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Classroom vs. Computer-Based Training

By Fred Fanning, CSP, M.Ed.

The author was asked to compare classroom and computer-based training (CBT) to modify behavior for court-required training. This is motor vehicle-related for drivers who have lost their driver's license and were attending court-appointed training as one of the means to get their driver's license reinstated. The courts investigated the potential for cost savings of having drivers go online and complete the training instead of drivers attending four hours of face-to-face classroom training. The author taught the old defensive driving course face to face in the 1980s for more than three years, and in the 2000s served on the acquisition team reviewing bids for an online computer-based version of a defensive-driving-type course. He also taught the Motorcycle Safety Foundation's motorcycle rider safety courses face to face for more than two years.

The Bottom Line

Classroom training, although normally more expensive because of the classroom, provides a better

learning environment that supports the student and allows for the security to ensure that the offender actually takes the training. The cost of a classroom can be reduced by using existing facilities. This reduces costs considerably.

Classroom Training

Classroom training provides an opportunity for students to ask the facilitator or instructor questions on topics as they come up. It also provides an opportunity for students to hear answers to questions asked by other students. Students can work in groups that allow for ideas and thoughts to transfer from fellow students, which can facilitate the learning since they come from peers. Students can also speak with the facilitator or instructor during breaks to address issues they feel uncomfortable addressing in class. Classroom training makes good use of all human sensory learning methods: seeing, hearing and doing. Accountability is present because students are actually in class. Finally, classroom training adapts to all students with or without computer training or access to a computer.

Computer-Based Training

Computer-based training (CBT) provides an opportunity for students to ask the facilitator or instructor questions through e-mail. This method also provides opportunities for students to read answers to questions asked by other students through chat rooms. Students can work in groups that allow for ideas and thoughts to transfer from fellow students, which can facilitate

learning since they come from peers using chat room and e-mail strings. Students can e-mail the instructor at any time to address issues. This method makes good use of two of the three sensory learning methods: seeing and doing. This method also adapts to students with computer training or experience.

Table 1. Classroom vs. CBT

Topic	Computer	Classroom
Resources	Costs of computer and Internet connections.	Cost of classroom and audiovisual equipment.
Student focus	Student is center through electronic connection.	Student is center through real-life experience.
Sensory learning methods	Use sight and hands-on doing.	Uses sight, listening and hands-on doing.
Prior learning required	Students must know basics of computers to include e-mail and web program operations.	None.
Security	Uses passwords but no guarantee that another person will not take course for student.	Student is present and ID can be checked to verify. Exams are controlled.

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Position Descriptions

Awards & Honors Chair

This person serves as the liaison to the Awards and Honors subcommittee of the Council on Practices and Standards and manages the nomination of any recognitions or awards given by the branch/practice specialty. The Chair gathers the names of any branch volunteers and submits them to ASSE staff for recognition. Once the branch becomes a practice specialty, the Awards and Honors chair coordinates the Safety Professional of the Year nominations and selection of the recipient.

Body of Knowledge Chair

This person serves as the liaison between the branch/practice specialty and the Body of Knowledge (BoK) subcommittee.

Membership Chair

This person assists in recruiting new members to the branch/practice specialty, welcomes new members (via e-mail or letter), develops member surveys as necessary and follows up on members not renewing membership in the branch/practice specialty.

Nominations Chair

This person assists in filling open chair positions for the branch. Once the branch becomes a practice specialty, the Chair manages nominations for the election every two years.

Professional Development Conference (PDC) Chair

This person coordinates the submission of branch/practice specialty-sponsored sessions for the upcoming PDC.

Website Coordinator

This person is the liaison between the branch/practice specialty and the ASSE webmaster. The chair gathers information to be posted on the branch/practice specialty's website and forwards it to ASSE staff. No web design or programming knowledge is required.



Findings

Classroom training, although normally more expensive because of the classroom, provides a better learning environment that supports students and allows for the security of ensuring that the offender actually takes the training. The cost of a classroom is normally reduced by using existing facilities. This reduces costs considerably.

If students were allowed to complete the training on a home computer, there is a question of validating who the student actually is. Furthermore, a shortage of computers still exists among disadvantaged citizens who may not even have a local library nearby at which to use a computer. Computer literacy among the disadvantaged would also come into play with CBT. If a center was provided that verified the student's actual identity, the costs would be similar to classroom-based training.

The idea of training that uses three sensory modes rather than two is also important and should not be underestimated. This supports the learning theory that adults prefer to work through information and get physically involved. Adults retain 20% of what they read, 30% of what they hear, 40% of what they see, 50% of what they say, 60% of what they do and a whopping 90% of what they see, hear, say and do (Copeland, 2003). Compare that to the fact that one year after training the average adult only retains 10-15% of what s/he learned. Given the dramatic loss of information, a trainer must use the method that gives the best retention, which is to provide the student with learning that allows the student to see, hear, say and do.

Reference

Copeland, L. (2003). Training that rocks. *Proceedings of the 2003 ASSE Professional Development Conference*, Des Plaines, IL.

Conclusion

Much more work must be done to evaluate and determine the best mix of classroom versus CBT, especially now with some providing training via iPod or MP3 player.

OSHA Establishes Watch List to Strengthen Outreach Training Program

In an effort to crack down on fraudulent trainers, OSHA said it is continuing to strengthen the integrity of its 36-year-old outreach training program by publishing an Outreach Trainer Watch List of those who have had their trainer authorizations either revoked or suspended.

OSHA recently conducted an undercover investigation as part of its heightened effort to address fraudulent activity by trainers authorized through the OSHA outreach training program. The investigation of a 10-hour course conducted by Don Barker, environmental health and safety director for Thor Construction in Las Vegas, NV, revealed several examples of failure to comply with program guidelines.

Barker's infractions included submitting falsified information regarding the instructional time spent on the topics, failing to collect and retain required documentation and inappropriately

advising students not to contact OSHA to report hazards.

OSHA revoked Barker's outreach training authorization after he declined to appeal the decision and his name has been added to the watch list (http://www.osha.gov/dte/outreach/construction_generalindustry/watchlist.html), which will be updated weekly. OSHA is monitoring training programs and has provided a hotline at (847) 297-4810 for individuals to file complaints about fraud and abuse.

"Trainers who fail to provide appropriate safety training will pay a stiff price for their fraudulent behavior," says Jordan Barab, acting assistant secretary of labor for OSHA. "A tighter record control procedure has been instituted requiring trainers to sign their reports and to certify the class was conducted in accordance with OSHA's guidelines. Trainers face civil and criminal penalties under federal law if reports or certifications are found to have been falsified."

Trainers are authorized by completing a one-week OSHA trainer course through an OSHA training institute education center. The trainers are then eligible to teach 10-hour programs that provide basic information to workers and employers about workplace hazards and OSHA, and 30-hour courses in construction, maritime and general industry safety and health hazards.

The voluntary outreach training program has grown to a national network of more than 16,000 independent trainers eligible to teach workers and employers about workplace hazards and to provide OSHA 10-hour course completion cards. The program's



success has prompted some states and cities to legislate a requirement that workers complete training to earn an OSHA 10-hour card as a condition of employment.

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Bag of Tricks

By Don Weatherbee

This is one of several articles based on a seminar I have given to other safety and training professionals.

I will break down my understanding of, approach to and general thoughts for presentation design with a noticeable nod of the head to safety training.

This article primarily addresses things that one must take into consideration for any presentation.

When I had first arrived at my current place of employment, I used whatever I could lay my hands on. I found several CDs at the site with a bunch of presentations on it and went to town with them.

Do not misunderstand me—purchased training presentations can be a good starting point.

Once I got past the initial rush, I began to create my own site-specific training. This slide was part of the PPE training for my facility.

In it, I used a football equipment analogy to get employees to buy in to my plan to change and upgrade their PPE. Much like football helmets had changed over the years, our PPE would also be changing.

I needed to overcome the “if it is not broken, do not fix it” syndrome.

Now, besides being site-specific, another benefit was realized. The employees knew I was putting in the time to create the training, and this made the training have a greater value to them. After all, perception is often reality when it comes to effective training.

Of course, I am not the first guy to realize that good training can be made better with a well-designed presentation.

Use Images

People remember images longer. Images are remembered longer by people.

Have a Plot

Think of the presentation as a mini movie, and have a beginning, middle and end. It also helps to use hidden slides for organizing a presentation when viewing all slides.

Slide Design

When designing slides, consider fonts, colors, placements, space, arrangement, backgrounds, text use and images as well as animation, motion and multimedia methods.

Fundamentals

As I see it, four fundamentals are needed for any presentation.

I am at best an average speaker, so I want something behind me that will help. I strive to be as good as Steve Jobs or as effective as he is.

It helps to know who your audience will be—a few people, a few hundred or a few million. Under 40 to 50 people, you can have good audience interaction, but above 200 or so, you move from being an educator to an entertainer. You will need to adjust your presentation accordingly.

Is the audience your employees at the plant, your CEO or your peers? Everyone will have different expectations.

The room is everything from the projector used, to the physical size of the room and how the seating is arranged.

From the presentation design perspective, I ask will green look green on the screen? Will the colors in my presentation show as I intend?

Those in the seminar business tend to call the collection of slides that they use their deck. The deck alone is not the presentation, but it is an important part that warrants due consideration with proper design.

Giving a Presentation

There are five basic paths to giving a presentation. Of course, there is live—this is what most of us do. The audience gets the full benefit of the speaker—hand gestures, facial expressions and the speaker's ability to answer questions as they are asked.

Presentations can be saved as webpages (HTMLs). If you have an internal website, this can be uploaded to it. However, since the speaker will not be there, having good notes on each slide is important.

A webinar is basically a web version of a presentation with someone talking behind the slides as they are shown. Slide design becomes much more important as people cannot see the speaker.

An ePresentation is a PowerPoint that has narration added to it, has custom animation applied and has been converted to a YouTube-like format. It basically plays like a



movie. In this format, keeping what is on the screen moving is important.

eLearning is basically an ePresentation with some level of interactivity build into it. Once considered the second coming of training, I now see this as just another tool in the box to be used.

Topic, Task & Story

Safety presentations tend to be grouped into three main categories—topic, task and story.

Topic

A topic-type presentation is the primary kind that most of us use at work. Many of these are rooted in one regulatory requirement or another. These include most of the OSHA, EPA and DOT training topics.

You basically try to pass on information about something. Typical training of this type includes confined space, hot work, hazard communication, fall protection, machine guarding, industrial hygiene, lockout/tagout, hazardous waste, heat stress, bloodborne pathogens, back safety, drug and alcohol programs and physical properties of chemicals.

Topic-type presentations:

- Are the least interesting
- Benefit from plant-specific photos
- Should be changed each time they are given

Task

Task-type presentations will also have some level of hands-on activity associated with it.

The presentation will be rooted in some direct aspect of the employee's job.

In the case of respiratory protection, you have the fit test, positive and negative flow tests and a piece of PPE that they use in the plant.

For example, for forklift safety, employees will be asked to conduct an inspection of a forklift and to conduct defined tasks with the forklift to show they are capable of handling one.

Electrical safety, NFPA-70E, arc flash and safe use of portable power tools are all job-specific training.

Another type of task-based presentation is when it is used as a visual standard operating procedure.

Task-type presentations:

- Are more interesting due to the hands-on component
- Are harder to create due to specific imagery needed
- Need site-specific images

Story

A story-type presentation is one that draws upon life experiences, personal beliefs or interests. Since I grew up in Buffalo, NY, I know cold, snow and winter well. I give a cold stress and winter safety classes based on my experience.

Many off-the-job safety presentations will be like a story. Examples include fire or electrical safety in the home, bugs and bunnies (insects, etc.), Halloween safety and mower safety.

In effect, most of my off-the-job safety topics are my attempt to sell safety as a 24/7 idea. To do this effectively, I must relate work-based safety ideas to daily activities associated with home and play.

Story-type presentations:

- Are most interesting
- Lend themselves to strong imagery
- Require more practice than normal

Timing your talk with the slides is critical during a story-type presentation. Any lack of flow or chopiness in the presentation will be obvious.

Conclusion

I give 25 to 35 training presentations at my site annually. About 50% of them are topic, 25% are task and 25% are story.

Realizing that three kinds of presentations exist can help as one builds one type or the other. The resources used will change, and the flow and structure of each presentation will be different. However, my goal is to make all presentations seem like a story. This tends to be more enjoyable for the audience, and the more they like it, the better they will remember it.

Personally Speaking

Review by Fred Fanning, CSP, M. Ed.

Many fear public speaking. Unfortunately, safety training is a communication business. It does not matter what the trainer knows, estimates or foresees if s/he cannot get that message to students. Whether you fear public speaking and each training session is a struggle or you are an old hand and get through them with ease, *Personally Speaking* by Dr. Ralph C. Smedley is a good book to read. The book is a collection of papers written by Smedley over the course of his



career. I came across this book at a Toastmasters Leadership Conference and picked it up to read on the daily commute to and from work. This turned out to be a wonderful idea and from this experience, I have learned and in some cases relearned the basics of personally speaking.

This book is a superb primer for public speaking. It delves into many areas that are often misunderstood or are considered unimportant. It also emphasizes the importance of the human element in public speaking. It is a must-read for anyone interested in or currently providing safety training.

The book is well-organized and easy to read. The facts and personal stories are interwoven to clearly present both to the reader. The singular strength of the book is that it provides the reader with a familiarization of the basics of speaking in a comfortable, easy read.

The intended audience is a Toastmasters Club member; however, I think this book is good for safety trainers because of its broad look at how to speak publicly. Even though the book is a collection of papers, I found it congruent and the layout well done. I am unaware of any other book that covers this topic any better.

Ten Secrets for Using PowerPoint Effectively

By Dave Paradi

You can take many courses on how to use PowerPoint from a technical standpoint, but when it is used effectively, it can add tremendously to your presentations. Here are ten secrets based on years of experience in developing and using presentation slides that will help you move from being technically proficient to using PowerPoint effectively.

1. Use the Outline View First

The most important part of any presentation is its content, not its graphical appeal. Develop your presentation with the content first before deciding on the look (colors, graphics, etc.) The best way to do this is to use the Outline view. This view is accessed by clicking on the View menu and selecting the Outline command or by clicking on the Outline tool button at the bottom left of the screen (the one with all the lines). This view only shows the text of each slide. Use the Tab key to move to a lower level within a slide or the Shift-Tab key to move to a higher level in the slide. By using the Outline view first, you ensure that the content of your presentation is solid before you concern yourself with the visual elements.

2. Use Contrasting Colors

If you want your audience to be able to see what you have on the slide, you must have contrast between the text color and the background color. I suggest a dark background

with light text. I usually use a medium to dark blue background and white or yellow letters. Some prefer a light background and dark letters, which will also work well. The one you choose will depend on personal preference. Do not think that just because the text looks fine on your computer screen that it will look fine when projected. Most projectors make colors duller than they appear on a screen, and you should check how your colors look when projected to ensure that is still enough contrast. To check that your colors have enough contrast, [use the Color Contrast Calculator](#).

3. Use a Big Enough Font

When deciding what font size to use in your presentation, ensure that it is big enough for the audience to read. I usually find that any font size less than 24-point is too small to be reasonably read in most presentation situations. I would prefer to see most text at a 28- or 32-point size, with titles being 36- to 44-point size. The only reason I would use a font less than 24-point is when adding explanatory text to a graph or diagram, where you could use a 20-point font size.

If you are given a small screen in a big room, your font will look smaller because the image will not be as big as it should be. In this case, see if you can get a larger screen, use a wall instead of a screen to project on, move the chairs closer to the screen or remove the last few rows of chairs. I have put together a chart that lists how far away the last row of your audience should be based on the screen size, font



size and visual acuity testing.
[Use the Font Size Chart here.](#)

4. Stop the Moving Text

When text comes on the screen, we want the audience to read the text, then focus back on the presenter to hear the message. If the text moves onto the screen in any way, such as flying in, spiral or zooming, it makes it harder for the audience members to read since they must wait until the text has stopped before they can read it. This makes the presenter wait longer between each point and makes the audience members focus more on the movement than on what is said. I suggest the use of the "Appear" effect, which just makes the text appear and is the easiest for the audience to read.

5. Turn the Pointer Off

During a presentation, it is very annoying to have the pointer (the little arrow) come on the screen while the presenter is speaking. It causes movement on the screen and draws the audience's attention from the presenter to the screen. The pointer comes on when the mouse is moved during the presentation. To prevent this from happening, after the Slide Show view has started, press the Ctrl-H key combination. This prevents mouse movement from showing the pointer. If you need to bring the pointer on screen after this, press the A key. If the pointer appears during your presentation, resist the urge to press the Escape key. If you do so, it will stop the presentation and drop you back into the program. Press the A key or Ctrl-H to make the pointer disappear.

6. Use Visuals Instead of Text Slides

Every two years I ask audiences what annoys them about bad PowerPoint presentations. The latest survey confirms that audiences are more fed up than ever with the overload of text on slides. Instead of using slides that only contain text, use visuals, such as graphs, diagrams, photos and media clips, to engage the audience.

7. Have Slides at the End of Your Presentation

The last slide you speak to should not be the last slide in your presentation file. You should have three identical copies of your last speaking slide so that if you accidentally advance one too many times at the end of your presentation, your audience never knows because you do not drop into the program. The slide looks like it has not changed. After these slides, you should include some slides that answer questions that you expect to be asked. These slides will be useful during Q&A sessions after the presentation. The final slide should be a blank slide so that if you go through all the other slides, you have a final backup from dropping into the program.

8. Be Able to Jump to Any Slide

PowerPoint has a feature that allows you to be able to move quickly and seamlessly to any slide in your presentation. To do so, you must know the slide numbers. The easiest way to print a list of the slide numbers and associated slide titles is to go to the Outline view and collapse the details for each

slide (a button on the left side of the screen in this view will do this). Then print the view. To jump to any slide, just enter the slide number on the keyboard and press the Enter key. This will move you directly to that slide. This technique is useful for moving to a prepared Q&A slide or for skipping parts of your presentation if time becomes an issue.

9. Blank the Screen

Sometimes we want the image on the screen to disappear so that the audience is focused solely on the presenter. You can do this in two ways. First, if you want to blank the screen with a black image, similar to shutting the projector off (we used to do this all the time with overhead projectors by just shutting the projector off), just press the B key on the keyboard and the image is replaced with a black image. Press the B key again and the image is restored. If you want to use a white image instead of a black image, press the W key each time.

10. Draw on the Screen During a Presentation

Sometimes it can be valuable to be able to draw on the screen during your presentation to illustrate a particular point or item. This can be done in the following way. Press the Ctrl-P key combination to display a pen on the screen. Then, using the left mouse button, draw on the slide as you wish. To erase what you have drawn, press the E key. To hide the pen, press the A key or the Ctrl-H key combination.



When you employ these secrets to use PowerPoint effectively, you will greatly enhance your audience's understanding of your message and help make your presentation the best it can be.

Managing Adult Education: How to Survive in Trying Times

By Jonathan Klane, M.S.Ed., CIH, CHMM, CET

Training does not happen in a vacuum, and it needs strong management to succeed. For more than two decades, I have developed, delivered and managed the training process in various settings—higher education, large and small consulting companies and industry. Following are some words of wisdom on managing adult education.

Relevant & Meaningful Adult Education

Adult education (or training) must be meaningful and relevant, and it must make a difference. It also must be self-sustaining if it is done for a fee (be it for profit or nonprofit). The management of it is equally about adult learning and running it.

For adult learning to make a difference, it must be directly applicable, flexible, of an immediate need, engaging, active and participative among other things. Adults learn better when they are allowed to be self-directed and involved in the training, including goal setting, topic selection and training delivery. These and other adult learning principles (ALPs) play important roles in any quality training or adult

education program. All of this becomes even more important from a management perspective if we think in terms of whether it is meaningful and relevant.

The Dry & Boring Instructor

I was contacted recently by an asbestos abatement contractor who requested a quote for annual refresher training. Federal and state governments require annual refreshers for certified persons involved in asbestos abatement. This mandated training has had the effect of lowest cost training in some areas and/or situations. I had not done their training before. I knew this contractor had another trainer, and I respected that business arrangement, so it was a pleasant surprise to receive the e-mail.

During our correspondence, I inquired why they were looking for someone new. The response was that while they received the training and certificates that allowed them to continue to work, the trainer was dry and boring, and they had finally become tired of it. Even though the trainer provided a mandated service, it was not well-received by the students. The training was meaningful—the workers were recertified—but it did not follow good ALPs and likely was not relevant either. It was not value-added to the contractor and did not add to the trainer's bottom line.

Entertaining, But Was it Relevant?

I love an entertaining speaker and trainer as much as the next person. In fact, if a trainer is too dry or boring, I am more likely to fidget and possibly leave. I have noticed others do the same at conferences and often ask them their thoughts. If the speaker has relevant information to share, I am

more likely to put up with poor delivery while wishing it were better.

Other speakers or trainers can have the opposite problem. They are great entertainers, but it seems to be just for effect and has no direct relevance or context. I enjoy providing training in a fun and entertaining way, but I always strive to ensure it has a context. I communicate what it is and it adds to the value of the training in helping meet the learning objectives.

While at a conference, I asked a fellow attendee what he thought of the entertaining speaker. The attendee said he was entertained and captivated by the jokes, videos and magic but really did not learn anything.

What is the lesson in these two examples? Good ALPs and a meaningful context and relevance are all important for effective training. One without the other is likely to lose students and be poorly received, ineffective and irrelevant.

If Managing Adult Education Us the Answer, What Was the Question?

Dr. Will Callender, a professor in the University of Southern Maine's graduate program in adult education, had a discussion technique based on this proposition. If the discussion subject happened to be the answer, then what was the question? We got used to it and knew one was always coming—and it worked. It was a derivative of the Socratic Method of teaching. If you think you would like it, then try using it.

If managing adult education is the answer, what was the question?



One possibility is “How can we ensure that an adult education (or training) program continues to exist?” The overall goal of managing adult education is to ensure its continued life—to maintain it and to give it structure but also flexibility. The training director or manager is usually responsible for this.

The Right Trainer for the Job

The training director typically does a lot. S/he often markets, promotes, coordinates, arranges, develops, delivers, evaluates and improves training and directs, manages, supports and mentors trainers. These duties apply to outside, consultant-type trainers as well as to in-house trainers. I have spoken with many in-house trainers who bemoan the difficulties of getting people to attend their training sessions. So marketing and promoting training, similarly to outside trainers, is vital to a vibrant and robust training program.

One way to look at this is in a chronological fashion. It often starts when an interested party contacts the training director and asks whether s/he can provide a training director. The instinct is to automatically say yes, but this may not be the case. The training director must ask, “Am I the right person to do this course?” Dr. Callender espoused a philosophy of always trying to meet the needs of trainees as best he could even if it meant that he did not get the job. A few years ago, a fellow industrial hygienist (IH) called me about conducting a CIH-preparation course overseas. I felt I was not the right person to deliver the course for two reasons. First, many CIH-prep course providers conduct courses regularly and successfully, and any one of them would have perhaps been a better

choice. Second, the course was to be held in Saudi Arabia, and my religious affiliation may not have been good fit, which left me with some serious reservations regarding my personal safety. My contact suggested that I just not be obvious about it, not advertise it and be vague or lie if someone asked. I thanked him for asking me but politely declined. Clearly, I was not the right person.

Several years ago, a conference group asked me to conduct a session on culturally appropriate training. Although I was qualified to provide the training, there is an unwritten rule that white men should not conduct diversity-type training since we are not obviously or outwardly diverse. I mentioned this to the contact and thanked them for the kind request. I suggested that the session might be better received if the trainer were more obviously diverse or a person of culture. The contact replied that although that might be the case, they wanted me to do it. I delivered it for them and for several more groups successfully. So far, it has been well-received, and no one has questioned my lack of outward diversity. The point is I suggested they find someone else whom I felt would be more appropriate, but they just as soon preferred I do it. This aligns with another of Dr. Callender’s theories—knowing when it is meant to be.

Managing Adult Education in Trying Times

When I taught OHS full-time at a technical college, I was also the training director for our program, which was on soft money—meaning on grants with no money from the state system. Basically, we needed to be self-sustaining. This pressured us to generate training that brought in money. We

put on contract training, conferences and in-house training. We had a committee of persons from the business community who helped us deliver conferences. It was enjoyable, rewarding and successful, and it expanded my network. When the college started downsizing instructors and programs, and I was almost bounced from my position by a more senior instructor in another program, I took the hint and shopped my resume around. I was picked up by a large consulting company that wanted to broaden its services in the training arena. I was saved by virtue of my experience as a training director.

A year later or so, the training had not done as well as the large consulting company had hoped. I was not as billable as they wanted me to be. For those unfamiliar with the concept of billability, it is the metric consultants use to measure your value and is expressed as a percentage of your time. If I am 50% billable in a given week, I had 20 out of 40 hours that were billed to client projects (as opposed to administrative duties, which are nonbillable as they do not generate revenue). Doing mostly training and managing it put me at risk of job loss.

What happened? I obtained my CIH and instantly became more billable. My CIH snatched job security from the jaws of unemployment. The moral is managing adult education can be both a boon and a bane. Pursue other skills and credentials to be as billable and valuable to potential employers as possible. In business, human resources is often hit first when it comes to layoffs, and a training director position is likely thought of as being within human resources (even if it is not actually so).



The Compelling Display of Health & Safety Data to Achieve Desired Decision-Making

By Robert Emery, DrPH, CHP, CIH, CSP, RBP, CHMM, CPP, ARM; Bruce Brown, MPH, CBSP, CHMM, ARM; & Jason Bible, MAM, CSP, CHMM, ARM

An inevitable finding of any review of a health and safety program is the need for improved communications. The recurrent commentary provided by groups ranging from frontline workers to executive management is that they often do not really understand what health and safety programs do and do not know how the program's efforts actually contribute to the organizational mission or the bottom line.

When presented with such findings, the natural response on the part of the health and safety professional is to explore ways to improve the transmission of information orally or in writing. While efforts to enhance oral and written communication are always laudable, another means of communication also warrants close examination. The way in which important health and safety data are displayed is an equally important avenue of communication, and it is ironic that in an era when health and safety professionals are implored to develop and collect key performance measures and metrics, little attention is provided to the way the data are actually displayed and communicated.

This is a crucial shortcoming within our profession, and one that we believe serves as a major barrier

to achieving full management support. This impression is based on five years of intensive field research, where we examined the existing literature on the science and art of effective data displays and then reviewed data displays from hundreds of actual health and safety programs. From this effort, we have learned that when data are displayed in a manner that is compelling, desired decision-making often ensues.

Barriers to Effective Communications

When trying to communicate the message inherent to the health and safety data we have accumulated, we should always first think about what the message is trying to convey. One of the major barriers we have observed is overly complex data displays that obscure the underlying message. We should always first ask, what is our message? Is injury frequency increasing? Is compliance improving? Are levels of job satisfaction changing? Once we determine what the message is, then we should keep that concept foremost in our minds as we create the graphic display that we will subsequently rely upon to convey this point.

Another common problem we encountered when reviewing real-world data displays is the absence of any valid comparisons. This is an issue that Dr. Edward Tufte repeatedly addresses in his works, the notion of compared to what?

For example, if we wish to communicate that hazardous waste disposal costs are escalating, we should include data describing the basis for this escalation. For example, perhaps an increase in production or expansion of facility size is the underlying driver for such cost increases. If this is the case, then

we should be sure to display these important data as well, as this will help convey the message to upper management and facilitate their understanding of the issue and the causality.

Another key point that Tufte addresses is the notion of presenting such data adjacent in the eye span so that comparisons can be easily made. In other words, if two graphs were shown on the same page in immediate proximity to reach other, a view could easily reach the conclusion that as production increases, hazardous waste volumes are likewise increasing, and as such, so are the costs for disposal.

Key Data Display Aspects

Although many techniques can be considered when displaying data, we have encountered a list of basic precepts that are better described by Tufte and others but can at least help get people started on improving the way in which information is conveyed:

- Do not blindly rely upon the automatic formatting provided by standard graphing tools embedded in software. The programs provide useful basis upon which to create a good data display, but rarely do compelling data displays automatically spew out upon hitting a button.
- Eliminate the unnecessary. In other words, most of the ink on the data display should be employed to show data and not all of the superfluous stuff around it. For example, in some graphic programs, the automatic graphs produced carry with it a gray background, which only serves to diminish the importance of the actual data displayed.



- Use clear and thorough labeling. Ensure that each axis is labeled and add text and lines to help the reader understand other aspects. Also include a clear descriptive title.

- Include comparison data, as this will help tell the story as well.

Data Display Example

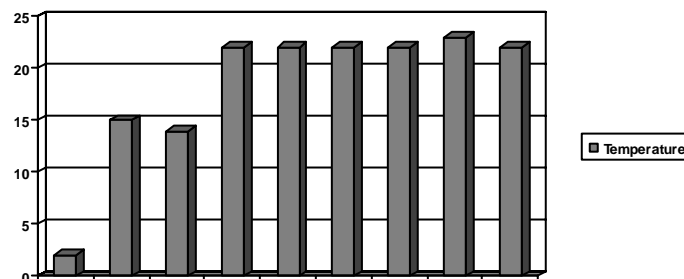
To drive home some of the points described, let's use a simple example. For this example, we will use a real-world data set from a sixth grader's science experiment.

The first step is to determine what we're trying to say. This sixth grader would like to perform an experiment to estimate what the optimal thickness of blubber is of a penguin that lives in Antarctica. To do this, cooking lard will be used to simulate penguin lard. An ice chest filled with water and ice will be used to simulate the water conditions in the Antarctic. The lard will be formed into spheres and allowed to equilibrate to room temperature. Then each sized ball will be immersed in the ice water for 10 minutes, at which time a thermometer will be inserted into the ball's center and the temperature recorded. The idea is that at some point in lard thickness, the insulating quality will become self-limiting, e.g. no significant additional insulating value is obtained by the added thickness (and weight) of the lard. The theory is that this would be the point likely where actually penguin blubber thickness falls.

Based on this experimental design, the following data are obtained:

Lard Ball Radius (cm)	Recorded Temp (°C)
0	2
1	15
2	14
3	22
4	22
5	22
6	22
7	23
8	24

If the data are placed into the spreadsheet cells of a widely used computer graphics display package, this is what the automatic formatting would provide (except it would likely be in blue):



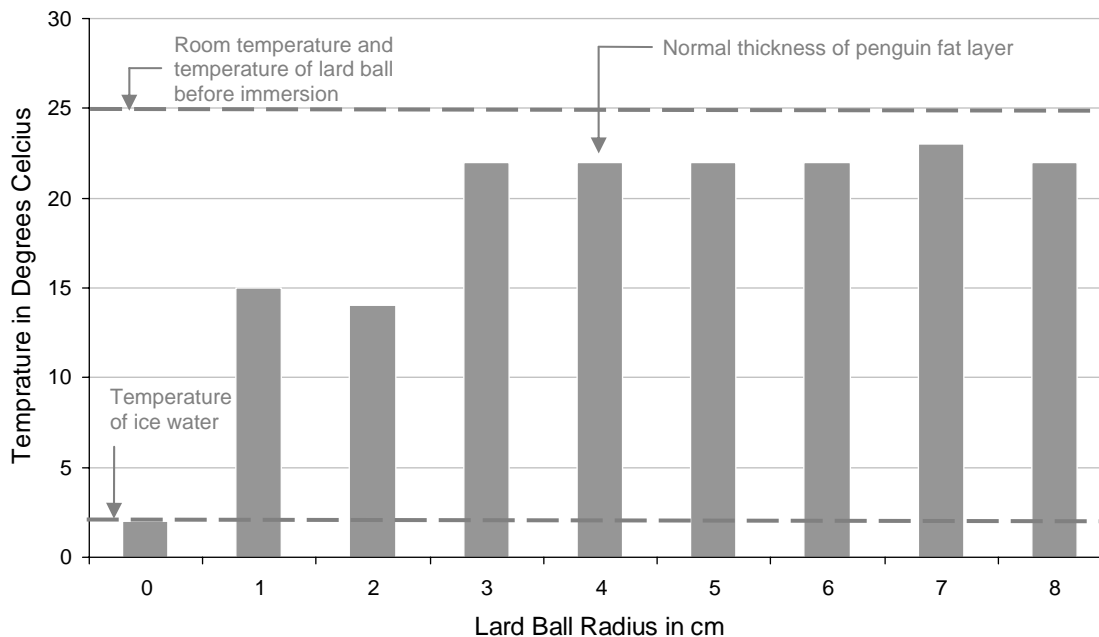
Key steps to improve this data display include:



- Elimination of the unnecessary three-dimensional effect shown on the bars
- Elimination of the text box labeled “temperature” since this will be the variable specifically mentioned in the title
- Inclusion of a title, axis labels and units
- Inclusion of some key reference points so comparisons can be made easily

These modifications allow for the creation of a much improved data display:

Recorded Temperature in Center of Lard Ball After 10 Minute Immersion in Ice Water



With this improved graphic, we can clearly see all of the important information: what the graph is about, the ice water's temperature, the room temperature, the nominal thickness of actual penguin blubber and the experimental data collected. Showing the data in this way allows the viewer to draw the conclusion that a lard thickness of approximately 4 cm is the point at which nature has determined where sufficient insulation is achieved without having to expend additional energy to carry about excess weight. This improved example provides a stark comparison to the previous graph that was automatically generated from a graphing function in a spreadsheet or presentation software.

Conclusion

From our intensive review of the data display literature and the examination of hundreds of real-world health and safety data displays, we have become convinced that the key to desired decision-making on the part of executive leadership (and other key stakeholders) is the ability to display data compellingly. If we can take the time to think about what it is we are trying to say and then refine the way our data are displayed to clearly make this point, we are more likely to achieve desired decision-making. In our experience, most of these data display adjustments require the removal of unnecessary graphical features and the inclusion of clear and through labeling. The creation of graphics for paper distribution rather than temporary projection onto a screen also improves the way in which information is conveyed and comprehended.

Those wishing to learn more about the science and art of effective data displays are encouraged to examine the works listed in the bibliography by Tukey and Tufte. By taking the time to digest and reflect upon their messages, you will be able to improve the way in which you can convey your message as well.

References



Tufte, E.R. (2001). *The visual display of quantitative information*. Cheshire, CT.

Tufte, E.R. (1990). *Envisioning information*. Cheshire, CT.

Tufte, E.R. (1997). *Visual explanations*. Cheshire, CT.

Tukey, J.W. (1977). *Exploratory data analysis*. Reading, MA.

Tukey, P.A. & Tukey, J.W. (1982). Summarization: smoothing; supplemented views, in Vic Barnett ed. *Interpreting Multivariate Data*, Chichester, England.

