

## **Effective Training for Adult Learners**

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### **Introduction**

OSHA's pamphlet on training (OSHA 7) states that an "Effective training program allows employees to *participate* in the training process and to *practice* their skills or knowledge. This will help to ensure that they are learning the required knowledge or skills and *permit correction* if necessary." Learning occurs when behavior is changed and adults learn differently than children. When determining the effectiveness of the training experience (traditional, accelerated learning, e-Learning, blended, and so on), ask three questions:

1. Did the learner participate in the training, e.g., will you have appropriate types/numbers of respirator cartridges/filters to allow each respirator user an opportunity to conduct an exercise on proper selection and attachment of media?
2. Did the learner practice their skills or knowledge, e.g., will you have appropriate sizes/numbers of SCBA facepieces and breathing air cylinders to allow each respirator user sufficient time to practice inspection, donning, seal checks and doffing?
3. Was the trainer available to permit correction? Remember that it is harder to unlearn incorrect information than it is to learn new information. So it is critical that learners take the correct information home with them in their short-term memory before burning it to long-term memory.

Learning objectives describe the behavior change expected from the learner after training. Learning objectives should reflect the knowledge and skills addressed in training materials which are then linked to various instructional methods. Learning objectives provide the basis for evaluating course effectiveness in relation to student learning.

This paper includes nine learning objectives designed to improve the effectiveness of training for adult learners.

#### **Learning Objective #1: List the Five Required Elements of Properly Designed Learning Objectives**

Learning objectives should be SMART: specific, measurable, action-oriented, relevant and timely. Learning objectives should be designed with observable behavior. For example, the

learning objective “The learner will *understand* the welding processes and hazards associated with them” uses the verb “understand” which can not be observed or measured. Furthermore, the learning objective lacks specificity. The objective may be revised, as follows:

- The learner will list 5 hazards from TIG welding (= GTAW (gas tungsten arc welding)).
- The learner will list 3 acute and 2 chronic health effects from exposure to hexavalent chromium while welding stainless steel.

Examples of appropriate action verbs for learning objectives can be found in Russell 219. Review the learning objectives you created for a recent training program and determine if they are SMART.

### Learning Objective #2: Use the Flesch-Kincaid Score to Improve Readability of Training and Testing Materials

Only 4% of people can understand an average safety email, which is typically written at grade level 16 (Larking and Larkin 5). For technical communications, it is recommended that materials be written at the 6<sup>th</sup> grade level, where sixty percent of learners can understand them.

The Flesch-Kincaid readability tests are used extensively in the field of education and include two tests – Flesch Reading Easiness (a score from 0-100) and Flesch-Kincaid Grade Level. The tests use the same core measures – word length (syllables/word) and sentence length (words/sentence). The core measures are inversely proportional so a text with a comparatively high score on the Reading Ease test will correspond to a lower score on the Grade Level test. *Reader’s Digest* magazine has a readability index of about 65 and is easily understandable by 13-15 year old students (grade level 8-10). Use of the Flesch-Kincaid score is so ubiquitous that it is incorporated with many popular software programs such as Microsoft Office Word. Can you determine the readability (grade level) of this paper?

### Learning Objective #3: List Five Visuals to Improve Comprehension of Technical Material

Can you draw Heinrich’s Accident Triangle? Studies show that presentation graphics can reduce teaching time by as much as 28% (Pike 64). Furthermore, visuals dramatically improve comprehension of technical material. TWA flight attendants taking a safety test used images to improve the pass rate from 70-100%. Initially they toured the plane and located safety equipment. Then from memory, they identified the locations of safety equipment on diagrams ((Rose and Nicholl 101).

Visuals include room peripherals, diagrams, charts, mind maps (Rose 28, 97, 110), window panes (Pike 91), flash cards, etc. When designing visuals, avoid colors like red and green since about 10% of American males (<1% of American females) are colorblind.

Can you design a visual to help learners memorize Ohm’s Law?

$$\text{Voltage (volts)} = I \text{ (current in amps)} \times R \text{ (resistance in ohms)}$$

Can you design a visual to explain the clearance needed to use a shock-absorbing lanyard?

#### Learning Objective #4: List Four Ways to use PowerPoint More Effectively

PowerPoint may be a great tool when used properly:

- Use a minimum 24-point type
- Use upper and lower case fonts; avoid using all caps
- Use bold or underline for emphasis
- Use visuals more than words
- Use a 6 X 6 format
- Avoid transitions and moving text
- Use good contrast between the text color and background color
- Number slides
- Use few fonts and few colors on each slide
- Use sans serif fonts (verdana, arial)
- Avoid italics
- Use bright color to attract attention (Russell 240)

It is not uncommon to see slides with distracting transitions and multiple fonts and colors creating a fruit salad effect. Fortunately, it is becoming uncommon to listen to trainers read text directly from their slides. Review slides you designed for a recent training program and determine if they can be improved using the guidelines above.

#### Learning Objective #5: List Four Information Levels for Training

Do you conduct training needs assessments? Consider at least four distinct information levels – mastery, competence, familiarity and awareness for lockout/tagout training:

- **Mastery:** The superintendent of facilities/maintenance who is responsible for auditing LO/TO programs for multiple energy sources and conducts the annual review/certification.
- **Competence:** The authorized craftsmen who are responsible for conducting LO/TO in their field of expertise, e.g., electricians, pipefitters, etc.
- **Familiarity:** The affected machine operator whose equipment will be locked and tagged out for maintenance or repairs.
- **Awareness:** The other employees who are in close physical proximity to equipment which is being locked and tagged out.

It is not uncommon to find out that an employer offered just one level of training for LO/TO and put all employees in the same training session. While this is efficient, it is not effective since each level described above requires unique knowledge and skills. When employees who need awareness level training are mixed with those at the competence or mastery level, they soon become bored and distract other learners. They lose contact with radio station WIIFM. How many levels of training do you offer for confined spaces?

#### Learning Objective #6: List Five Memory Aids to Improve Retention in Learners

Mnemonics are fun tools to help learners memorize information. There are many types of mnemonics such as acronyms, acrostics, linking, rhymes and jingles:

- **Acronyms:** IDLH – **I**mmediately **D**angerous to **L**ife or **H**ealth (aka “I Don’t Like It Here”), SCBA – **S**elf-Contained **B**reathing **A**pparatus and WIIFM – **W**hat’s **I**n **I**t **F**or **M**e?

- **Acrostics** : **My Dear Aunt Sally** (multiply and divide before you add and subtract); conduct air monitoring in a confined space **OFTEN** (oxygen first, flammables second, toxics third);
- **Linking**: He screamed “eee” as he passed the cemetery (spelled with 3 “e’s”);
- **Rhymes and Jingles**: Thirty days hath September, April, June and November; when short February is done, all the rest have 31.

Chunking is another memory technique which is based on the fact that short-term memory is limited to holding  $7 \pm 2$  items. When chunking items, you decrease the number of items you are holding in memory by increasing the size of each item. For example, when spelling the word “psychiatrist” we often chunk it into syllables – PSY-CHI-A-TRIST. Local telephone numbers using 7 digits are based on chunking. Furthermore, words have more meaning than numbers so a phone number like 352-1234 is easier to memorize as “FLAnders 2 - 1234” using the telephone keypad. We remember only 20% of what we read, but we remember 90% of what we see, say, hear and do (Rose 34). So use multiple senses to memorize “Flanders 1234” by visualizing it, repeating it out loud (auditory) and writing it (kinesthetic). One last idea - To maximize recall, take frequent, short breaks (5 minutes/hour) so you have lots of primacy and recency. Do you provide memory aids to supervisors to rehearse/review/repeat with learners after training?

#### Learning Objective #7: List negative or defensive types of nonverbal communication

Albert Mehrabian stated that 55% of communication is nonverbal, 38% is vocal and only 7% is words (Bone 66). Trainers need to be aware of nonverbal communication. Body language is an amplifier to what you are feeling. Learners with a tight jaw and mouth will struggle to learn and retain information since an increase in tension reduces retention. Learners nodding off or slumped over send cues to the trainer to take a break or change to a more interactive instructional method. Learners who shake their head negatively and sit turned away from the trainer avoiding eye contact require additional follow-up with the trainer or employee’s supervisor. Properly decoded nonverbal communication helps the trainer to discern and diffuse hostility in learners. Similarly, trainers need to be aware of their own nonverbal communication. Trainers who make frequent eye contact open the flow of communication. Trainers who smile often transmit warmth and friendliness. Can you recognize defensive nonverbal communication in learners? Have you ever videotaped yourself training to check on your nonverbal communication?

#### Learning Objective #8: Identify Ways to Prime Participants for Learning Before Training Begins

According to Maslow’s hierarchy of needs, a learner’s most basic needs must be met before higher order needs such as learning can be met. What do you do before training to help learners feel safe, to create a sense of belonging and to help everyone feel valued?

Meier (66) suggests you send learners a “pre-course prep kit” to reduce anxiety, identify goals, clarify benefits, raise curiosity and create positive feelings about the upcoming training. The kit might contain an agenda, testimonials from previous attendees about the value of the training and a learning contract specifying what outcomes learners desire and what they are prepared to do to achieve those outcomes, e.g., participation. Have you ever considered marketing your product (training program) with posters and bulletins to get people energized and curious before training?

Do you provide brain boosters, such as bananas and water, or brain busters, like donuts and caffeine, as learners arrive? Do you play Baroque music to serenade the brain as learners arrive?

Events that are accompanied by intense emotions result in long-lasting learning. Do you provide fun games such as crossword puzzles, seek and find or brain games for learners when they arrive?

### Learning Objective #9: Distinguish Four Different Levels of Training Evaluations

New information must be understood correctly before learners leave the training room. New skills must be reinforced on the job soon after training or they will not be retained. Evaluating your training programs helps the trainer to justify your training budget, quantify performance improvement and improve the effectiveness of all aspects of the training program. There are four different levels of training evaluations, as follows:

1. Level 1 – Reaction of the learner regarding the trainer, agenda, presentation style, audiovisuals, handouts, training environment, etc. Last year I conducted an 8-hour training program in a conference room with a temperature of 65 degrees despite repeated attempts to heat the room. Several people had goose bumps and shivered. They eventually wore coats/jackets, but this poor learning environment, albeit uncontrollable by the trainer, contributed negatively to the training experience.
2. Level 2 – Learning – Change in knowledge, skills or attitude at the end of training. For example, were learners able to identify multiple energy sources and demonstrate skills to conduct LO/TO at the end of training? Do you use pre- and post-training tests or quizzes?
3. Level 3 – Behavior Change – Transfer of knowledge, skills or attitude to the workplace. For example, were electricians able to perform LO/TO in the workplace properly 30 or 60 days after training? Did employees don a fall protection harness properly or are the chest/thigh straps loose? Does the organizational culture support change? Note that there may be workplace factors that discourage the proper use of PPE such as lack of enforcement by the supervisor or lack of availability of proper sizes of PPE. Was there a difference in their pre- and post- training behavior observations?
4. Level 4 – Results such as return on investment, increased profits, fewer incidents, reduction in turnover, etc.

You can't manage what you don't measure. Review your most recent training program in light of the four different levels of training evaluations. What was the learner's reaction? Was there a change in learning and on-the-job behavior? What were the bottom line results?

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"I don't know what your destiny will be, but one thing I do know; the only ones among you who will be really happy are those who have sought and found how to **serve**."

Albert Schweitzer 1875-1965

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