

Public Health Preparedness Summit
San Diego, CA
February 20, 2009

Developing More Effective Training for Emergency Responders



Presenters

- Scott Fisher
National Association of County & City Health Officials
(NACCHO)
- Deb Chromik
Quality Link
- Amy Iveson
Knowledge Factor



Agenda

- Introduction & Session Overview
- The NACCHO Program
- Challenges with Traditional Training
- Introduction to Confidence-Based Learning™
(CBL)
- Questions and Comments



Impetus for Change

- The Project Public Health Ready program
- What challenges needed to be overcome?
- Why wasn't training as usual good enough?
- What would a successful training program look like?



Discussion with Audience

- Describe your best and worst learning experience
- Challenges with your current training environment
- How do you measure a successful training program?



Uncovering Training Pitfalls

**People are being trained
but their performance doesn't
always reflect it.**



Disconnect : Food Manufacturer

- Implementing all the best practices and training
- Bringing uniform metrics to a \$1B+ operation built through acquisitions
- Elated with business performance improvements - 70% efficiency!

- The cost of 30% inefficiency - \$150M



7

Disconnect: Healthcare Organizations

- Number of preventable deaths 2003-2005 – 247,662¹
- 1% of patients are injured in the hospital and 25% of these injuries result in death²
- Medication errors harm 1.5M people each year³
- Malpractice payments in 2004: \$4.2B⁴
- Preventable medication errors cost hospitals \$3.5B per year⁵

¹ HealthGrades, 2007; ² Harvard medical study, 2006; ³ NNT1 Academy of Science, 2006;

⁴ Public Citizen, 2005; ⁵ Institute of Medicine, 2006

Copyright © 2007 Knowledge Factor, Inc.



8

Activity 1

- 1.
- a. high-tech companies
 - b. patents generated
 - c. technology employees

- 2.
- a. Steve Wozniak
 - b. Steve Jobs
 - c. Larry Ellison

- 3.
- a. 2007
 - b. 2005
 - c. 2009

- 4.
- a. Silver
 - b. Plutonium
 - c. Mercury

- 5.
- a. Euell Gibbons
 - b. John Muir
 - c. Samuel Chisolm



9

How Well Did you Guess

- San Jose leads all other U.S. cities in the total number of _____.
 - high-tech companies
 - patents generated
 - technology employees
- Downtown San Jose's Woz Way is named after San Jose native and Apple Computer co-founder _____.
 - Steve Wozniak
 - Steve Jobs
 - Larry Ellison
- In what year will San Jose celebrate its 130th birthday?
 - 2007
 - 2005
 - 2009
- The San Jose Mercury News was named after a substance that was found in more abundance in the San Jose Valley than any other area of North America. What substance was this?
 - Silver
 - Platinum
 - Mercury
- Who was the first president of the Sierra Club (which was founded in San Francisco)?
 - Ewell Gibbons
 - John Muir
 - Samuel Chisohn



Activity 1 – High Stakes

Question

- Ask the nurse to administer aspirin and metoprolol (a beta blocker).
- Ask the nurse to have the social worker evaluate the patient for a history of domestic violence
- Ask the nurse to obtain another electrocardiogram in 5 minutes.



High Stakes Guessing

Question

You are the physician on duty in the emergency room when a nurse hands you an electrocardiogram from a 45 year old woman who has come in with severe chest pain that began an hour ago. The electrocardiogram shows changes consistent with an acute myocardial infarction (heart attack) – elevation of the ST segments in the anterior leads. The patient's heart rate and blood pressure are normal. You immediately:

- Ask the nurse to administer aspirin and metoprolol (a beta blocker).
- Ask the nurse to have the social worker evaluate the patient for a history of domestic violence
- Ask the nurse to obtain another electrocardiogram in 5 minutes.



The Impact of Guessing

- People given credit for knowledge they don't have
- People given job responsibilities they are not prepared to handle
- Management has false sense of security
- Hidden liabilities in organization
- Management doesn't know that on-the-job mistakes are a product of the training regimen



13

Why the Disconnect? Activity 2

Exercise 2 Please Wait for Instructions

1. Who invented the first automobile assembly line?
 - a) Chrysler
 - b) Olds
 - c) Ford
2. What is a nautical measurement of depth equal to 12 feet called?
 - a) A Mark Twain
 - b) A Knot
 - c) A Fathom
3. As reported by the FDA, most deaths from food poisoning in the are caused by which bacteria?
 - a) Salmonella
 - b) Staphylococcus
 - c) E. Coli
4. Which company began to introduce a process for freezing food in 1925 that launched the frozen food industry?
 - a) Green Giant
 - b) Swanson
 - c) Birdseye
5. Which invention originated during World War II and later became a successful children's toy?
 - a) The Slinky
 - b) The Hula Hoop
 - c) The Frisbee



14

Format Makes a Difference


- Certain types of questions are prone to guesswork
 - T/F, Yes/No – 50/50 chance of getting right, but not a measure of knowledge
- Content is not always aligned with outcomes
- Content and assessment are not always aligned with each other



15


Why the Disconnect? Activity 3

Exercise 2 Please Wait for Instructions	Exercise 3 Wait for Instructions!
1. Who invented the first automobile assembly line? a) Chrysler b) Olds c) Ford	1 2 3
2. What is a nautical measurement of depth equal to 12 feet called? a) A Mark Twain b) A Knot c) A Fathom	1 2 3
3. As reported by the FDA, most deaths from food poisoning in the are caused by which bacteria? a) Salmonella b) Staphylococcus c) E. Coli	1 2 3
4. 5. Which company began to introduce a process for freezing food in 1925 that launched the frozen food industry? a) Green Giant b) Swanson c) BirdsEye	1 2 3
Which invention originated during World War II and later became a successful children's toy? a) The Slinky b) The Hula Hoop c) The Frisbee	1 2 3



The Value of a Second Dimension

- More accurate predictor of behavior
- Focuses on knowledge quality
- Isolates knowledge states that can lead to mistakes
- **Provides moments of discovery**
- Installs a new set of rules – focusing on knowledge outcomes and not test scores!
- **Confidence is the missing element in the learning process**



Confidence-Based Learning™

Your people, only smarter.



"The 55/15 Rule"

- The average level of competence for employees across industries is **55%**
- **15%** of the knowledge employees have is actually *confidently-held misinformation*

...this is *after* training



You May Be Wondering...

- What is Confidence-Based Learning?
- How is Confidence-Based Learning different from traditional learning methodologies?
- What kind of results can be gained?
- Does this take the place of facilitator led training?
- Can the technology integrate with your existing Learning Management System?

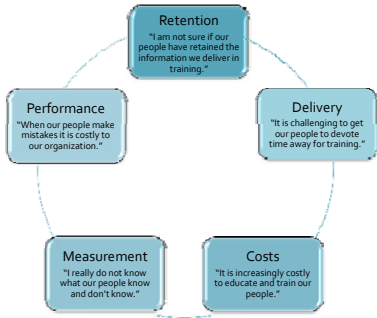


Training's Biggest Hurdles

- No way to *validate* what someone has learned – until mistakes are made
- Scores aren't predictors of how someone will perform on the job – let alone what they know
- Retention of knowledge is low – up to 70% is lost in 2-3 weeks
- "One size fits all" training disengages learners (70% drop-off rate for CBT)



Common Challenges



Confidence-Based Learning

Background

- Product of 50 years of research
- Dr. James Bruno continued development in the 1990s
 - Focused on assessing *knowledge quality* in K-12
 - A PhD student did first studies of "CBL" in hospitals and FAA
- Knowledge Factor worked with Bruno to turn Confidence-Based Learning into an online learning tool
 - Rolled out CBL in 2004
 - Focus was commercial training



Results

Healthcare Case Study:

- 17 hospitals represented
- 430 Med-Surg RNs



Demonstration




Confidence-Based Measurement

Surgically Isolates Misinformation

User	Uninformed	Misformed	Incorrect	Doubt	Doubt Correct
Asher, James	3.75	24.08	2.77	0	0
Bradford, Jane	3.75	24.17	8.33	20.83	0

Question	% Uninformed	% Misformed	% Incorrect	% Doubt	% Doubt Correct	% Mastery
According to 24-31-309, C.R.S., "it therefore the in-formation is 4(9)..."	26.89	37.8	23.98	0	34.62	38.13
In a statute enacted in 2001 (24-31-309), the State of Colorado...	23.66	27	3.45	4.82	0	66.42
In accordance with 74-31-309, C.R.S., a peace officer...	23	0	0	2.5	0	77.5



Manufacturing Outcomes


Average score on traditional tests for On-the-Job Training: **86%**

Loss from substandard products: **~\$1M per month**

Percentage of loss due to human error: **51%**

Confidence-Based Learning diagnostic results:

How the Learner Answered:	First time through CBL (% of answers)	Last time through CBL (% of answers)	% Improvement
Confident and Correct	68.69	100.00	45.58%
Doubtful and Correct	4.09	0.00	
Unknown (selected "I Don't Know")	4.59	0.00	
Doubtful and Wrong	1.06	0.00	
Confident and Wrong	21.57	0.00	



Manufacturing Outcomes

- Productivity
 - 15% improvement line employees
- Reduction in Errors
 - 90% reduction human error
- Cost Reduction
 - Estimated \$4.62M per year
- Less Employee Turnover
 - 69% reduction in turnover
- Better Communication on the Floor



Benefits of Confidence-Based Learning

- Substantially reduces training time
- Increases workforce productivity
- Reduces employee error on the job
- Reduces employee turnover
- Reduces liability and risk associated with error
- Improves completion rate of certification



Questions and Comments

Thank You!

- Scott Fisher-NACCHO
sfisher@naccho.org
202-507-4218
- Deb Chromik-Quality Link
Dchromik-cfmc@comcast.net
303-550-8542
- Amy Iveson-Knowledge Factor
aiveson@knowledgefactor.com
303-818-4349