of knowledge.
- These are the five fundamental principles of improvement:
  1. Knowing why you need to improve
  2. Having a feedback mechanism to tell you if the improvement is happening
  3. Developing an effective change that will result in improvement
  4. Testing a change before attempting to implement
  5. Knowing when and how to make the change permanent (implement the change)
- The Model for Improvement is a framework for applying the five fundamental principles of improvement.