Empowerment in Organizations

Supporting empowerment with Deming's PDSA cycle

Barbara A. Cleary

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The author

Barbara A. Cleary is Corporate Vice-president, PQ Systems Inc., Dayton, Ohio, USA.

Abstract

The theory, process, and tools that are known collectively as "total quality management" offer ways in which empowerment of employees can support an organization's efforts not only in quality improvement, but in empowerment as well. Its approach places the responsibility for an organization's processes in the hands of those who know those processes best, and helps them to participate directly in the organization's mission or purpose. In particular, the plan-do-study-act cycle lies at the heart of the improvement process and represents the key to employee empowerment in that process. Using the case study of a telephone callback system and concrete examples representing applications in health care, education, and manufacturing, demonstrates how the PDSA cycle builds teams' confidence in their ability to solve problems and bring about improvement, concomitantly enhancing pride in work and empowerment in the organization.

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If one were suddenly to transfer the immense power of an eight-cylinder automobile engine to the drive train without the use of intermediate steps and appropriate gear ratios, the result would be not only inefficient but ultimately destructive. Empowerment – literally, transferring power to others in the organization – is replete with the same risks that transferring any kind of power poses. To work smoothly, it must be accompanied by appropriate planning, support, and processes.

The theory, process, and tools that are known collectively as "total quality management" offer ways in which empowerment of employees can support an organization's efforts not only in quality improvement, but in empowerment as well. Its approach places the responsibility for an organization's processes in the hands of those who know those processes best, and helps them to participate directly in the organization's mission or purpose. In particular, the plan-do-study-act cycle lies at the heart of the improvement process and represents the key to employee empowerment in that process.

Improvement = empowerment

An individual's ultimate involvement in an organization is represented in a genuine desire to improve the products and services of that organization to the benefit of all. In traditional, hierarchically-organized companies, it has been only top managers that have worried about such improvement. What has become increasingly clear, however, as a result of the influence of W. Edwards Deming and other quality theorists, is that it is those who are closest to an organization's processes who are in the best position to improve them. A machine operator can provide valuable insight about the efficiency of his or her process or about the usefulness of a particular machine. When that operator is empowered to use statistical and problem-solving tools in that effort, the results can be dramatic. Training in these methods thus represents important support to the empowerment process.

It is neither the tools nor the improvement cycle alone, however, that can bring about change. These must be grounded in an understanding of systems, appreciation for variation and its implications, a commitment to teamwork, and an understanding of customers, both

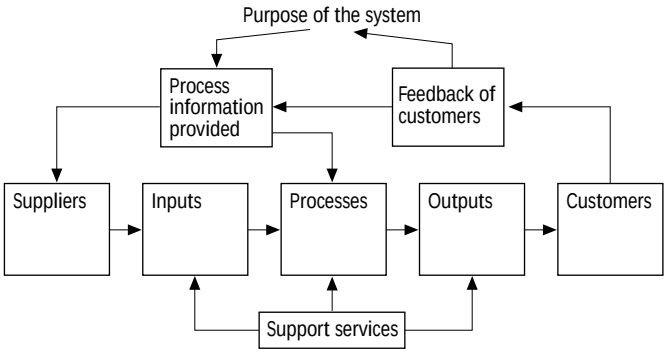
internal and external. What has become known as "total quality management" includes these and other elements of organizational design and commitment and, before introducing the improvement cycle as a key to empowerment of employees in an organization, it will be useful to review Deming's illustration of a system. When people can identify the systems within which they work and understand their organizations as systems, they will have enhanced pride in their contributions to those systems and their roles within the organization. It is this sense of pride and ownership that characterizes what has become known as "empowerment".

In the classic description of a system posited by Deming in his landmark discussion of quality, *Out of the Crisis*[1], a key link in the loop that assures ongoing improvement to systems is that of the customer. Whether a system is seen as the organization in its entirety or simply a "subsystem" which makes up that organization, the same structure applies. Figure 1 demonstrates the relationships that comprise a system. From suppliers, inputs, and internal processes, to outputs, the arrows point in the same direction – toward the customer. A customer of a system may be internal (when one is considering a subsystem within an organization) or external (the traditional customer who uses the services or products of the organization). In any case, "customer" refers to one who derives benefit from a system.

Feedback from the customer to the system is necessary if the purpose of the system is to be carried out, for that purpose is closely tied to the needs and expectations of the customer. When customers' needs are no longer being met by a system, that system will have no purpose (or its purpose will need to be redefined). Those needs are, after all, dynamic; customer expectations tend to define needs, so, as expectations are met, perceptions about needs will actually change. An example is found in transportation, a basic need for most people. A century ago, that need may have been met with horse-drawn carriages but, when the automobile became a fact of everyday life, the horses were put to pasture, since customers' expectations had rendered motorized transportation a "need". Likewise, after air travel had become routine, customers would balk if they were suddenly asked to meet their basic need for transportation only with automobile travel or by horse-drawn vehicles. Rapid and convenient air travel raised the expectations of customers, so that their transportation needs, especially over long distances, could be met satisfactorily only by air travel.

Everyone who is part of an organization must be in touch with the needs of that organization's customers. When employees have an understanding of those customers, they are empowered in previously unimaginable ways. Rescuing a young child who had been trapped in a well in Texas several years ago required a highly specialized piece of equipment that was not available locally but had to be shipped from a distance. Because of the urgency of the requirement, a dispatcher for the shipping company bypassed many of the permissions ordinarily

Figure 1 A system



Source: [1, p. 4]

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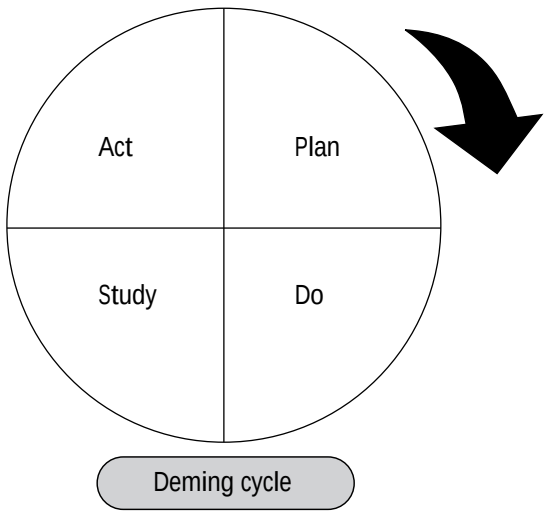
required to arrange for such a shipment. When he was asked if he had felt diffident about violating some of the company's procedural rules in expediting the shipment this way, he replied with confidence that he had not been. "My company understands that a customer's needs are more important than individual policies, and it supports my ability to make such a decision." This represented genuine empowerment: the employee was acting for the company as if it were his own company, because he clearly understood the needs of the customer and was apparently accustomed to identifying those needs.

PDSA: step-by-step improvement

Deming's plan-do-study-act (PDSA) cycle, also known as the Shewhart cycle after statistician Walter Shewhart, is illustrated in Figure 2. The cycle has been broken down further, into the seven-step process outlined originally by Kume[2] and variations of that process, such as that utilized in the total quality transformation system[3]. Regardless of the precise steps in the process, it is the structure of the improvement cycle itself that enables team members to address problems with confidence. Outcomes of the process include not only improvement of these problems, then, but a simultaneous enhancement of the individual employee's ownership of the organization's processes.

Figure 2 Plan-do-study-act cycle



The emphasis of the cycle is on careful, step-by-step improvement based on data collection and analysis. Reflecting the scientific method, a theory of improvement lies at the heart of the process. That is, after enough data have been collected to understand and describe a process as it exists, a theory is formulated by a project team to begin to address a particular aspect of that process. That theory is tested with appropriate action and observation, and ultimately it is standardized (if it has brought about improvement) or modified (if it has not). It represents a cycle because, regardless of how well the specific improvement may work, the improvement process calls for continuous monitoring and study to bring about even greater improvement. Every member of the team, which may represent all levels of the organization, participates at every step of the way, using problem-solving and team skills appropriate to that step.

In one case, the PDSA cycle was used to bring about improvement in telephone response time in an organization which relies on a telephone "hot line" to provide technical support for its software products. At each step of the process, team members – employees who are involved in or affected by the system under scrutiny – are responsible for the system's improvement. In traditional, hierarchically-arranged organizations, on the other hand, the pattern of improvement is based on determining who can be blamed for inadequacies in the system. A great deal of energy often goes into assessing fault energy that can be used in a team setting to bring about actual change in the system itself. Deming argues that nearly 90 percent of all problems are due to faulty performance of systems, rather than faulty performance of people.

Case study: telephone team

In an effort to improve its response time for customer support calls, an inbound telephone inquiry team was formed at an Ohio software and training organization. The team was made up of analysts who respond to support calls, a representative of sales, and a member of the software development team. For a more complete discussion of the project see[4].

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As the team defined the system as it was currently operating, it found that, while customer support calls were answered immediately, the analyst who could best help a customer might be out of the office or engaged in helping another customer. In these cases, that analyst would call the customer back when he or she was free to do so. Data demonstrated that those who were to be called back had to wait an average of 50 minutes to receive a follow-up call. No customer complaints had been registered. But the team felt it could do better.

As the team pursued its project, it created a visual record of progress by means of an improvement project communication board, which documented each step of the process. For "define the system", for example, it displayed a flow chart which illustrated all the steps involved in the telephone callback process. The communication board was displayed prominently in the company training room and, when the plan was completed, the team shared its story with everyone in the organization at one of the company's daily morning meetings.

The technical support group responds by telephone. Its customers call on a toll-free customer support line. If all support analysts are busy, the incoming calls "spill over" into the customer sales area, where a representative takes the information and promises to have a technical support analyst return the call if immediate assistance cannot be provided (some questions can be answered by nearly anyone in the organization, based on their training about the company's product line). Harking back to the days when such telephone messages were delivered by means of notes that were speared on an old-fashioned mail spike, these calls are still referred to as "spiked" calls, even though they are now delivered via E-mail.

The improvement team wanted to address the average length of time that a customer must wait for a call to be returned or a problem to be resolved by a technical-support team member. The goal was to improve the service to customers by reducing the time required for call completion – to reduce the customer's time "on the spike". All members of the inbound telephone inquiry team were committed to improving that service, and to working together to do so. This commitment represents an important point of departure from traditional "improvement" methods, where the process might be to track the same data and then to discover which of the analysts had demonstrated the worst performance record, so that the problem could be laid at his feet, rather than seen as a system problem. The subtle difference in the total quality approach is one of teamwork and systems perspective, empowering the team members to solve the problem and improve the system rather than assessing blame.

After composing an improvement theory, the team tested that theory. In the process of analyzing the data and formulating improvement theories, the team had discovered a second area, involving root causes which were much more far-reaching. It began the second stage of analysis by forming an additional improvement team and collecting data related to these problems, thus widening the improvement effect far beyond what had appeared as the initial problem to be addressed. In the meantime, spike times were reduced significantly after studying the process and making recommendations about addressing calls to be returned. The time between leaving a message and receiving a return call was reduced by an average of 36 percent for customers. Measurement took place by recording the times and using control charts for analysis.

The team's experience demonstrates the ways in which continuous improvement is achieved. Seeing that solving one problem can often uncover others – or even create others – the team saw itself prepared to continue looking at causes even after an initial "solution" had been generated.

For the technical support team in this organization, "spiked" calls represent only 12 percent of the customer calls; in other words, 88 percent of incoming calls with requests for help from the technical support line are addressed immediately by the appropriate person. Thus the improvement team was not responding to complaints about response time, or to perceptions of a "problem" in technical support. After all, in many organizations, 88 percent would be considered "sufficient". But the team was seeking ways to improve an already-acceptable system in order to surprise and delight its customers.

The improvement which ensued in the process – reducing the average callback time

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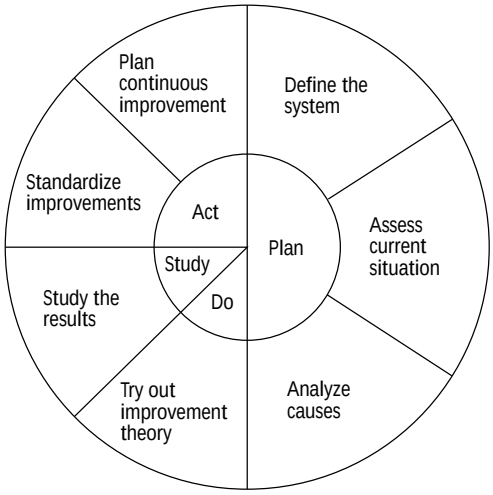
from 50 minutes to 32 minutes – was the result of a step-by-step plan for improvement, involving the collection of data and analysis of that data. The savings that were generated by the improvement effort are among those that Deming refers to as "unknown and unknowable".

In this example, team members recognized that, although their customers were not complaining about response time (and thus it could not be considered to be a problem, in some people's opinion), they could nonetheless improve the system and thereby delight their customers. Each of the seven steps of the improvement process demands the use of specific tools – flow charts, cause-and-effect diagrams, Pareto analysis, etc. Team members cooperate with one another not only in improving the system, but also in gathering data and recording the steps of their process on an improvement project communication board. Every stage of the project is visible to team members and to anyone with whom the team wishes to communicate its progress.

Figure 3 Seven-step improvement process



Other applications

The seven-step improvement process (Figure 3) applies to any organization and its systems, from manufacturing to government and education to various other service organizations. In a hospital, for example, the use of PDSA and the seven-step approach to improvement brought about a reduction of waste of supplies that were provided to patients, and an improved tracking system for such supplies. Summarizing the steps to this improvement, they included:

- *Defining the system:* The tracking system for patients' supplies.
- *Assessing the current situation:* Using flow charting, the team traced the way in which the system was actually working when they began the improvement process (not the way team members thought it should operate, but what they actually saw happening). A deployment flow chart illustrated the steps in this system and the division of responsibilities for each of these steps.
- *Analyzing causes:* What emerged from the team's analysis of causes for supplies that were used but not tracked or billed was a cause-and-effect diagram illustrating these causes and breaking them down with respect to people, equipment, environment, measurement, materials, and methods. A root cause seemed to lie in the fact that patients were often admitted when a unit secretary was not on duty, and therefore supply usages were not correctly attributed.
- *Trying out an improvement theory:* After discussing the implications of data that had been collected and analyzed, the team formulated its theory: if charge cards were assigned to patients at the point of admission, tracking and charging of supplies would improve.
- *Studying the results:* Putting the theory into place demanded continued data collection and analysis. Control charts and other tools reflected ways in which the supply tracking was affected by the change in the system which the team had made.
- *Standardizing the improvement:* Data suggested that the improvement theory seemed to be correct and the change in the system brought about improvement; therefore, the team took steps to make the changes standard practice.
- *Planning continuous improvement:* No improvement process is ever "finished", since systems can always be improved even further. The hospital team continued to gather data which led to its next improvement project related to supply usage.

Other examples of teams utilizing the seven-step improvement process and the PDSA cycle

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include those which addressed the following processes:

- tracking errors in an invoice system;
- analyzing and reducing the number of defects on an automobile radiator grill;
- standardizing groove depth in an O-ring manufacturing process;
- improving response time in crisis intervention;
- changing the labeling system in a food-processing operation;
- reducing the number of classroom interruptions for message delivery in a school;
- improving accuracy of prescription deliveries to patients from a hospital pharmacy;
- reducing delays in a preventive maintenance system in a manufacturing facility;
- analyzing types of merchandise returns by customers in a retail furniture store.

It is clear from this list and others that many improvements in organizations can best be made by those who are closest to processes that are amenable to improvement. In an organization which emphasizes hierarchical arrangement of processes and individual accountability for errors in the system, the ensuing atmosphere of fear would preclude teams from improving these processes. It seems clear that it is only with appropriate empowerment of employees that organizations can improve. The improvement itself is usually the focus for teams and the organizations that support them. Improvements can be measured and savings can be realized from them. In many of the examples cited here, teams were credited with saving significant dollar amounts with their improvement projects.

The concomitant benefit that accrues when employees are empowered to analyze their own processes and improve them is less easily measured, for it entails enhanced morale, pride in work, and commitment to the organization. While they are not easily measured, these benefits may have even more significant impacts on organizations and their ultimate success than any individual or collective improvement could hope to have.

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