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CONSTRUCTION SAFETY TRAINING GUIDE

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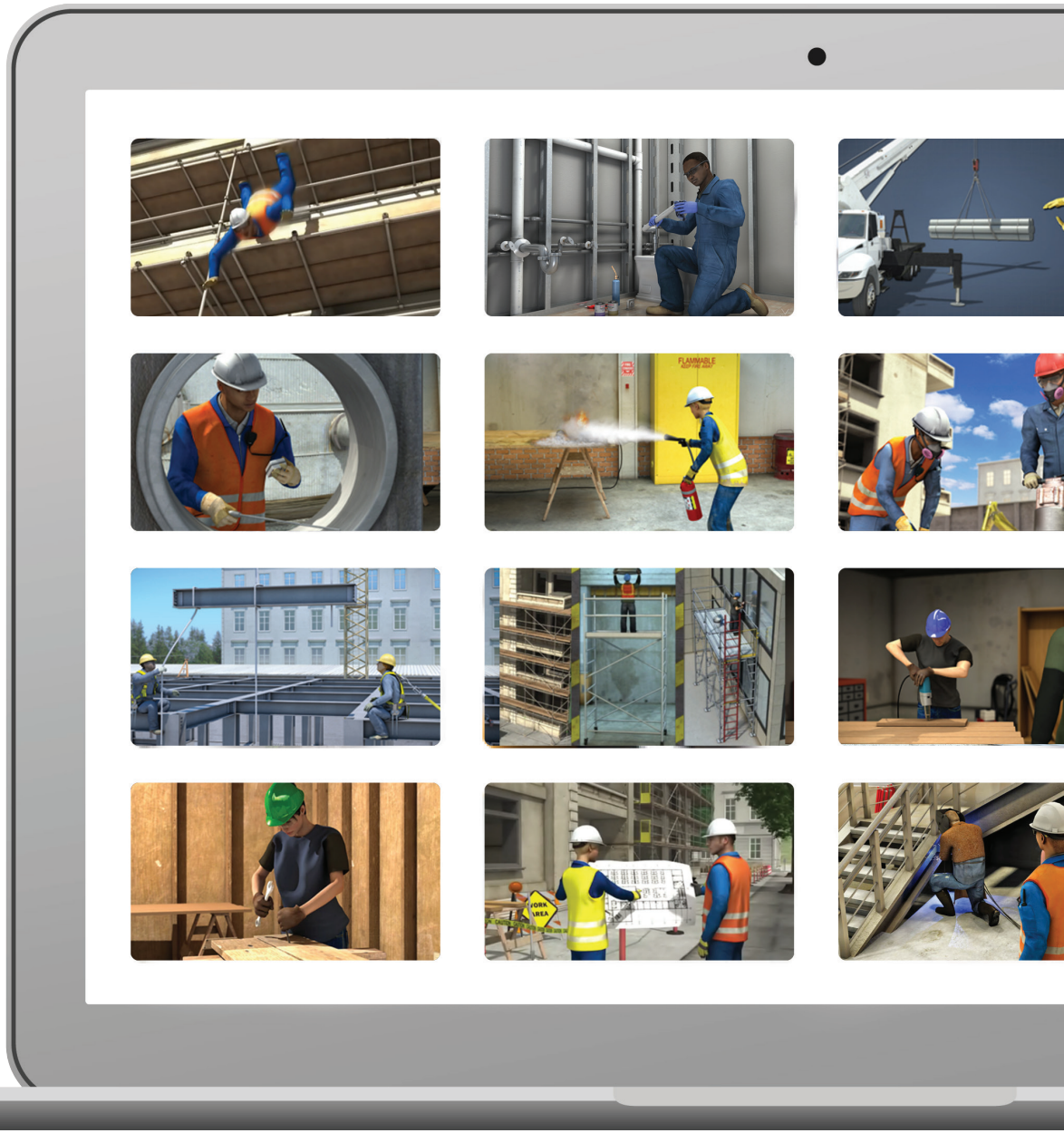

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PART I

INTRODUCTION

INTRODUCTION

In this guide, we'll provide you helpful tips, methods, and resources for improving the construction safety training your organization provides.

We'll provide a big-picture view of safety training within the context of your safety management program (or system) and your hazard identification and control activities; provide an overview of some OSHA construction safety training requirements; provide a helpful, step-by-step method you can follow to design, develop, deliver, and evaluate safety training (this section largely follows the well-known ADDIE instructional design model as well as the structure of the ANSI/ASSP Z490.1 standard for EHS training); provide tips on blending safety training; and provide links to some resources on safety training from organizations such as OSHA and the ASSP (American Society of Safety Professionals).

We hope you find this guide useful and encourage you to study the methods of developing effective safety training even more after this introduction.

PART II

SAFETY MANAGEMENT, WORKSITE HAZARDS, AND SAFETY TRAINING

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SAFETY MANAGEMENT, WORKSITE HAZARDS, AND SAFETY TRAINING

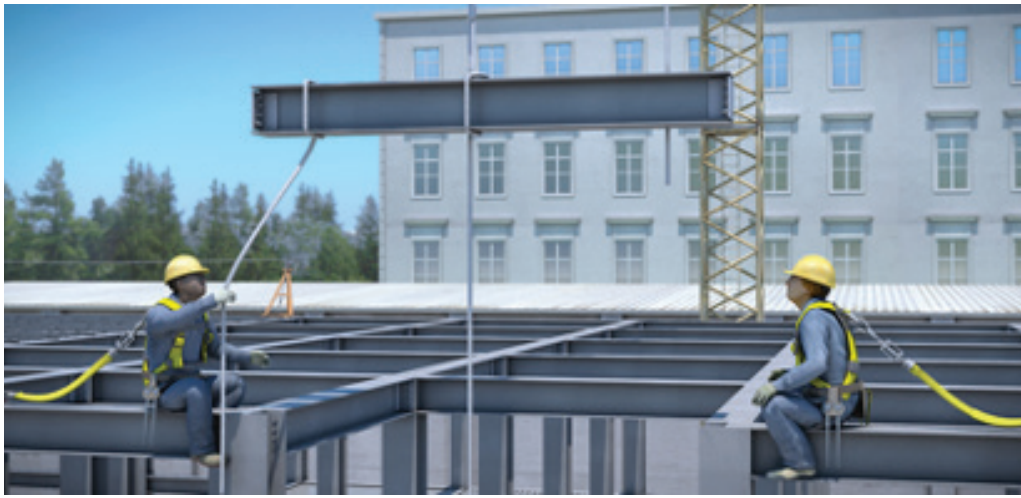
While safety training may be a compliance requirement, compliance is not the primary purpose of safety training.

Likewise, you can't create and deliver appropriate safety training to workers simply by reading a regulation to workers (or even by basing the training you develop directly on a regulation).

Instead, you need to design, develop, and deliver safety training that helps workers work safely in the presence of the hazards at their job sites and involved in their job tasks. And you'll have to design the safety training using evidence-based training methods that foster learning, memory, understanding, and later application on the job.

And finally, your hazard identification and safety training efforts must be integrated and inform one another.

It's our goal with this guide to help you with both those things—identifying hazards that safety training can and should address, and creating effective safety training using evidence-based training methods.



SAFETY MANAGEMENT, WORKSITE HAZARDS, AND SAFETY TRAINING

Safety Training and Safety Management

Safety training shouldn't exist in a vacuum. Instead, it should be one part of your safety management program or system.

OSHA 3886, *Recommended Practices for Safety & Health Programs in Construction*, is a helpful resource for safety management in construction (you might also want to check out ISO 45001 or the ASSP's Z10 standard for Safety and Health Management Systems).

Here are some key requirements regarding education and training that OSHA calls out in 3886:

- All workers are trained to understand how the [safety and health] program works and how to carry out the responsibilities assigned to them under the program.
- Employers, managers, and supervisors receive training on safety concepts and their responsibility for protecting workers' rights and responding to workers' reports and concerns.
- All workers are trained to recognize workplace hazards and to understand the control measures that have been implemented.

Additionally, in 3886, OSHA explains that safety training and education must "provide employers (owners and executives), managers, supervisors, and workers with:"

- Knowledge and skills needed to do their work safely and avoid creating hazards that could place themselves or others at risk.
- Awareness and understanding of hazards and how to identify, report, and control them.
- Specialized training, when their work involves unique hazards.

Additional training may be needed depending on the roles assigned to employers or individual managers, supervisors, and workers.

And lastly, in 3886, OSHA lists the following "action items" for safety training in relation to your safety management system:

- Provide program awareness training (safety and health program)
- Train employers, managers, and supervisors on their roles in the program
- Train workers on their specific roles in the safety and health program
- Train workers on hazard identification and controls

SAFETY MANAGEMENT, WORKSITE HAZARDS, AND SAFETY TRAINING

Hazard Identification

As noted earlier, the purpose of safety training isn't compliance. Rather, it's to help workers be aware of and know how to work in a safe and healthy manner in the presence of hazards at your worksites.

OSHA 3886, *Recommended Practices for Safety & Health Programs in Construction* notes the importance of hazard identification, stating:

"One of the "root causes" of construction injuries, illnesses, and incidents is the failure to identify or recognize hazards that are present, or that could have been anticipated. A critical element of any effective safety and health program is a proactive, ongoing process to identify and assess such hazards."

Further, OSHA 3886 lists these "action items" for hazard identification:

- Collect existing information about jobsite hazards
- Inspect the job site for safety hazards
- Identify health hazards
- Conduct incident investigations
- Identify hazards associated with emergency and non-routine situations
- Characterize the nature of identified hazards, identify interim control measures, and prioritize the hazards for control

For additional information about hazard identification, check out OSHA's Hazard Identification webpage and the OSHA Hazard Identification eTool.

OSHA's Construction Hazard List

Although your safety training should be based on helping workers work safely with the hazards at your worksite, OSHA has created some helpful lists of hazards that are often present at construction workplaces (this list is in the OSHA Compliance Assistance Quick Start for Construction).

OSHA's list of common construction hazards is below. We've also included links to helpful OSHA resources regarding those hazards:

- Falls
- Stairways and ladders
- Scaffolding
- Electrical
- Trenching and excavation
- Motor vehicle safety
- Highway work zones

SAFETY MANAGEMENT, WORKSITE HAZARDS, AND SAFETY TRAINING

- Hazard communication
- Hand and power tools
- Silica
- Concrete and masonry products
- Cranes, derricks, hoists, elevators, and conveyors
- Welding, cutting, and brazing
- Confined spaces
- Residential construction
- Steel erection
- Fire safety
- Emergency action planning

Remember, what's important is the list of hazard at your worksites, but this list can be a helpful reminder and OSHA's prepared and collected lots of good resources for each hazard.

The Hierarchy of Controls

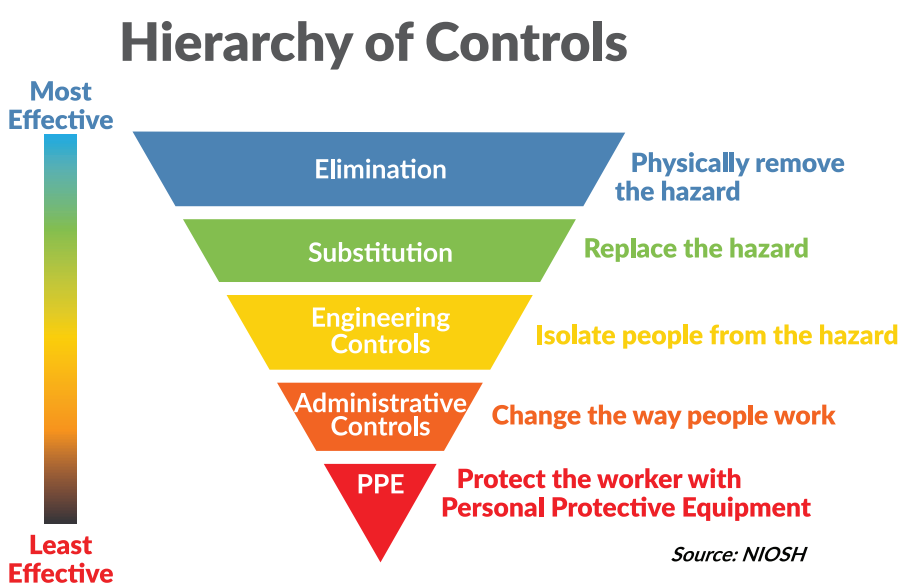
It's important to remember that safety training isn't a cure-all and it should never be a safety professional's first consideration when thinking of ways to mitigate and/or control a hazard at work.

After identifying hazards and prioritizing them for corrective actions, use something like the hierarchy of controls to mitigate hazards in the following ways:

- Elimination
- Substitution
- Engineering controls
- Administrative controls (this can include safety training)
- PPE

So never think of safety training as a first line of defense to protect workers from workplace hazards.

Read more about this at OSHA's Hazard Prevention and Control webpage.



PART III

OSHA CONSTRUCTION SAFETY TRAINING COMPLIANCE REQUIREMENTS

OSHA CONSTRUCTION SAFETY TRAINING COMPLIANCE REQUIREMENTS

Although compliance isn't the primary reason to provide safety training, it is a reasonable concern for safety professionals.

OSHA has created a helpful OSHA Compliance Guidance on Training webpage with some documents related to safety training in general and safety training compliance in particular. We encourage you to check them out.

This webpage includes a link to the *OSHA Standards Training Policy Statement*, the purpose of which is to:

"...reiterate OSHA's policy that employee training required by OSHA standards must be presented in a manner that employees can understand, and to provide enforcement guidance to the area and regional offices relative to the Agency's training standards. This position applies to all of the agency's agriculture, construction, general industry, and maritime training requirements."

This webpage also includes a link to OSHA 2254, *Training Requirements in OSHA Standards*. 2254 is primarily a listing of all the OSHA standards that include training requirements—see page 1 for training and workplace safety and the section on construction safety training, which begins on page 143.

Additionally, 2254 makes an interesting recommendation about involving workers in developing safety training programs:

"Training programs help ensure that safe jobs are no accident. Safe jobs exist because employers make a conscious decision, each and every day of the year, to make protecting workers a priority in the workplace. When this effort includes participation from workers, workplace injury and illness prevention programs are improved because workers can identify missing safety procedures, make recommendations for changes and help ensure a safe workplace. When workers have a voice in the workplace and input about how training is developed, training programs are more accurately focused on specific workplace hazards."

The OSHA webpage also includes a link to OSHA letters of interpretation, many of which relate or otherwise touch on issues of importance when considering safety training. In particular, check out the following:

- Standard Interpretations (Letters of Interpretation/LOI) for Construction Standards
- LOIs related to 1926.21, Safety Training and Education
- 1926.545, Training Requirements
- 1926.503, Training Requirements
- 1926.761, Training; 1926.1060, Training
- 1926.1430, Training

Finally, the webpage includes a link to OSHA 3824, *Resources for Development and Delivery of Training to Workers*. This OSHA document includes some great information on the development and delivery of safety training, including characteristics of sound training programs; best practices for training adults; a checklist for adult education principles; and more. The guide you are currently reading includes similar information about the design, development, and delivery of safety training, based to some extent on the structure of the ASSP Z490.1 standard for EHS training.

PART IV

DEVELOPING EFFECTIVE EHS TRAINING

INTRODUCTION

So how do you know when it's time to develop EHS training materials? And what should you do if it IS time to develop EHS training materials?

You move into the process of designing & developing EHS training, of course, which we'll explain further in this section.

But first, let's explain those terms "design" and "develop."

- **Design**: determine if EHS training would be helpful and make plans for creating it.
- **Develop**: the process of actually creating the EHS training materials.

After the training has been designed and developed, it can then be delivered to employees.

With that explained, let's look at some parts of design and development, including:

- Training needs analysis
- Learning objectives
- Training prerequisites
- Course design & development
- Continuous improvement strategy

Training Needs Analysis

So you've got an EHS problem. Sounds like time for some EHS training, right?

But hold on. When you've got a problem, it's easy to assume a little training can fix it. But that's not always true.

Before you rush into training creation, and possibly waste a lot of time and money, it's best to analyze the situation more closely. The technique for doing this is known as a training needs analysis, which is also sometimes known as the training needs assessment.

In rough terms, we can break the training needs analysis down into two stages:

- Is EHS training the right or best solution to this problem?
- If EHS training is the best solution, then gather useful information that will help you develop effective training.

We'll explain each step in the following pages.

You might also want to download our free Analyzing & Solving Workplace Performance Problems Flowchart for even more help with this.

Is EHS Training Needed and Will it Fix the Problem?

It's important to analyze the situation before you rush into creating training.

If you rush to provide training, you may waste money on training development when training can't solve the problem, or when there's a better solution. And so you risk wrongly putting your resources into training development, ignoring a different aspect of the situation, and possibly leaving a hazard in place.

For example, say a machine operator gets her hand cut while working on a machine. You can create training materials for machine operators, telling them to be careful of a dangerously exposed moving blade. Or, you can perform a training needs analysis, put a guard on the blade, control the hazard, and skip the training.

That's a simple example, and there are more reasons why EHS training may or may not be needed. But it gets you started in the right direction.

On the other hand, there are many times when you'll determine that training is the right solution. And in those cases, you'll go ahead and design that training.

Here are some things to consider at this phase:

- Can you change something in the work area instead of developing training?
- Are there obstacles in the workplace or steps in the work process that contribute to the hazard? If so, can these be removed or redesigned?
- Can you create and provide a job aid at the work area that will improve safety instead of providing training (like a checklist for workers to follow)?
- Is there currently some form of incentive that allows or encourages the continuation of the hazard? For example, are workers running down the hall because they get a bonus for units produced per hour? Can that incentive be removed?
- Is there currently some form of punishment that causes workers to work unsafely or to work in the presence of a hazard? For example, does taking the time to perform a JHA make it impossible for the employee to reach his/her weekly goals and thereby lead to disciplinary action for the worker?

If EHS Training Is Needed, Gather More Information

If you investigate the problem, and it turns out that you should develop and deliver EHS training, then the next phase of the training needs analysis is to gather information that will help you design, develop, and deliver better training.

Information to gather at this point includes:

- What the trainees should know or be able to do after the training is complete
- Characteristics of the trainees, including:
  - Previous/existing knowledge
  - Current/existing skills and abilities
  - Language preference (speaking and listening)
  - Education
  - Culture
  - Literacy
  - Preferred learning methods
  - Work schedules
  - Interest in training topic/reason for interest
- Site-specific information to include in the training
- Any existing relevant job analyses and/or job safety analyses

- Applicable regulatory requirements (federal, state, and/or local)
- Relevant industry standards

You can gather this information in a number of ways, including:

- Reviewing job descriptions from HR
- Reviewing job hazard analysis documents
- Interviewing employees and/or having them complete surveys
- Observing employees in the field
- Interviewing supervisors and/or having them complete surveys
- Reviewing company incident data for injuries, illnesses, and near-misses
- Reviewing safety suggestions
- Reviewing minutes from safety meetings
- Consulting with safety committee
- Consulting regulations from OSHA, EPA, DOT, MSHA, and similar agencies

Learning Objectives

Once you've completed your training needs analysis, determined EHS training is appropriate, and have gathered your information, it's time to think about creating learning objectives.

A learning objective is something the employee should know or be able to do when training is complete. It's the reason for providing training--to teach employees what they need to know or do to be safe on the job. Your training should have one or more learning objectives.

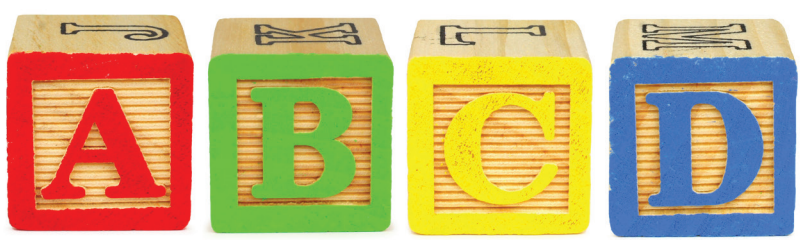
Once you've written your learning objectives, they'll function as a road map for everything else you'll have to do. You'll develop training materials that are intended to help employees satisfy the learning objective (and that won't include anything else). You'll use the learning objectives to let the trainees know what the training is intended to teach them and what they're expected to be able to do when the training is over. And you'll create and deliver tests to see if employees can satisfy the learning objectives after the training is over.

Many people begin creating training materials before they create learning objectives. Or, they never create learning objectives. The problem with this is you're likely to create meandering, content-heavy, "flabby," and irrelevant training materials that don't solve your problem. If you've heard of "information dumps" or "spray-and-pray" training, this is the most likely cause. So don't be that training creator.

Four-Part Learning Objectives: ABCD

When you're writing a learning objective, think of adding four parts, each represented by one of the letters A-B-C-D.

You may find you can do with fewer parts, but in many cases, using all four parts or at least considering doing so will help create a very clear, unambiguous learning objective.



Let's look at each of those four parts now.

A Is for Actor

Every learning objective should state something that the employees should be able to do after the training. So the employees, the people who take and complete the training, are the "actor(s)" of your learning objective.

Sometimes, your objective may refer to the "actor" in general terms such as "the learner" or "you." Other times, you may identify the actor by his or her job role, such as the crane operator or pipe fitter.

Regardless, remember that each learning objective states something that the actor must be able to do after the training.

Don't fall into the trap of writing learning objectives that simply explain the content of the training. That doesn't explain what the employees will be expected to do after the training. Focus on the Actor(s).

This is the "WHO?" of your objective.

B Is for Behavior

Every learning objective should state something that the employee must do—a behavior of some sort. This may be something as simple as stating a definition or something more "physical," such as performing an action.

Because this is something the employees must perform, the behavior will be a verb. "Stating" is a verb, and so are things like "performing."

In addition, the behavior must be an observable behavior, not something that's unobservable or subjective like "know," "understand," or "appreciate." How can you prove if someone "knows" something?

Finally, the behavior should be something that any observer could agree was either performed or was not performed adequately. Don't leave this up to your own subjective interpretation.

If you remember your behavior should be a verb, that it should be observable, and that it should be something any objective observer can agree was met or not met, you're headed in the right direction.

This is the "WHAT?" of your objective.

C Is for Condition

Many times, the employee will have to perform the learning objective's behavior under a set of given conditions.

For example, you might say "given a list of words, circle the ones that are part of a given machine," or "given a wrench, tighten this bolt," or "given a schematic diagram, correctly identify the machines in a work area."

In those three examples, the conditions are "given a list of words," "given a wrench," and "given a schematic drawing."

This is the "HOW?" of your objective.

D Is for Degree

This part of the learning objective explains how well the employee must perform the behavior.

Examples of degree might include things like "in less than ten minutes," "with 90% accuracy," or "90 times an hour."

This is the "HOW WELL?" of your objective.

Learn more about ABCD learning objectives.

SOME NOTES about actors, conditions, and degrees in learning objectives

We mentioned earlier that you won't always have to include all four parts (A, B, C, and D) in your learning objectives.

Let's get back to that.

You don't always have to write the name of your actor in your learning objectives (like "you" or "employees" within the objective). What's really important is that you remember that you're writing an objective that an 'actor'--your employees--must be able to perform.

Many times, you'll see learning objectives listed to learners as simple lists beginning with behaviors (stated as verbs), or with a simple "At the end of this training, you will be able to:"

You may also find you don't need to add a condition or a degree for every learning objective. That's OK if your learning objective stands alone without a condition or degree, and if their absence creates no confusion or ambiguity. But it's always good to ask yourself if your learning objective is perfectly clear or if it would be more clear with conditions and degrees.

Not to overstate it, but the important thing is to make sure your objective is clear, precise, and unambiguous.

SMART Learning Objectives

There's a second thing to consider when you're writing learning objectives. Learning objectives should be SMART. A SMART learning objective will have five characteristics:

S Is for Specific

Use clear, direct language to tell employees exactly what they should learn and what they should be able to do after the training. Don't be vague, unclear, or misleading.

M Is for Measurable

The point of creating a learning objective is to identify standards that employees must meet, perform, or satisfy. You can only do that by making the objectives measurable through an action that you can observe and objectively determine if the employee has satisfied the objective.

A common mistake to avoid is trying to measure subjective values that can't be measured objectively. An example of this is writing an objective that uses the words "know" or "appreciate" as the behavior.

Write the objective so that any observer could watch the employee's performance and agree if the employee satisfied the objective or not. Don't create a learning objective that can be satisfied only by your own unique, personal understanding of the objective.

A Is for Achievable

The learning objective must be something the employees have a chance of completing/satisfying, having enough pre-existing knowledge, time, and similar resources.

For example, you wouldn't create a learning objective that asks an elementary school child to construct a rocket in an hour–it's just not achievable. Not in most cases, at least.

While checking your objectives at this level, make sure they aren't too easy, either. If they're too easy, chances are you may not need to hold the training at all.

R Is for Relevant

The objective should be something that's relevant to the employees' job and that employees see the value of learning. Don't teach material that isn't relevant or that employees won't use on the job. Remember, you're providing EHS training to employees so they can work safely at their job.

T is for Timely

Make sure your objective is something employees will have to use in a timely fashion. Meaning--soon after training.

For example, try to hold training on a topic immediately or shortly before employees need to use the information on the job--not months or years before.

Click for more on SMART learning objectives.

More about Learning Objectives

Want still more information about learning objectives?

Robert Mager developed what he called performance-based learning objectives. Writing a performance-based learning objective is similar to what we've described already. For example, the "behavior" in an ABCD learning objective is the "performance" in a performance-based learning objective.

Read more on performance-based learning objectives and how this idea began in a book review of Mager's classic, *Preparing Instructional Objectives.*

Benjamin Bloom developed Bloom's Three Learning Taxonomies to help pick out the ideal behavior (verb) in your objective to match the type of knowledge, skill, or attitude you want employees to acquire.

Click the following link to read a summary of how to use the Bloom approach with the ABCD and SMART methods in this Guide to Writing Learning Objectives.

Prerequisites

After you've analyzed your audience and created your learning objectives, take a moment to consider any prerequisites that will be necessary for the training you'll soon create, and that employees will soon be required to complete.

What background, experience, knowledge, skills, and abilities will the employees need even before they begin your training so that they can perform well and have a fair shot at satisfying your learning objectives?

Create a list of the course prerequisites necessary to begin the training you're completing now, come up with a way of notifying workers of the prerequisites before they attend your training, and find a way to help workers attain those prerequisites in a timely fashion before training if necessary.

Course Design & Development

Once you've got your learning objectives in order, and have identified any prerequisites, it's time to design and develop your course.

In this phase, you'll consider:

- The training delivery method
- The source of your training content
- Training materials, including instructional materials for the employees and trainers
- The training location
- The training schedule
- The qualifications of the trainer
- Training evaluation strategy

Let's take a closer look to see what each of these are about.

Selecting the Training Delivery Method

You're going to create EHS training, but what delivery method will it be?

Will employees attend an instructor-led classroom training session? Will they watch a video? Will they read a PDF or a PowerPoint presentation? Will they do some hands-on exercises in the field? Will they complete an eLearning course?

Training delivery method options include:

- Instructor-led training in a lecture setting
- Online eLearning courses
- DVD- or VHS-based courses
- Web-based videos
- On-the-job, in-the-field training (OJT)
- Peer mentoring/shadowing/following programs
- Group discussions
- Case studies
- Safety exercises performed in a classroom setting
- Safety demonstrations
- Group interactive safety training activities
- Webinars
- Others

In general terms, each of these training delivery methods have some advantages and disadvantages for particular training needs. For each training need, you should try to select the most appropriate training delivery method (or a mix of delivery methods).

Now let's look at some ways to pick the best training delivery method for different training needs.

Method 1: Results from Employee Analysis

When selecting the most appropriate delivery method, one thing to think of is the stuff you learned about the employees when you performed the training needs analysis.

Is there a type of training that they prefer more than others? If so, you may want to try to use that.

Do some employees have trouble reading? If so, written training materials may not be a good choice.

Are the employees spread out throughout multiple different locations? If so, eLearning that can be delivered online may be a good option (or a webinar or video).

Run through your training needs analysis at this point and look for any clues that suggest one training delivery method may be more helpful than others.

Method 2: Appropriate to Learning Objective

The next thing to consider when selecting the training delivery method is how well the method matches the learning objective that the workers will have to satisfy.

You may find that some types of training delivery are more appropriate for specific learning objectives.

For example, if an employee has to learn to "state" a definition or "list" some things, written materials, a video, or a simple eLearning course may be the right training delivery method.

On the other hand, if an employee has to learn a complicated procedure, some hands-on field-based training may be a better option.

Method 3: Allowing for "Adequate Feedback"

A last thing to consider when selecting the training delivery method is if the method will provide "adequate feedback" to make sure the employees understand the materials.

Let's take a look at two of the words in that sentence. We'll cover both, but we'll do it in reverse order.

What does "feedback" mean?

In the context of EHS training delivered to your employees, feedback can mean a number of things. These can include:

- Q&A sessions during instructor-led training
- Group discussions
- Feedback from an instructor while the employee performs hands-on exercises
- Feedback from a knowledgeable trainer, mentor, or supervisor during OJT training
- Electronic feedback to questions presented and answered in a traditional eLearning course (typically multiple-choice or true/false questions)
- More sophisticated, interactive feedback in role-playing, simulation, or gamified eLearning courses
- An anonymous comments drop-box posted in a public place (that you then respond to in a public manner soon after)
- The ability to write and send follow-up emails to an instructor when training is over (and receive a helpful response)
- Other forms of communication and guidance

What does "adequate" mean?

Next, let's look at "adequate." It stands to reason that some trainings will require a LOT of feedback, and others won't call for much feedback at all.

For example, your workers will probably have a lot of questions and concerns about a significant change to a safety regulation like the recent new Silica standard. You might want to develop some form of instructor-led training that allows for a lot of feedback in this case.

Likewise, if you're implementing a new job procedure, the employee will probably benefit from a lot of feedback as well. But maybe in this case, some form of hands-on and/or on-the-job training with a supervisor providing real-time feedback would be best.

Of course, other cases may not call for as much feedback. If you're simply saying that smoking cigarettes is now allowed only outdoors in designated smoking areas and explaining why, may be a written document distributed to the workers, followed by a simple "Any questions?" is all that's necessary.

Method 4: Blended Learning Solutions

A final thing to keep in mind when selecting a training delivery method is that a "blended learning solution" that makes use of more than one method maybe just what you need.

Blended learning solutions use more than one type of training delivery for a given training need-for example, you could assign an eLearning module, hold a follow-up instructor-led training to answer any questions and provide other feedback, and then distribute written documents as reminders or post-training references.

Download our free Guide to Blended Learning Solutions to learn more.

Instructional Materials

The next step is to develop the training materials for both the trainees and the trainer. These instructional materials can include any number of things, such as:

- A trainee's manual or student book for the employees
- Any additional handouts for the employees
- Materials of any format used during training, including written materials, photos, videos, eLearning courses, etc.
- Hands-on exercises for employees to perform during the training
- Evaluation tools (quizzes, test, questionnaires, role-playing scenarios, procedure demonstrations, etc.)
- A trainer's guide for the instructor (more on this below)

Step 1: Instructional Materials for Trainees

There's a lot to be said about the best ways to create training materials that are truly effective. But here are a few things to keep in mind:

- Create training materials that fully cover your learning objectives and focus on nothing but
- Create training materials that make use of and appeal to adult learning principles
- Consider creating training that includes these nine events of instruction
- Remember to consider a blended learning solution
- Use simple, conversational language
- Use training materials that include effective training visuals (read this article and this article for more on that)
- Create effective training assessments that truly determine if your employees can satisfy the learning objectives (more on this later)
- Create a strategy now, during training development, for how you will evaluate the effectiveness of training
- Identify and measure relevant key performance indicators (KPIs) before the training
- Consider working with safety training development professionals

Tip: If you want to check out one short, easy-to-read book that's full of great tips for creating effective training materials, you could do worse than *Design for How People Learn* by Julie Dirksen–we recommend this one highly.

Step 2: Instructional Materials for Trainers

If your training will include some form of face-to-face instruction, whether it's formal instructor-led training in a classroom setting or field-based, on-the-job training that pairs the employee with an experienced worker, you should create a trainer's guide.

Here are some things the instructor's guide should include:

- An outline
- The learning objectives
- A list of any necessary prerequisites for the training
- Scheduled instruction time
- A list of any training aids and handouts
- Directions for running any demonstrations or activities that will take place during the training
- A list of requirements for the training environment
- Emergency evacuation procedures and routes, plus the post-evacuation meeting area location
- Tools for evaluating the learning of the employees
- A list of reference materials
- The date on which the training guide was published
- A revision date, if that applies

The Source of the Training Content

Of course, one very important thing to think about while developing training material is the information you're trying to get across.

In particular, where will you get that information? Remember to always use credible sources such as:

- Regulatory agencies (OSHA, MSHA, EPA, etc.)
- Government agencies (NIH, CDC, NIOSH, etc.)
- EHS professional organizations (ASSP, NSC, AIHA, etc.)
- Recognized scientific principles
- EHS journals
- Subject matter experts, including experts at your workplace
- Employees
- Manufacturer recommendations and manuals
- Site-specific information

Training Location

You should also be sure that the training can be conducted in an environment that is:

- Safe
- Appropriate for the training delivery method chosen

Both points may seem obvious, but it's worth noting and ensuring nonetheless. For example, if you're going to teach the HazCom 2012 chemical labeling requirements and will have some flammable chemicals with you, don't schedule the training to take place in a room with an open flame (the example is exaggerated, perhaps, but you get the point).

Likewise, make sure the location matches the training delivery method you've chosen. If you're going to do instructor-led training, you'll probably want to book a quiet, out-of-the-way conference room instead of leading the training in the middle of the production floor.

Of course, if you want to do some on-the-job training, that conference room won't work so well. And if you want to deliver online eLearning courses, you'll want to make sure the trainees have access to a computer in a quite environment with proper computer ergonomics.

There are a number of good books and websites that can you help you select and set up the training environment. The Association for Talent Development's website is a good place to start looking for those.

Training Schedule

The next step is to allocate an appropriate amount time for the training. Your schedule should include an:

- Estimated duration for the entire training session
- Estimated duration for each individual topic within the training session
- Time to address questions and concerns and to provide "adequate feedback"

Provide a time estimate for the training based on:

- The amount of material to cover
- The complexity of the material
- The learning objectives your employees must satisfy
- Regulatory or compliance factors

Trainer Qualifications

Develop a list of the minimum criteria a person must need to be qualified to lead the training. This will help you identify appropriate trainers for the particular topic and help ensure the right trainer facilitates each training. This criteria might include:

- Subject matter expertise
- Training delivery skills
- Training and/or other professional certifications
- Compliance with specific regulatory requirements

While you're at it, come up with a desired ratio of trainers-to-trainees. You can use this later when you're scheduling the session.

Training Evaluation Strategy

After you've created those EHS training materials and "set them loose in the wild," you'll want to monitor them, evaluate their effectiveness, and continually improve them.

Although you'll primarily evaluate the training after it's been delivered, you'll have to do the upfront planning and some creation now.

Before you do, it's helpful to know that the standard method for evaluating training is to use the Kirkpatrick Four-Level Training Evaluation, in which the training is evaluated at the following four levels:

1. Reaction
2. Learning
3. On-the-job behaviors
4. Business results

Level 1: Employee Reactions

The first level of training evaluation is designed to gather reactions from the employees who completed the training. You can collect the reactions from employees by having them complete surveys that allow them to share their opinions about the training.

Write those surveys now, during the training development phase. You'll hand them out and employees will complete them during (or immediately after) training delivery. That way you can use the information from the employee reaction surveys when you're evaluating training and continuously improving it.

For more information, read this article on Writing Better Employee Reaction Surveys (Smile Sheets).

Here are some DOs and DON'Ts for creating those surveys.

Do:

- Include some questions that allow employees to write in their thoughts and suggestions
- Focus questions on whether or not the employee believes the training prepared him/her to work safely on the job
- Create answer options that range through a spectrum of negative and positive responses
- Create answer options with clear meanings
- Create answer options that are clearly different from one another
- Ask questions and provide answer options that will leave you with survey results that will help you determine if the training was effective
- Ask questions and provide answer options that will give you information to help you revise and improve the training if necessary

Don't:

- Ask employees if they "liked" the training or trainer
- Ask "leading" questions (example: the training was very good--agree or disagree?)
- Rely purely on "Likert scale" questions (questions with answer options like 1-5 or strongly disagree/disagree/neither agree nor disagree/agree/strongly agree)

Level 2: Employee Learning

The second level of evaluation focuses on testing the employees after the training has been completed.

Tests are typically of two types: knowledge and performance-based. The type of evaluation you use at this phase will depend on:

- The learning objectives
- The type of training delivery method you selected

Knowledge tests focus on what employees know. These tests may be in the form of verbal discussion and/or Q&A sessions, written short-answers or essays, or tests with question types such as true/false, multiple-choice, matching, sequencing, and others.

Performance-based tests focus on having the employee demonstrate that they can perform a task properly and safely. Typically, the trainer evaluates the employee's performance of the task using a reference, checklist, rating scale, or similar evaluation guide that's prepared during the training development phase.

Whether it's a knowledge-based test or a performance-based assessment, the purpose of the assessment is to determine if the employees can satisfy the learning objectives from the training. Don't fall into the trap of providing training but never determining if your learners "get it."

You'll also have to give some thought to the criteria for successful training completion. In other words, what does an employee have to do to "pass" the training?

The answer will depend on the training need and the learning objectives, since the objectives state what the employee should be able to do after the training is over.

But there may be some additional variables to consider at this point too. For example, if you want your learners to be able to do something, do they have to do it every time, or something like 95 times out of 100? Or, if you want the employee to demonstrate knowledge, how do they do that--by repeating it to you once, or by scoring 80%, 90%, or 100% in a written test? (These points would be addressed in the "degree" of your learning objective.)

Whatever your answer to these issues, your criteria for valid training completion should:

- Be created before the training occurs
- Be applied in the same consistent manner for all training sessions
- Indicate a test score or a similar performance-based measure of success
- Include standards for minimum attendance and participation

Reliable and Valid Tests

It's important to remember that training evaluations at level 2 should be both "reliable" and "valid." Here's what those terms mean:

- **Reliable:** Gives consistent results over time
- **Valid:** Accurately reflects the knowledge, skills, abilities, or attitudes specified in the learning objective

Level 3: On-the-Job Behaviors

The third level of evaluation focuses on whether or not the workers apply the EHS training when they're back on the job after training.

After the training, you'll want to go out into the field and observe their behaviors to see if this is true. It may help to develop some form of written guideline now of what to look for in the future, when the training is done and workers are back on the job.

In addition, you may want to observe the workers' current on-the-job behaviors so you see the current state and the skill gap.

Finally, it's a good idea to communicate with the workers' managers so they'll know the intention of the training and so they can help support and reinforce the training when the workers have been trained and are back on the job.

Level 4: Business Results

The fourth and final level of evaluation focuses on whether or not the EHS training had a measurable positive effect on a business goal.

Business goals to monitor at the highest level may include things like revenue, cost, profit, and production, all of which EHS training can influence.

Business goals that are closer to home for EHS, and that EHS can more directly influence, include:

- Incident rates
- Fatalities
- Injuries
- Illnesses
- Near-misses
- Missed work days
- Production downtime due to EHS issues
- Insurance costs
- Worker's compensation costs

You'll want to identify any business goal you hope your training will affect, learn which KPI is used to measure progress toward that goal, and get current data on that KPI so you can later compare the post-training data and determine if the training had the desired positive effect.

Completion Requirements

There are a number of things to plan in advance to help employees successfully complete their training. These include:

- The possibility of completing and passing a pre-test to opt out of training
- The passing score on a test
- Successful performance on skill assessments
- Remediation for employees who don't pass the initial assessment (test or skill assessment)

Let's look at each.

Pre-Test

In some cases, you may want to allow employees to complete a pre-test and, if they score well enough, opt out of the training. It's important to check first to be sure this doesn't violate any regulatory requirements.

If you do want to do this, develop the pre-test, including the passing score, during this phase. The pre-test should be very similar to the test employees would take after training (though it would be a best practice to not use the same test, to reduce the chances of other employees getting the test before they take the training).

Passing Score (for Tests)

If your employees must take a test after training, set a standard for what it means to "pass" the test when creating your training evaluation. That passing standard should be directly linked with your learning objectives, which state what the employee should be able to do after the training is over.

Successful Performance for Assessment & Skill Demonstration

If instead of a knowledge-based test, you'll have employees demonstrate a skill or procedure to pass the training, develop a set of criteria that clearly spells out what a successful, passing performance looks like and includes (and perhaps what it does not include). Trainers use this as a guide while evaluating and assessing the performance of learners after training to determine if they can satisfy the learning objectives.

Remediation for Employees Who Fail the Initial Test or Assessment

Your completion criteria may also include alternative procedures that can be followed by employees who fail to satisfy the completion criteria. This may mean completing a full retraining or getting some remedial help.

Continuous Improvement Strategy

Once you've rolled out a training program, you've got to periodically review it to ensure it's up to date and effective. And you've got to revise it when necessary.

Begin making plans to do this now. As far as keeping your training up to date, you'll need to keep tabs of all the stuff you'd expect:

- Injury, illness, and near-miss reports
- Revised JHAs
- Regulatory changes
- New procedures and processes
- New equipment
- More

And that means you'll want to make sure these are in place now, that they're being measured (when relevant), and that you know the measurements now so they can act as a baseline after training.

Remember to use the data from the four levels of evaluation we covered earlier during your continuous improvement efforts.

PART V

DELIVERING EFFECTIVE EHS TRAINING

INTRODUCTION

Once you've developed training, it's time to deliver it.

Of course, training delivery varies based on the training delivery method(s) you've chosen. For example, if you've developed an eLearning course, you'll need something like a learning management system (LMS) for training delivery. If you've made something like a microlearning course for mobile phones, you may need to text the course for delivery. If you've developed a live online-learning course to be deployed over a webinar-like platform, there are yet another set of issues to consider for your virtual classroom. And if you've designed an instructor-led classroom session, you'll need to consider more traditional classroom/instructor-led training delivery dynamics.

In this section, we'll focus on safety training delivery in a classroom-based, instructor-led training delivery context. But don't forget other forms of training delivery methods bring with them other training delivery concerns.

In this section, we'll address:

- Traits of effective EHS trainers
- Planning and preparing to deliver EHS training
- Training delivery
- Managing the learning environment

Effective EHS Trainers

Effective EHS trainers should:

1. Possess a measure of subject matter expertise
2. Have training delivery skills
3. Have training delivery experience
4. Improve their knowledge and skills through work experience and continuing education
5. Be able to document their qualifications

First, they should be subject matter experts. The standard says they "shall have an appropriate level of technical knowledge, skills, or abilities in the subject they teach." So, they don't have to be subject matter experts in the way that Einstein was a subject matter expert on physics. But, they need to know their stuff. "Appropriate" seems to be the key word here.

Next, they should be experienced trainers with training delivery skills. This should include a particular emphasis on knowing and applying adult learning principles while delivering training.

Also, the trainers should maintain and improve on their knowledge and skills through a combination of work experience, continuing education, and other professional development opportunities.

Finally, trainers and training program administrators should create and store documents that show how EHS trainers comply to these expectations. This can include resumes, continuing education certificates, licenses, registrations, and/or simple experience sheets.

Trainer Planning and Preparation

The trainer should plan and prepare in advance of the training. Most notably, this means making sure the trainer:

- Meets the qualifications for an effective, appropriate trainer listed above
- Knows the course's learning objectives
- Is familiar with the course's training materials
- Knows how to use the primary training delivery method and the backup/alternate delivery method
- Has read and understood the instructor's guides
- (This final point is for instructors in virtual training environments) A virtual training instructor will have practiced training in the virtual environment enough to be completely familiar with the delivery system and be familiar with backup plans in case of a malfunction and/or technical error

Training Delivery

Two things the EHS trainer should pay especially close attention to while delivering training are:

- Applying adult learning principles
- Fostering communication and ensuring adequate feedback

Adult Learning Principles

The EHS trainer should use adult learning principles while leading the training.

Depending on where you look, you'll see slightly different sets of adult learning principles. While they all are similar, sometimes the differences are interesting. We'll present two sets below.

First, the set of adult learning principles listed in ANSI Z490.1 (this set focuses on what the trainer should do to appeal to the adult learners). According to this list, trainers should:

- Treat employee in training with respect
- Recognize and respond to their individual learning styles/preferences
- Manage difficult situations by exercising appropriate judgment
- Be flexible in tone and pace to accommodate the learning needs of the employees at the training
- Do what's necessary to coach, counsel, and guide the employees to make the learning experience as effective as possible
- Respect, value, and appreciate the different levels of experience that the employees bring to the training
- Encourage active participation from all employees in the training

Next, a set of slightly different adult learning principles based on the list by learning theorist Malcom Knowles (this set focuses on traits of the adult learners that the trainer should appeal to). According to this list, adult learners:

- Are self-directed
- Have life experiences
- Are goal-oriented
- Are task-oriented
- Want to learn within their own schedule
- Learn when motivated
- Want to feel respected

Communication and Feedback

When EHS training is being designed and developed, it's important to give thought to and build in opportunities for communication with the trainees. This includes feedback, such as answering questions, addressing objections, and coaching or guiding employees as they learn to perform job skills safely.

But it's up to the EHS trainer to ensure that communication and feedback takes place.

Trainers must foster an environment that encourages and supports questions and comments, and they should build in opportunities for practice and feedback.

To do this, try to focus on asking workers questions instead of merely lecturing to or talking at them.

Finally, remember to always create an atmosphere in which the learners feel safe asking questions; never make fun of or shame people when they ask something.

Managing the Learning Environment

Trainers must manage the learning environment during the training. That includes making sure the training environment is safe, of course, but also that it's an appropriate environment for learning in general and for learning the given topic in specific.

Trainers must ensure:

- Conditions are always safe
- Noise levels are low enough that trainees can hear properly
- There's access to water and restrooms
- The temperature, air quality, and climate is appropriate and comfortable
- Lighting and visibility are suitable
- There's enough seating
- There's enough work area for the training
- The training creates no ergonomic hazards
- There's a planned evacuation route and enough emergency exits, and all in attendance know what to do in event of an emergency
- There's a way to call for emergency medical assistance if required
- The desired teacher/learner ratio can be accommodated

PART VI

EVALUATING EHS TRAINING

INTRODUCTION

You can't just deliver EHS training, leave it at that, and do nothing else. Well, you CAN, but it's not a good idea. Instead, you've got to evaluate the training.

As you probably guessed, the purpose of evaluating EHS training is to see if it the training was effective. Are your employees "learning" from the training? Does the training lead to the desired change in their behaviors? Has the training had a positive effect on key EHS metrics or even on key company metrics? Does one or more individual employee need additional help after the training? Do you need to modify the training and deliver it again?

Evaluation of training once it's been delivered includes three aspects:

- Familiarity with evaluation strategies created during design & development phases
- Evaluation responsibilities after training, in both short- and longer-term time frames
- Use of evaluation data as part of continuous improvement efforts

We'll look at each of the three in this section.

Knowing Evaluation Strategies

An EHS trainer who's leading an EHS training session must be familiar with and carry out the evaluation strategies created during the EHS training design and development phases as described earlier in this guide.

That includes being familiar with the following:

- Pre-test, if applicable
- Learning objectives
- Tests for knowledge or skills, including how to deliver and how to evaluate them
- Passing scores/completion requirements
- Employee reaction survey
- Methods for observing later on-the-job behaviors
- Methods for evaluating effect of training on business goals

Evaluation Tasks

As discussed earlier, it's common to think of evaluation at four levels or stages. That evaluation typically occurs at two different times:

- The day of training (levels 1 and 2)
- The days/weeks/months after training (levels 3 and 4)

Let's look at each.

Evaluation Responsibilities on the Day of Training

The EHS trainer will have to carry out a number of tasks related to evaluation during the actual training session itself, or immediately afterward.

In the Kirkpatrick evaluation model, these correspond to levels 1 and 2, which includes:

- Correctly identifying each trainee who's being evaluated
- Delivering pre-tests, if applicable (ensure this is acceptable within relevant regulatory context)
- Evaluating pre-tests using completion criteria developed during training design to see if workers who did take the pre-test successfully tested out of training
- Delivering knowledge tests
- Observing and evaluating performance tests. Trainers must do this according to an objective standard/ performance expectation that was created during training design & development. If there's just one trainer doing evaluation, it's important that the one trainer evaluate all trainees in the same fair and objective manner. If there are multiple trainers doing evaluation, they all must evaluate all trainees according to the same objective standard.

- Providing trainees with the results of any training evaluation. The worker should then have the opportunity to use this feedback as a way to ask for more information, help, or practice.
- Ensuring that evaluation complies with any industry standard and/or regulatory requirement. For example, regulations often specify a minimum acceptable level of training (although it's always OK to exceed those requirements).
- Handing out or otherwise allowing workers to complete the worker reaction survey after training. Remember that in many cases, workers will want to do this anonymously and/or won't want to hand a completed survey directly to the trainer. Create some form of mechanism to make workers feel their responses are anonymous, assure them of that, and impress upon them that their input is desired solely to improve training and that it will be used in that way (and that way only).
- Providing trainees with the results of any training evaluation. The worker should then have the opportunity to use this feedback as a way to ask for more information, help, or practice.
- Providing trainees who do not pass the first time with additional assistance and/or more training until he or she can satisfy the objectives.
- As regulations require, workers should be periodically re-trained and re-evaluated.

Evaluation Responsibilities in the Days/Weeks/Months After Training

Training evaluation doesn't end on training day. Instead, there are more evaluation duties to be carried out. In terms of the Kirkpatrick four-level evaluation model, these correspond to levels 3 and 4.

Observing On-the-Job Behaviors

In the days, weeks, months, and even years after training, it's important to observe the employee's real on-the-job behavior at the workplace to see if the employee is correctly applying the knowledge, skills, abilities, or attitudes the training was intended to convey.

This can be done during daily safety walks, and can also be addressed in weekly safety meetings with the employees. It's also fine to schedule specific times for these observations. Be sure to create some mechanism for recording these observations as well, even if it's as simple as a notebook and paper.

The observations may include a comparison of behaviors from before and after training, and can include observations from customers and coworkers.

Part of this evaluation task includes providing recognition to workers who are applying the training, refresher/reminders to workers who are not, and, if workers aren't applying the training, investigating why (in some cases, it may be something unrelated to training, such as a manager on the floor telling workers to ignore the safety training).

Analyzing Effect on Key Business Goals

It's also important to measure and track key business goals after the training, compare them to measurements made before the training (as a benchmark), and try to determine if the EHS training had any impact.

Remember, any claims that your training had an impact will be more persuasive if you have data from before the training, too.

You can do this by analyzing key performance indicators (KPIs) such as safety behaviors; safety records; implementation of preventive measures; increased use of PPE; reduction in injuries, illnesses, and near-misses; reduction in workman's comp claims; and increased regulatory compliance.

You may also be able to determine and demonstrate that your EHS training had an effect on business KPIs such as profit, revenue, expenses, and ROI.

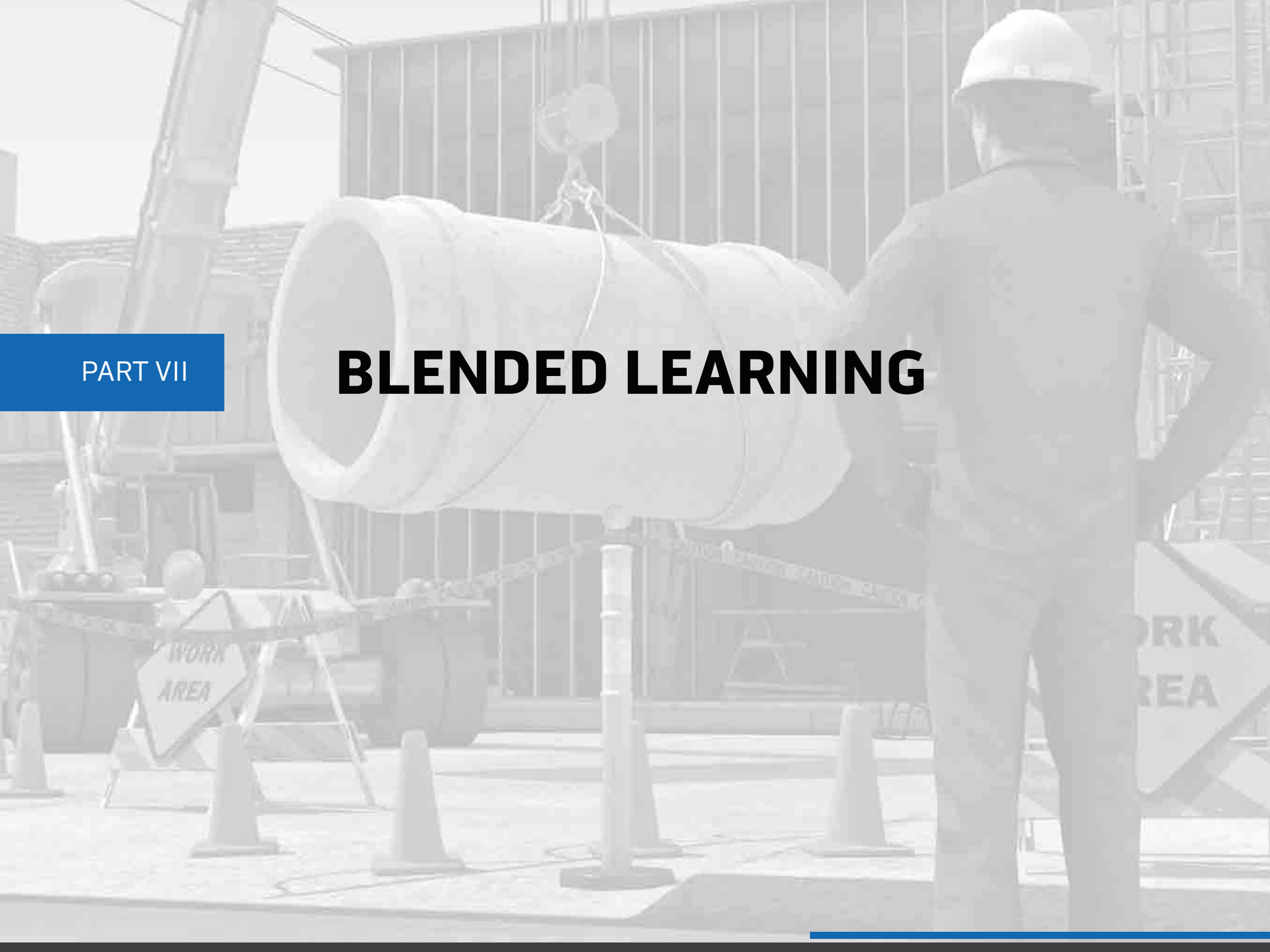
Continuous Improvement of Training

You don't do all of that evaluation just for the sake of evaluating.

Instead, use the evaluation data to determine if the EHS training has been effective or not, and if it can be improved.

If your data suggests that any aspect of your training--design, development, or delivery; course content; selection of training delivery methods; additional training materials; assessments; learning environment; etc.--can be improved, work to make the training better and more effective.

Remember to consider using information from incident investigations, job-site observations, safety audits, and inspection data as well in your continuous improvement efforts.



PART VII

BLENDED LEARNING

BLENDED LEARNING

If you're planning on using online training at work, it's important to know (1) using online training can be very helpful and (2) you shouldn't use ONLY online training at your workplace.

Instead, learning researchers and professionals recommend what's called a blended-learning solution for job training. In short, that means using both traditional forms of face-to-face training (instructor-led classroom training, field-based training, etc.) along with online training.

Many studies and meta-studies have shown blended learning provides better instructional outcomes than training solutions that use solely face-to-face training or solely online training. Here are a few sources for you to consider:

> "The difference between student outcomes for online and face-to-face classes—measured as the difference between treatment and control means, divided by the pooled standard deviation—was larger in those studies contrasting conditions that blended elements of online and face-to-face instruction with conditions taught entirely face-to-face."
>
> — US Department of Education

"Evidence from hundreds of media comparison studies… suggest[s] that blended learning environments are more effective than pure classroom or pure digital learning…"

— Dr. Ruth Colvin Clark

"Overall, these meta-analyses found that eLearning tends to outperform classroom instruction, and blended learning (using both online learning an classroom instruction) creates the largest benefits."

– Dr. Will Thalheimer

LEARNING

Ways To Blend

There are many ways to blend training to create improved learning outcomes. You can buy long books on the topic and we've included a link further down to a free guide on the topic as well.

That said, here are four easy ways to think of the timing of your training delivery methods when creating a blended learning solution.

1. Online Then Instructor-Led Training

One way to blend is to assign workers online training to complete in a self-guided manner before they attend instructor-led training in a classroom setting.

This allows you to use the online learning activities as a way to introduce pre-requisite knowledge and then practice job skills that require that knowledge during the instructor-led training.

It also allows you to use the sophisticated visual capabilities of online training to explain things like how machines work and/or your company's basic job procedures and processes (studies show that videos are very effective for learning this type of material).

2. Online During Instructor-Led Training

We've all learned that peanut butter and chocolate taste great together, and mash-ups are a big cultural craze. So why not apply the same basic idea to job training?

There's no reason why you can't hold an instructor-led classroom training session and introduce elements of online training during the class session.

During the class, you can play online training materials intermittently and then discuss the online materials with the class. This can be a great way to discuss a process, procedure, concept, or idea presented during the online training, or a great opportunity to demonstrate and then practice a job task illustrated in the online training.

3. Online After Instructor-Led Training

You can also choose to begin with instructor-led training and then follow that up with online training (perhaps just one online training activity or, more likely, several activities).

You can use the online training for a few reasons. First, to help workers continue to learn additional "chunks" of information that build upon the initial training over time as they develop toward expertise. And second, as a form of spaced-practice to help combat the training forgetting curve.

The use of online training delivery and materials for post-training spaced practice is one very effective use of what's commonly called microlearning.

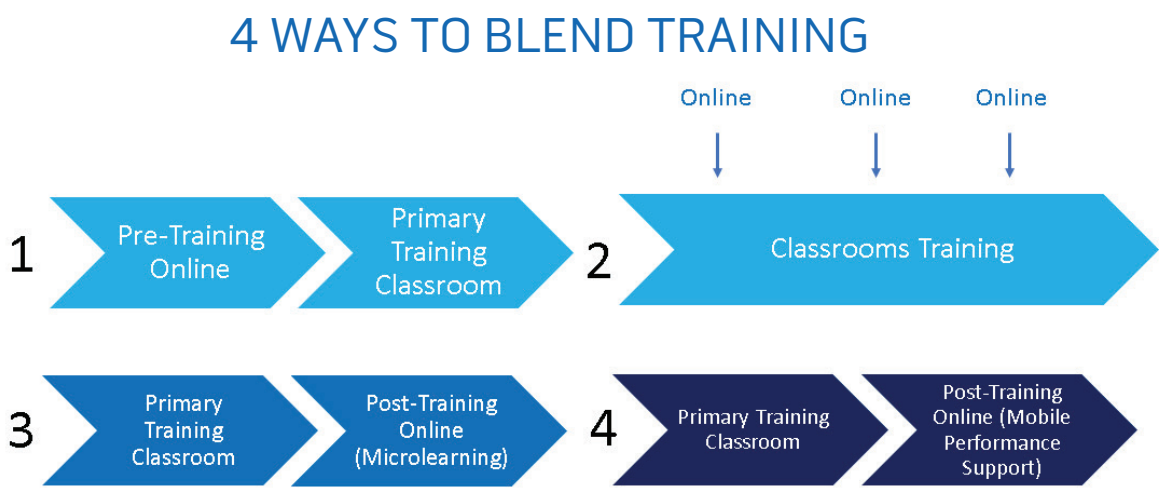
For more on spaced practice and the forgetting curve, read this article on The Forgetting Curve, this article on Spaced Practice, and this interview about the evidence behind the effectiveness of spaced practice.

4. Online Performance Support After Training

Another thing to consider is using some of the same tools and materials you use for online training not for training per se but to deliver performance support to workers in the field at the moment of need to help them make the correct decisions and perform tasks properly.

Examples include delivering checklists, visual SOPs, and/or videos to the worker via a mobile device, such as a phone or a tablet.

For more on this idea, read our articles on Job Aids and Using Mobile Devices for Training & Performance Support.



Additional Considerations For Blending Your Learning Solutions

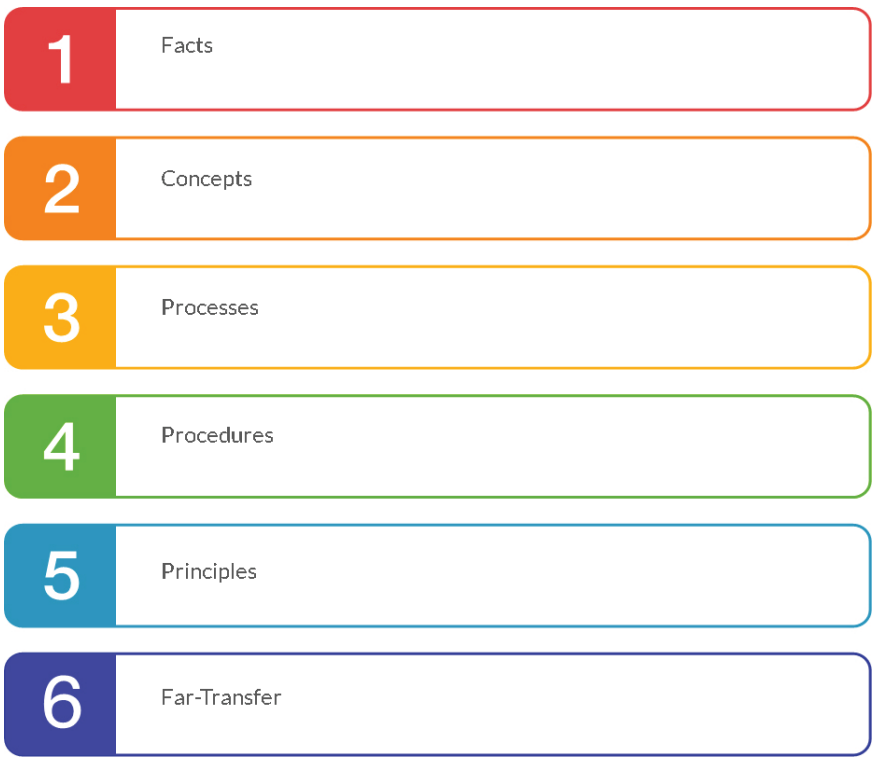
Two other things to think about when designing learning blends for your employees are:

- The type of content you want them to learn
- The reason the employees need to learn something

First, let's consider the type of content your employees need to learn and, in particular, how online training might help.

1. Facts: An example of a fact is "this is door 1." And the fact is that human brains aren't very efficient at simply memorizing facts. So if you can, try to reduce the number of facts that employees have to remember from training. One way to do this is by providing job aids for performance support, and mobile devices and online training tools can be helpful here.

2. Concepts: A concept is a group of things that have something in common. For example, "All of these are different types of pumps." You could use online training to present different examples and non-examples and ask employees to decide if they are examples of the concept or not.



3. Processes: A process is how something works. Research shows that video of the type that you can deliver online is an effective way to help learn processes.

4. Procedures: A procedure is how a person does something. Research shows that video of the type that you can deliver online is an effective way to help learn procedures, although additional hands-on practice is also very helpful.

5. Principles: Principles are a broader set of guidelines one applies in various circumstances. For example, "lean manufacturing is the attempt to increase value and drive out waste." One could use online training in a variety of ways to teach something as broad as principles (and, as you can imagine, learning principles will probably include learning some facts, concepts, processes, and procedures).

6. Far-transfer: Far transfer means learning something to use in one context and, on your own, discovering a way to apply this in a different context. Far transfer isn't especially common, to be honest, and there's not a lot of great research on how to facilitate it. But it does often spring from great experience and expertise, and in some cases, that experience and expertise can more quickly be gained by running through the kind of scenario-based training that online training can deliver.

For more on this, read our Different Types of Training for Different Types of Learning article.

Next, let's consider the reason the employees need to learn something and how online training might help (this is drawn from the Five Moments of Need Training model by Bob Mosher and Conrad Gustafson).

- Learning for the first time
- Learning more
- Remembering and applying
- When things go wrong
- When things change

Let's give some thought to how online training can be used in each of these training moments of need.

Learning for the first time: Online learning can always be used when teaching employees something for the first time—preferably as part of a blended learning solution.

Learning more: Online training can be especially effective once you've completed the primary training on a topic and want to continue teaching employees more to build on that initial knowledge. That's because online training is so easy to distribute to your workers because it's not necessary to come together again in a large classroom setting, which of course makes it easier for workers to complete the additional training and learn more while also completing their jobs.

Remembering and applying: Online training can be especially important in helping workers remember information and skills from the initial training session and build on the knowledge/skills. One reason for this is because of something known as the "forgetting curve," which is based on the proven fact that people tend to forget things from an initial training if they don't get to continue working with the topic. Online training can be used to deliver periodic "bursts" of training on the initial topic in a training practice known as spaced learning.

LEARNING FOR FIRST TIME

LEARNING MORE

REMEMBERING AND APPLYING

WHEN THINGS GO WRONG

WHEN THINGS CHANGE

When things go wrong: When something goes wrong, you will often want to correct it quickly. And since it can sometimes take a lot of time and work to schedule, arrange, and conduct face-to-face training, online training can be a great assist in helping you deliver training to workers to fix that problem ASAP.

When things change: Online training can be used to deliver new training when things change in the same way it can be used to deliver any training on new topics. And again, remember it's most effective in a blended learning solution.

And for even more on blended, see our Blended Learning Best Practices article and download our Blended Learning Beginner's Guide.

PART VIII

ADDITIONAL SAFETY TRAINING RESOURCES

ADDITIONAL SAFETY TRAINING RESOURCES

Although this list isn't complete, the resources listed below would be great things to explore to learn more about effective construction safety training.

From the ASSP:

- ASSP Z490.1 (2016), Criteria for Accepted Practices in Safety, Health, and Environmental Training
- ASSP Z490.2, Accepted Practices for E-Learning in Safety, Health, and Environmental Training

From OSHA:

- OSHA 2254, Training Requirements in OSHA Standards
- OSHA 3824, Resource for Development and Delivery of Training to Workers
- OSHA 3859, Temporary Worker Initiative/TWI Bullet 4, Safety Training

Additionally, OSHA's Training Resource Library offers the following resources:

- OSHA 3666, Fall Prevention Training Guide
- OSHA 3739, Training Center Resource Center Loan Program Fact Sheet
- OSHA Videos
- OSHA Interactive, Web-Based Training
- OSHA Safety & Health Topics Webpages
- OSHA Susan Harwood Training Grants—Grant Materials by Topic
- OSHA Alliance Programs Training Products
- OSHA Safety and Health Training Resources
- OSHA 10- and 30-Hour Trainers for Construction

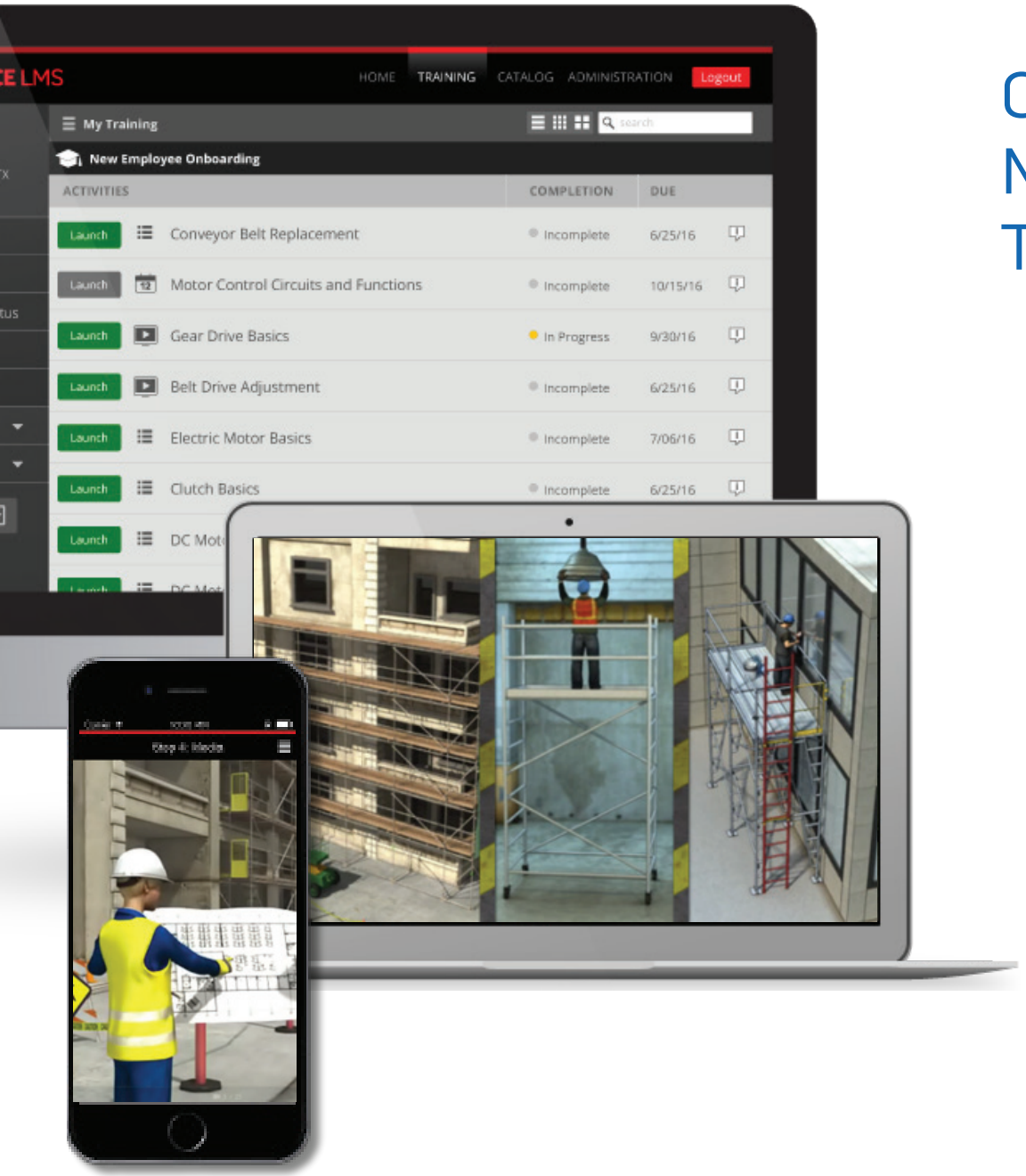
PART IX

CONCLUSION

CONCLUSION

We hope you found this construction safety training overview helpful and you're able to put it to good use at your workplace as part of your overall construction safety management efforts.

Let us know if you'd like to talk about our construction safety training products, including online construction safety training courses, learning management systems, and mobile devices, as well as our courses for AEC certifications, construction project management, and more.



CONVERGENCE SAFETY MANAGEMENT & SAFETY TRAINING SOLUTIONS:

- Safety management software
- LMS for safety training administration & management
- Online safety training courses for general industry, construction, and mining/MSHA
- Mobile training and safety management apps
- Contractor, visitor & vendor orientation courses and software

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