

Evolution of the PDCA Cycle

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Summary

The PDCA cycle had its origin with Dr. W. Edwards Deming's lecture in Japan in 1950. Where did he get these ideas and how have these ideas evolved since those lectures?

This presentation will move from the 1600's with Galileo and the philosophy of science through the evolution of the scientific method and the science of improvement. Walter Shewhart in 1939 applied the scientific method with his cycle: specification-production-inspection. W. Edwards Deming in 1950 modified the Shewhart cycle: design of the product, make it, put it on the market, test it through market research, then redesign the product."

The Japanese interpretation of the "Deming wheel" in Dr. Deming's lectures of 1950 and 1951 lead to the plan-do-check-action or PDCA cycle. This cycle was integral to the Japanese QC, TQC, and QC circle activities. Deming introduced his Shewhart cycle for learning and improvement in the USA in 1986. Dr. Deming introduced a more abbreviated PDSA cycle in 1993.

In 1994, the PDSA cycle was accompanied by three questions to aid in the planning step of the PDSA Cycle. In 1996 and 2009 publications, the PDSA cycle was broadened to include strategies and methods to develop, test, and implement changes that would result in improvement. This version was called the "Model for Improvement." As an introduction to a framework for improvement, the model for improvement has been found to support improvement efforts in a full range from the very informal to the most complex.

Keywords

Scientific Method, W. Edwards Deming, PDCA, PDSA, Model for Improvement

1. Introduction to the Scientific Method (1600-1900)

When did the science of improvement begin? Juran [1] states that the origin of handicraft industries and their quality control in China's history can be traced back from the 16th century B.C. Galileo is often credited with being the father of modern science and the first person to begin the development of the scientific methodⁱ. Other authors give the credit to Aristotle for the beginning of the method. Recently, Steffens [2] has credited Ibn al-Haytham (965-1040) as being the first scientist. Morgan [3] has also described the contributions of Ibn al-Haytham and the use of empiricism and learning through testing at around 1020:

...The core lessons of his writings is that science must be based on empirical methods. As far as we know, Ibn al-Haytham is the first scholar to absolutely apply this principle of empiricism without mercy. While the Greeks had understood