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# CQI Learning Lunch

## The PDSA (**Plan Do Study Act**) Cycle - *The Heartbeat of Organizational Performance*

**Host - Dennis Sergent**  
**517-381-5330**

**March 10th, 2011**  
**10:30 AM to 1:00 PM**

*University Club of Michigan State*  
*3435 Forest Road, Lansing, MI 48909*  
*517-353-5111*

## Deming's System of Profound Knowledge (SoPK)

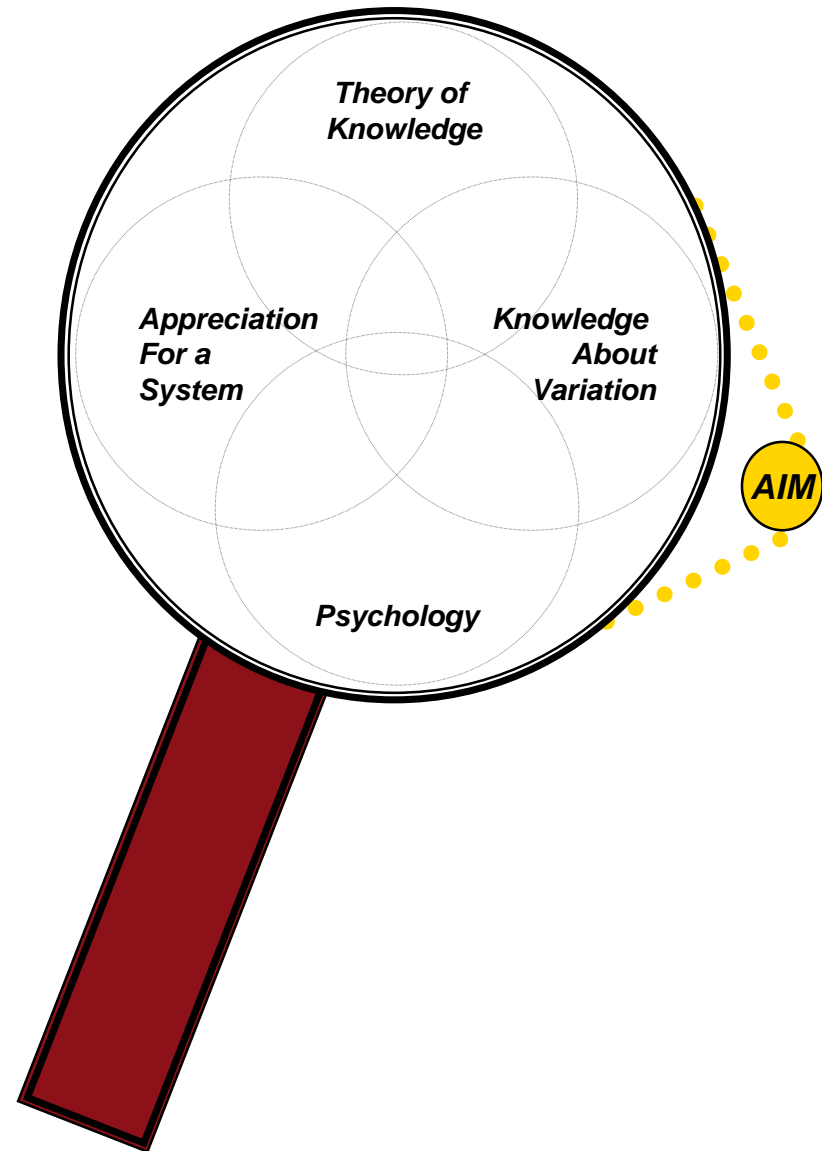
“The aim . . . is to provide an outside view - a lens . . . provides a map of theory by which to understand the organizations that we work in”

### Components of The Whole

- **Theory of Knowledge**  
Knowledge is built on theory
- **Appreciation for a System**  
A system is a network of interdependent components that work together to accomplish the aim of the system
- **Knowledge About Variation**  
There will always be variation.....
- **Psychology**  
Individuals  
Groups  
Society  
Change

“One need not be eminent in any part of profound knowledge in order to understand and to apply it”

“The various segments of the system . . . Cannot be separated. They interact with each other. For example knowledge about psychology is incomplete without knowledge of variation.”



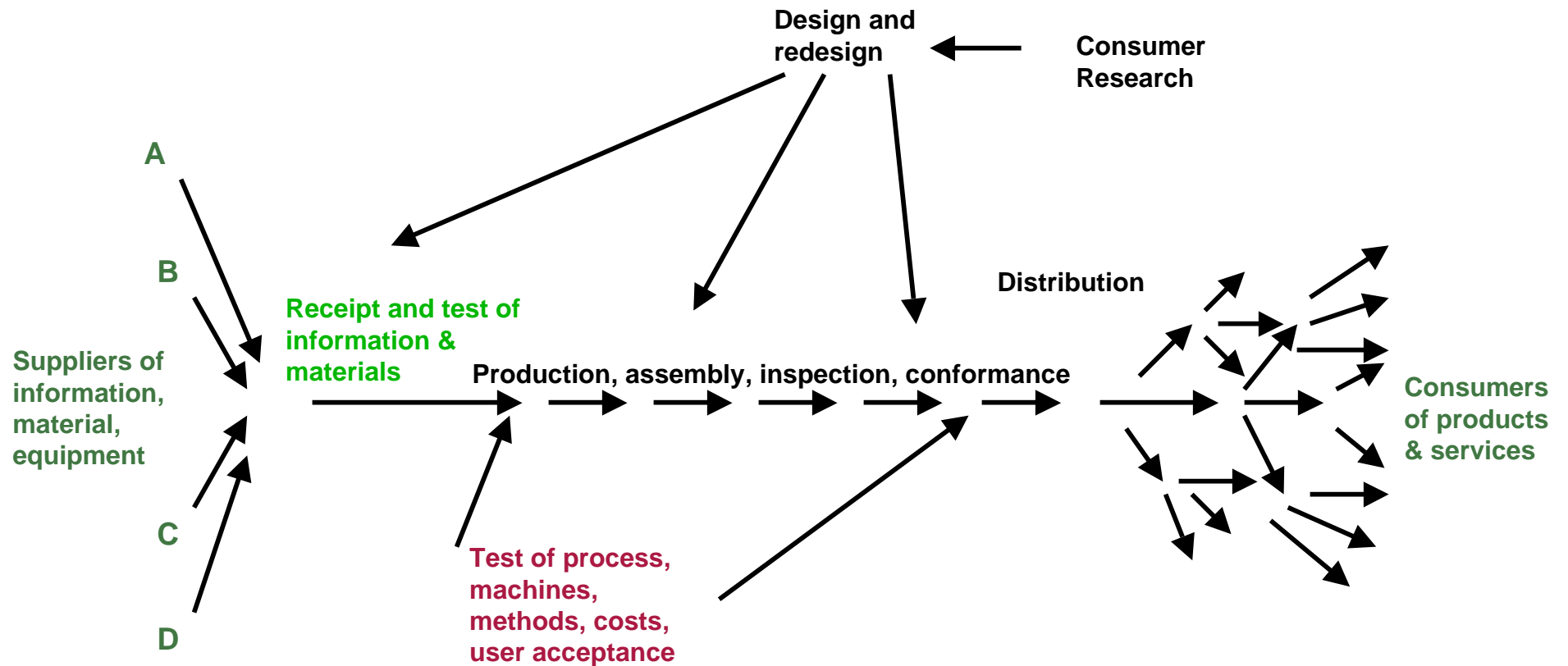


# Deming's System of Profound Knowledge - Components

## TIMELINE of PROFOUND KNOWLEDGE - IMPORTANT COMPONENTS

| 1900s                                    | 1910s | 1920s  | 1930s  | 1940s   | 1950s  | 1960s   | 1970s   | 1980s   | 1990s                                      | 2000s   |
|--|-------|--|--|---|--|---|---|---|--|---|
| <b>KNOWLEDGE</b>                         |       |  |  |   |  |   |   |   |  |   |
| Realism of Pragmatism, John Dewey - 1905 |       | Mind & The World Order, C.I. Lewis - 1929                          | How We Think, John Dewey - 1933  |   |  | Experiential Learning Theory, Carl Rogers - 1969    | Double Loop Learning in Organizations, Chris Argyris - 1974 |   |  | Descriptive & Normative Learning Models, Carlile & Christensen - 2005 |
|  |       |  |  |   |  |   | Adult Learning Theory, Malcolm Knowles - 1975               |   |  |   |
| <b>PSYCHOLOGY</b>                        |       |  |  |   |  |   |   |   |  |   |
|  |       | Lewin's Equation, Kurt Lewin - 1920                                | Anthropological Theories Applied to Business, Edward Tolman - 1932           |   | Organizational Development, D. McGregor - 1950                 | Human Side of Enterprise, D. McGregor - 1960        | Relationship Awareness Theory, Elias Porter - 1971          |   |  |   |
|  |       | Participation Management, Mary Parker Follett - 1925               |  |   | Socio-Technical System, Eric Trist, Tavistock Institute - 1951 | Maslow's Hierarchy of Needs, A. Maslow - 1962       | Attribution Error, Lee Ross - 1977                          |   |  |   |
|  |       | Hawthorne Experiments, Elton Mayo - 1927                           |  |   |  | Motivation Theory, Herzberg - 1968                  |   |   |  |   |
| <b>SYSTEMS</b>                           |       |  |  |   |  |   |   |   |  |   |
|  |       | Scientific Management, F. Taylor, Frank & Lillian Gilbreth - 1920s |  | General Systems Theory, Ludwig von Bertalanffy - 1949             | Holistic Management, Stafford Beer - 1959                      | Principles of Systems, Jay Forrester - 1968         |   | Creating The Corporate Future, Russ Ackoff - 1981 | Theory of Constraints, Eli Goldratt - 1990 |   |
|  |       |  |  |   |  |   |   | The Goal, Eli Goldratt - 1984                     | Fifth Discipline, Peter Senge - 1990       |   |
|  |       |  |  |   |  |   |   | Open Systems, Fred Emery                          |  |   |
| <b>VARIATION</b>                         |       |  |  |   |  |   |   |   |  |   |
|  |       | Shewhart Control Chart, W. Shewhart 1924                           | Economic Control of Quality of Manufactured Product, W. Shewhart - 1931      | Use of Statistical Methods to Support The War Effort 1941 to 1945 |  | Enumerative vs. Analytic Studies, W. E. Deming 1960 |   |   |  |   |
|  |       | Design of Experiments, Sir Ronald Fisher - 1925                    | Statistical Method From the Viewpoint of Quality Control, W. Shewhart - 1939 |   |  |   |   |   |  |   |
|  |       |  | Sampling Methods Developed, H. F. Dodge                                      |   |  |   |   |   |  |   |

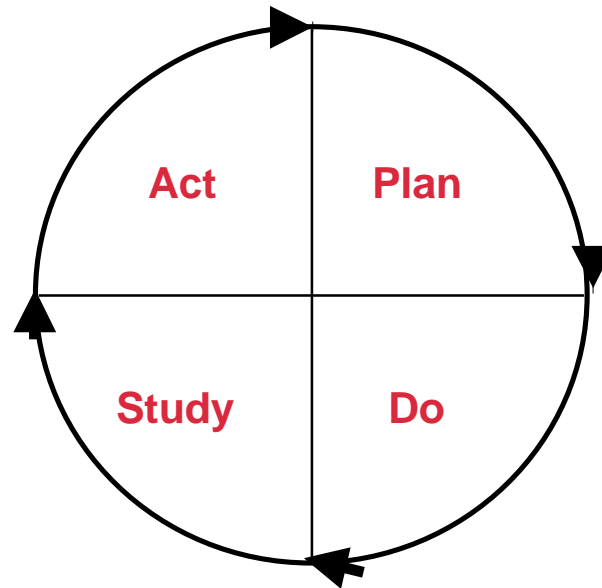
# Deming's System Model



# P-D-S-A Cycle (Deming)

We **PLAN** what we want to accomplish over a period of time and what we will do to get there.

We **DO** something that furthers the strategies and goals developed in our plan.



We **STUDY (Check)** the results of our actions to make sure we achieve what we plan.

We **ACT** by developing procedures to ensure our plans continue to be successful and by changing what is needed to achieve the initial goals.

# Ian Bradbury's Presentation

## Shewart described “statistical control” as

- A concept of a statistical state
- An operation or technique to obtain uniformity
- A judgement

## Ishikawa described “control” as

- Plan
- Do
- See

## Management is prediction (Deming)

- Rational prediction requires theory
- Builds knowledge through systematic revision and extension of theory
- Requires comparison of prediction with observations

## Learning is not explicit in PDCA Cycle

- Presumed to be, but not
- Every plan involves prediction

## Knowledge must satisfy two conditions

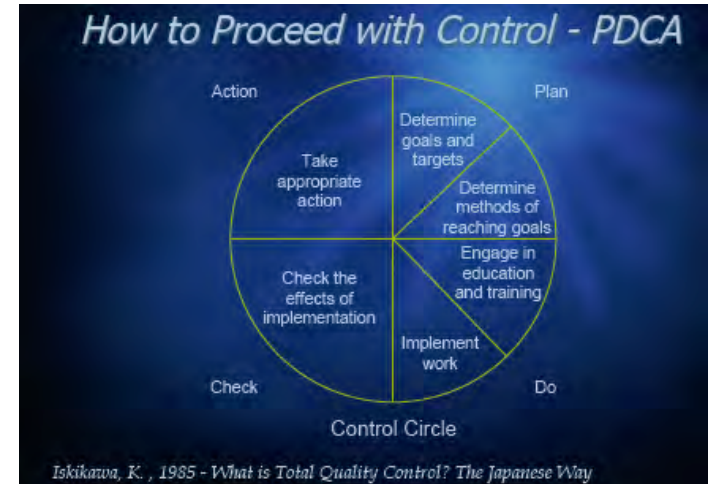
- Explanation of past experience, not contradicted by another past experience
- Predicts future outcomes which may contradict the previous explanation

## Rational prediction qualifies

- Leading to the PDSA Cycle, which Deming viewed as different than PDCA
- Some call the “Deming Cycle” in error
- Doctor Deming viewed PDCA as a “corruption”
- Developed PDSA as “The Shewhart Cycle for Learning and Improvement” in 1989

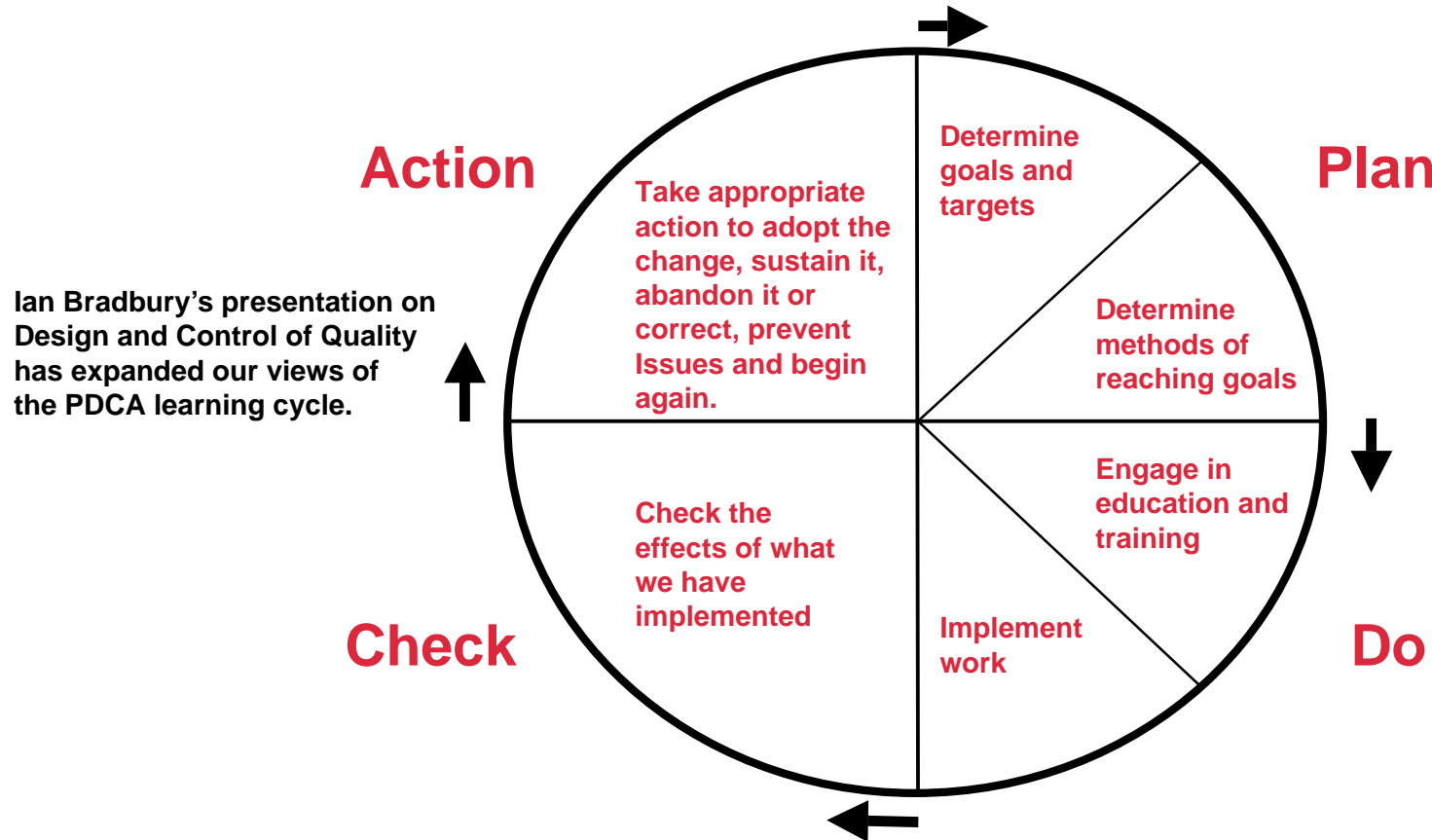
## Results contrary to prediction & expectations

- Cause us to revise the theory or learn!



# P-D-C-A - Proceed With Control

We **PLAN** what we want to accomplish over a period of time and what we will do to get there.  
We **DO** something that furthers the strategies and goals developed in our plan.



We **CHECK (Study)** the results of our actions to make sure we achieve what we plan.  
We **ACT** by developing procedures to ensure our plans continue to be successful and by changing what is needed to achieve the initial goals.

# Other Models

## Worksheet Model (at right)

- Andrew, Hooper, Pavlik Model

## Heartbeat Model



## Corkscrew Pasta Model



## Your Ideas?

| Plan - Do - Check - Act (PDCA)                      |   |
|---|---|
| <b>PLAN</b><br><small>Hypothesis/Prediction</small> | <p><b>Purpose:</b> <i>State what we are trying to improve.</i></p> <p><b>Key Measures:</b><br/><i>List how we will know there is improvement.</i></p> <p><b>Flow chart</b> – Purpose is to be able to see what the <u>current</u> process looks like from start to finish.<br/><i>Steps in performing</i></p> <ol style="list-style-type: none"> <li>1. Define start and finish points for the current process to be examined.</li> <li>2. Describe the current process. From starting point, chart the entire process through to the finish. Including every step.</li> <li>3. Build the flow chart and <u>Attach</u></li> </ol> <p>5 Whys</p> <p>What changes may cause Improvement and plan for collection:</p> <p style="text-align: center;"><b>What-Who-When-Where</b></p> <p>Results of Flowchart and Cause and Effect diagram should be used to predict what changes may cause improvement and plan a test and plan for collection of data – <b>What</b> is to be done, <b>Who</b> is to do it, <b>When</b> is should be done, <b>Where</b> it is to be done.</p> |
|   | <p><b>Root Cause Analysis</b></p> <p><b>Cause and Effect Diagram (AKA Fishbone Diagram)</b> – Purpose is to examine the relationship between a given outcome and the factors influencing that outcome:</p> <ol style="list-style-type: none"> <li>1. Specify the problem to analyze</li> <li>2. Create a list of possible causes of the problem</li> <li>3. List the major categories of factors influencing the effect.</li> <li>4. Place the list of ideas under the major category headers.</li> <li>5. Identify factors and sub factors</li> <li>6. Read the Results</li> </ol>   |
| <b>DO</b><br><small>Experiment</small>              | <p><b>Carry Out the Change or Test –</b><br/><i>The key activity for this step is the implementation of the defined plan for the process change.</i></p> <p><b>Collect Data and Begin Analysis –</b><br/><i>Take periodic measurements of the process change as implementation progresses to ensure the changes are improving the process rather than creating new problems</i></p> <p><b>Gemba:</b> <i>The place where value is created; in manufacturing the gemba is the factory floor. The gemba walk, much like Management by Walking Around, takes management to the front lines to look for opportunities for improvement.</i></p>   |
| <b>CHECK</b><br><small>Analyze data</small>         | <p><b>Data and Analysis:</b> <i>Check the Effect of the change. The purpose of this data is to measure the effect the change has had on the issue. This is done by comparing data taken after the change to the previously collected baseline data. This data should be the same type as that collected in the collect Data Step.</i></p> <p><b>Summarize What was learned:</b><br/><i>The effect of the implemented change must be compared to the Aim statement to determine whether success has been achieved.</i></p>   |
| <small>4<br/>P<br/>P</small>                        | <b>Was desired improvement achieved?</b>  |



# More Resources

- ***Design & Control of Quality*** - by Ian Bradbury (PDF)
  - [The CQI plans to have Ian Bradbury present more detail on this at a future CQI Breakfast!](#)
- ***The New Economics, 2nd Edition*** - by W. Edwards Deming
- ***Out of the Crisis*** - by W. Edwards Deming
- ***Some Theory of Sampling*** - by W. Edwards Deming
- ***Kaizen: The Key to Japan's Competitive Success*** - by Masaaki Imai
- ***Orchestrating Learning with Quality*** - by David P. Langford & Barbara A. Cleary, Ph.D.
- ***Statistical Method from the Viewpoint of Quality Control*** - by Walter A. Shewhart
- ***What is Total Quality Control? The Japanese Way*** - by Kaoru Ishikawa



# Lunch!

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- **Let's collect our lunch!**
- **Room will be secure**
- **Staff will take your drink orders**
- **While you dine, discuss this**
- **Make sure everyone is heard from**
- **Be prepared to share your answers to the following questions!**



# TABLE DISCUSSIONS

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## AT YOUR TABLE DISCUSS:

- **WHAT ARE OUR NEXT ACTION STEPS?**
  - **What did I learn here?**
  - **What do we need to discuss next?**
  - **Who else should be here?**
  - **What will we do with this learning?**
  - **When do we meet again?**

# Future Agenda

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## Future Discussions = 3 Weeks + 1 Weekday

- April 1st, 2011 = Quality Tools & Processes (Beth Lienhart)
- April 25th, 2011 = Discussing The Un-Discussable (Robin Cleveland)
- May 17th, 2011 = System of Profound Knowledge
- June 8th, 2011 = Overcoming Roadblocks
- June 30th, 2011 = Innovation and the Alternatives
- July 22nd, 2011 =
- August 15th, 2011 =
- September 6th, 2011 =
- September 28th, 2011 =
- October 20th, 2011 =
- November 21st, 2011 =
- December 8th, 2011 =

- What Are Your Ideas?



# Other Subject & Speaker Suggestions

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- Benchmarking
- Brainstorming
- Civility - Lack of it Costs up to \$300 Billion Annually (Pattie McNeil)
- Comparisons of Quality Management Systems
- Continuous Improvement
- Design & Control of Quality (Ian Bradbury of Peaker Services, Inc.)
- Effective Measurement for Training & Development Initiatives
- Gipsie Ranney
- Having Difficult Conversations - Principles and Tools
- Influence (Influencing Your Leader and Your Team)
- InThinking, Investment Thinking, Thinking Roadmap
- Lean Project: Eliminating the Waste In Performance Reviews (R. Steele of Peaker Services)
- Mentoring & Partnership Between Generations (Baby Boomer, GenX, GenY, Transition to Future)
- Quality Assurance Through Proofing
- Six Sigma
- Training vs Learning - What Makes The Difference in Performance?
  
- What Are Your Ideas?



**SERGENT  
RESULTS  
GROUP**

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# **CQI LEARNING LUNCH**

**The PDSA (Plan - Do - Study - Act) Cycle -  
*The Heartbeat of Organizational Performance***

