

## Did You Know that the Brain Cannot Refuse a Question?

Using Brain Science to Make Your Lean EHS Program Smarter  
Kathy J. Malone, CHMM

### What are the Specific Learner Objectives for this session?

At the end of this session, attendees will:

- Understand the difference between Innovation (big change) and Kaizen (good micro change) from a brain science perspective
- Have explored how to use this to improve their Lean EHS programs
- Have explored how to implement this day to day to improve the engagement of their teams
- Have explored how to have team members feel that their suggestions have been heard and considered


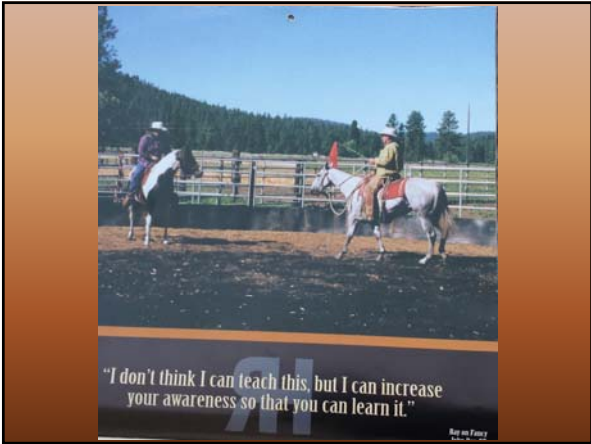
### Who are you? Introductions (if time allows)

- Name, Company, Job description
- What do you most hope to get out of this session?
- What are your biggest lean challenges at the moment?
- What is your favorite example of kaizen (good micro change)

### Who am I? Kathy J. Malone, CHMM

[kathyjmalone@gmail.com](mailto:kathyjmalone@gmail.com)

- Purdue Environmental Engr, Chem Engr
- 40 years experience
- Automotive, Aerospace
- ERP integration of Chemical approval through waste management with Safety in between
- Lean at a Horse Farm

### What is SafeStart 's "4x3+1 for Safety"

- When the chips are down, people revert to their habits
- Have You Built a Culture Where Everyone Is Working on Their Habits?

**Figure 2a**

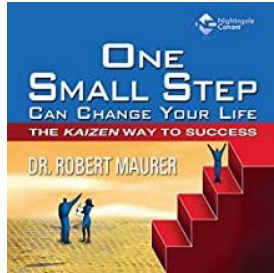
**Figure 2b**

**Figure 2c**

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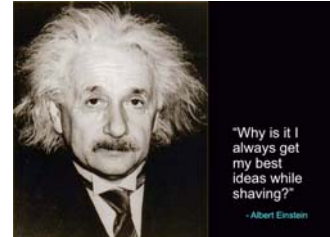
What is the difference between Innovation (big change) and Kaizen (good micro change)?

- Big change (innovation) sets off the brain's amygdala and shuts down creativity?
- Good micro-change (kaizen) engages the brain's love of a puzzle?



Did you know you don't need to come up with an answer to your question?

- Lob it into your subconscious, which will figure it out.
- If you keep asking the question, your subconscious brain figures it is important, starts working on it

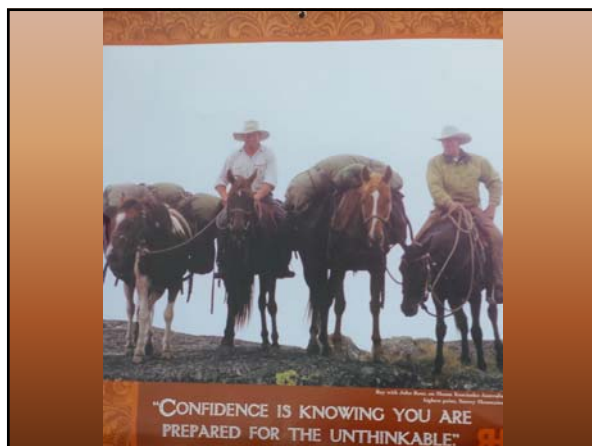
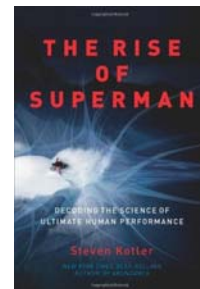


“What new ideas do you have for me today, brain?”

Tom Dorrance “A guy has a lot of time to think if he drives from Montana to California with the radio off”

Did You Know that in Times of Stress, Your Thinking Brain Goes Off-line?

- And that that is good?
- It lets you take advantage of the faster processing speed of the subconscious
- Let's you “hack” Anders Ericksen's 10,000 hours of mindful practice
- Why good safety needs to be a habit (HRO's)
- When you don't get to practice before the event



Did You Know that Planning Failure Modes Can Help You Succeed?

- 5 traits of HRO's
- Prevention
  - Preoccupation with Failure
  - Reluctance to Simplify
  - Sensitivity to Operations
- Mitigation
  - Commitment to Resilience
  - Defer to Expertise
- “Managing the Unexpected” book

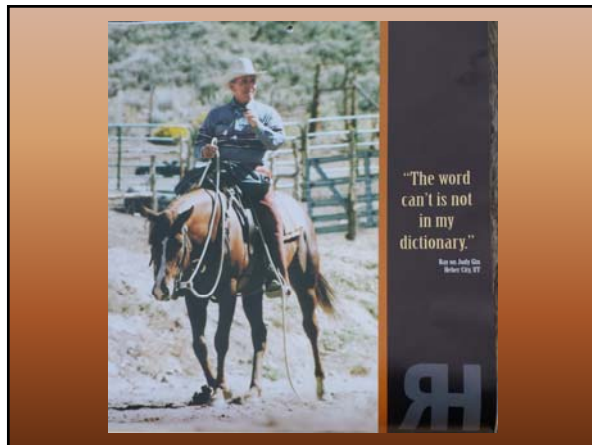
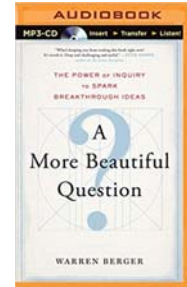


“What could go wrong in this process and how could we prevent that?”

Also, “If it goes wrong, how can we respond to minimize the impact”

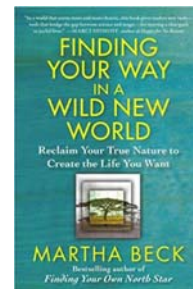
Did you know there’s another resource about questioning?

- Explores the progression from Why to What If to How
- Gives you examples and exercises to help you increase your creativity with better questioning



(Brackets up, please) Did you know you can explore lean outside of Lean?

- To tap into good ideas?
- Chapter 11, choose items around you, ask “how is this like a problem I need to solve?”



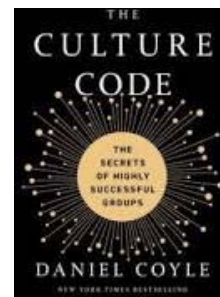
(Brackets up, please) Have you ever thought of Ideas as Things?

- Ideas as “things” looking for a person to bring them to life
- Does anyone have any fear challenges?
- You have to leave time for the “pause”



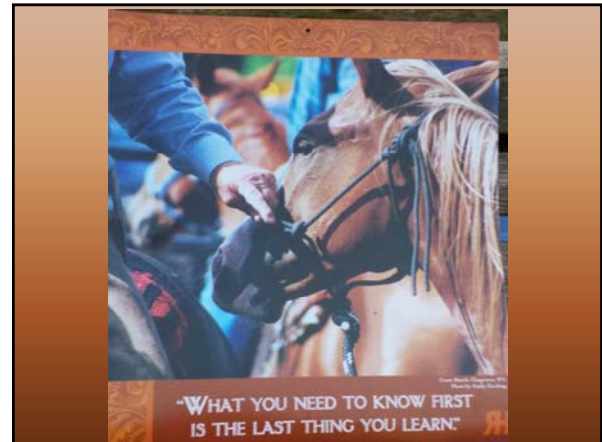
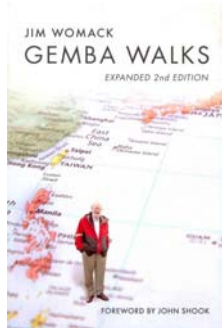
How can I help my team members be more engaged?

- 3 kinds of companies, “Star”, Professional, and Committed
- Committed outperforms the other 2
- 3 components of committed culture
  - Build safety
  - Share vulnerability
  - Establish purpose



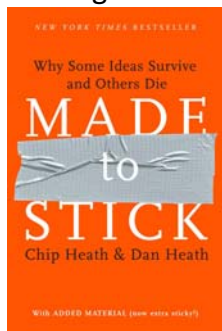
### What does "Purpose" have to do with Lean?

- Jim Womack opens Gemba Walks with talking about putting Purpose in front of the "nuts and bolts" of lean
- One of the my favorite resources for Practical Lean



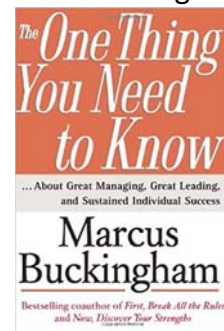
### How can you help your people learn what you are teaching?

- Did you know that:
- A pre-test improves learning even if people don't know the answers?
- "Interleaved learning" works better than silo'ed learning



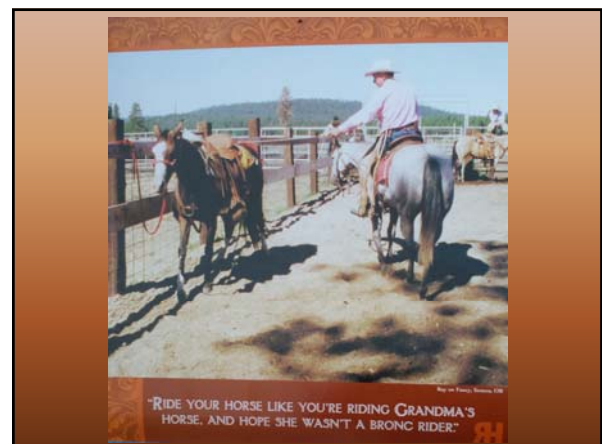
### How can you help each person on your team learn what you are teaching?

- Compares Leading and Managing
- Chapter 1, great info on how to maintain a relationship (of any kind)
- Great managers customize their approach for each individual



### How can we incorporate some of these materials into our training?

Which of these materials resonate most with us?  
 What are we already doing well in this area?  
 Where can we improve?  
 How does this information change how you think about training?



### What's the Difference Between Error-Proofing and Mistake-Proofing?

- What can you learn about error-proofing by making coffee?
- Any time you say "be careful" you have a process with the opportunity to be improved



Exercise: What are some examples of error-proofing and mistake-proofing opportunities/examples?

### Did You Know that Fatigue Can Be as Impairing as Drinking?

#### What Are the Effects of Worker Fatigue?

Worker fatigue increases the risk for illnesses and injuries. Accidents and injury rates are 18% greater during evening shifts and 50% greater during night shifts compared to day shifts. Research indicates that working 12 hours per day is associated with a 37% increased risk of injury<sup>2</sup>. In a 2005 study reporting on a survey of 2737 nurses, every extended shift scheduled in a month increased by 16.2% monthly risk of a motor vehicle crash during their commute home from work.

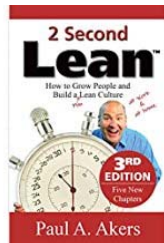
- Decreased alertness from worker fatigue has been a contributing factor in:
  - Industrial disasters such as the 2005 Texas City, BP oil refinery explosion, the 2009 Colgan Air Crash, the explosion of the space shuttle Challenger and the nuclear accidents at Chernobyl and Three Mile Island.
  - Increased sleep problems and risk for injury<sup>1</sup> among full-time employees in relation to the number of hours worked per week.
  - Errors in patient care, increased needlesticks and exposure to blood and other body fluids and increased occupational injuries among healthcare workers.
  - Direct or indirect links to increased costs<sup>3</sup> from lost productivity, increased injury and illness costs, increased time off the job due to illness and increased workers' compensation costs.
  - An estimated annual cost of \$136.4 billion from fatigue-related, health-related lost productive work time to employers<sup>4</sup>.



"How could we improve our SOPs and other practices to compensate for fatigue and other cognitive impairments?"

### Did You Know that According to Paul Akers, Money Kills Creativity?

- Setting the criteria for questions that the changes are free or cheap
  - Lowers the amygdala's perceived risk
  - Keeps it a game
- "2 Second Lean" by Paul A. Akers



On all the previous questions, "That doesn't cost anything and requires no additional resources?"

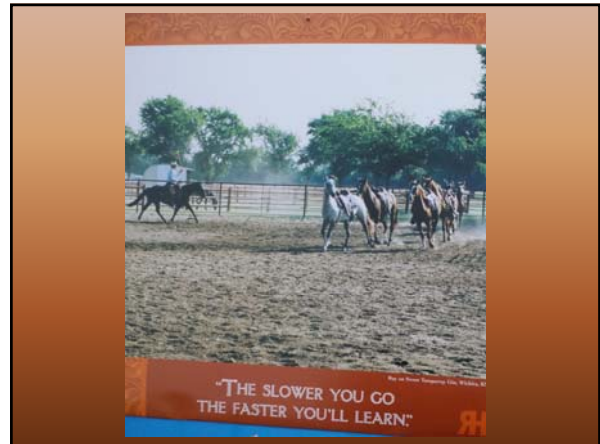
(or only costs 2 cents or takes 2 seconds?)



## The “No Idea Left Behind” Box and Your Lean Culture

The index card method to progressing in your Lean Journey

How can you make “error proof” making sure your team members feel heard?

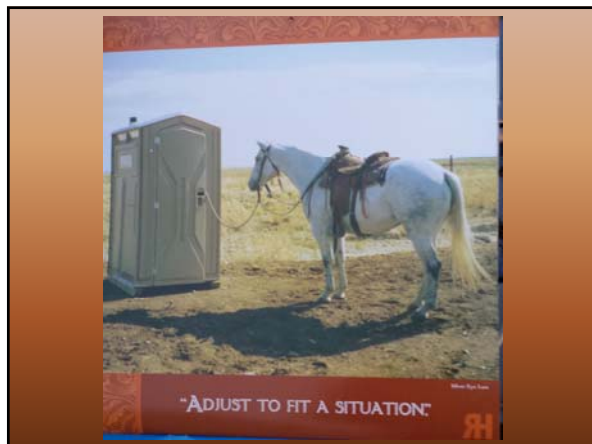


## Reflections

- What is the most useful thing you are taking back from this workshop?
- What was the most surprising thing you learned?
- How has your questioning process changed as a result of this material?
- What is your next action step?

## Thanks for Participating!

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## Who am I? Kathy J. Malone, CHMM [kathyjmalone@gmail.com](mailto:kathyjmalone@gmail.com)

- Purdue Environmental Engr, Chem Engr
- 40 years experience
- Automotive, Aerospace
- ERP integration of Chemical approval through waste management with Safety in between
- Lean at a Horse Farm



## More Resources

Books that you might find useful

### What Questions Can You Ask and Have Your Workers Ask?

- What's the smallest change/one small change I could make to:
  - Improve safety?
  - Error-proof the process?
- What could go wrong unexpectedly with this process?
  - How could we prevent it?
  - How would we mitigate?

### Did You Know that most of the time we train for failure instead of success?

- Talent Code: Studying disproportionate centers of excellence
- Neurologically, how habits are built, and how to build the right ones
- The wrong ones atrophy, they don't go away

### What's a good "Recipe" for On-shift Training?

On-Shift Training Steps "Recipe":

- Prepare
- Show
- Tell
- Do
- Review

### Where can I find out more about what Zingerman's has learned?

- Zingtrain.com, lower right, look for "free"
- Ari Weinzweig's books

### What does the You:I ratio have to do with getting your message across?

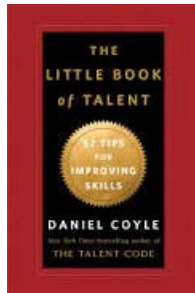
(cross training)

Patricia Fripp (heard a CD of hers)

- 6:1 You:I ratio (they care more about them than about you)

### “Cheat Sheet” for Implementing The Talent Code

- 52 Tips for building disproportionate excellence



### Did You Know You Can Learn About Organizational Culture From A Deli?

- What if your team members knew that for every \$1000 in Worker’s Compensation cost they needed to bring in \$50,000 in sales to offset the cost?
- And what if they knew that took away from their profit sharing?



Did you know espresso making can help you improve error proofing/mistake proofing?

- Choose a process:
  - Espresso/ coffee making
  - Traffic
  - Process of your choice



### What % of the training compact is the Trainer’s, what is Trainee’s responsibility?



- Does someone want to try to explain this?
- How might you re-frame the “Trainer Agrees To: bullets to better engage the learner?”