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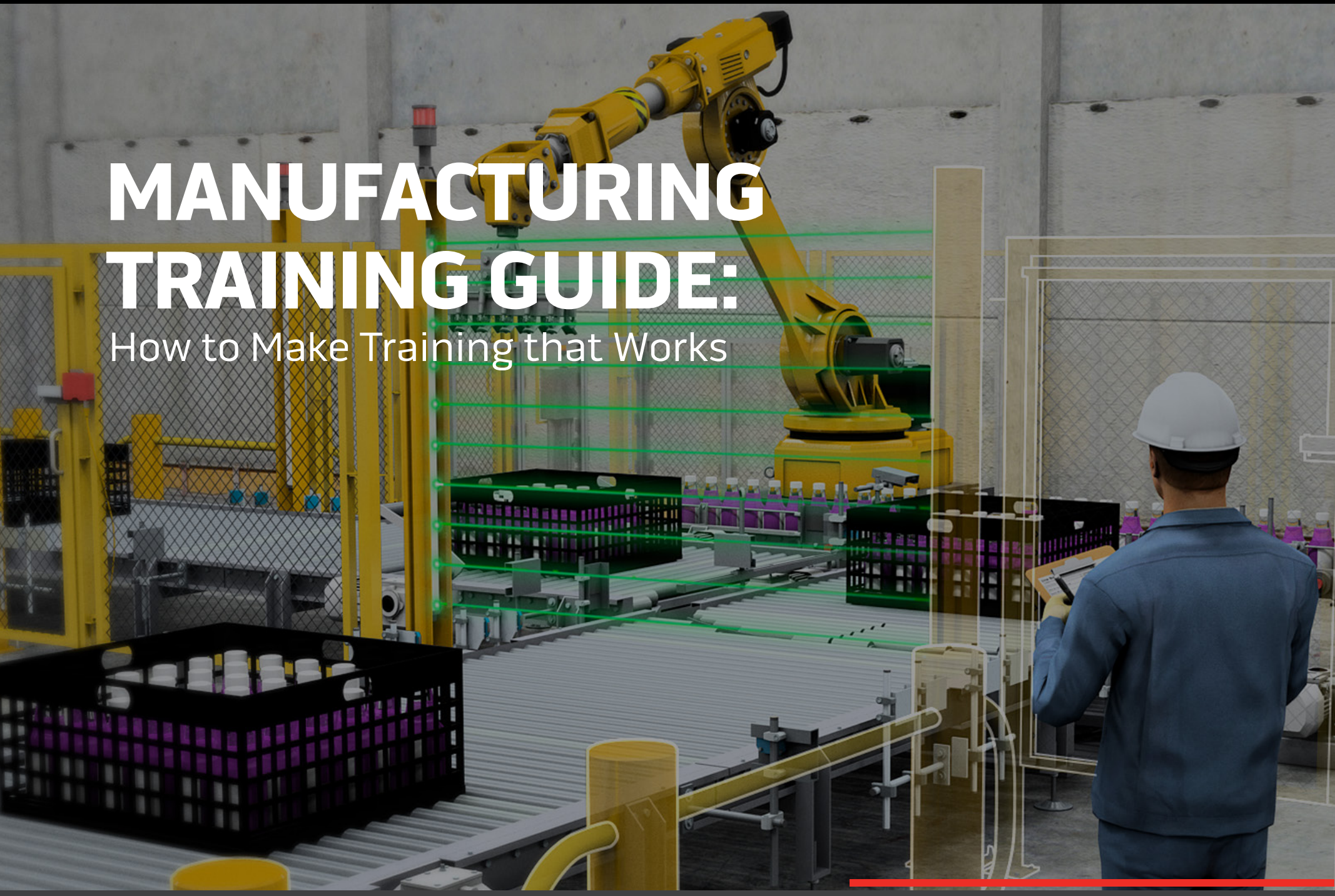

MANUFACTURING TRAINING GUIDE:

How to Make Training that Works

PART I: **IDENTIFY YOUR TRAINING NEEDS**

1. Identify Business Goals and KPIs, Page 6
2. Identify the Job Roles, Page 7
3. Identify the Tasks for each Job Role, Page 8
4. Analyze Current Worker Performance of Tasks, Page 9
5. Analyze the Tasks, Page 11
6. Analyze the Employees You'll Be Training, Page 13

PART II: **DEVELOP LEARNING OBJECTIVES AND TESTS**

7. What Are Learning Objectives?, Page 16
8. How to Create a Learning Objective, Page 17
9. Creating Tests (aka Assessments), Page 19
10. Types of Tests, Page 21

PART III: **CREATE YOUR TRAINING MATERIALS**

11. Tips and Techniques, Page 23
12. Match Your Content to Your Training Materials, Page 25
13. Match Training Types to Content, Page 29

PART IV: **IMPLEMENT**

14. Review Your Materials, Page 31
15. Do a Pilot Test, Page 32
16. Deliver Your Training, Page 33

PART V: **EVALUATE AND REVISE**

17. Survey Employee Reaction, Page 37
18. Test Employee Knowledge, Page 37
19. Observe On-the-Job Behavior, Page 37
20. Measure Business Results, Page 38

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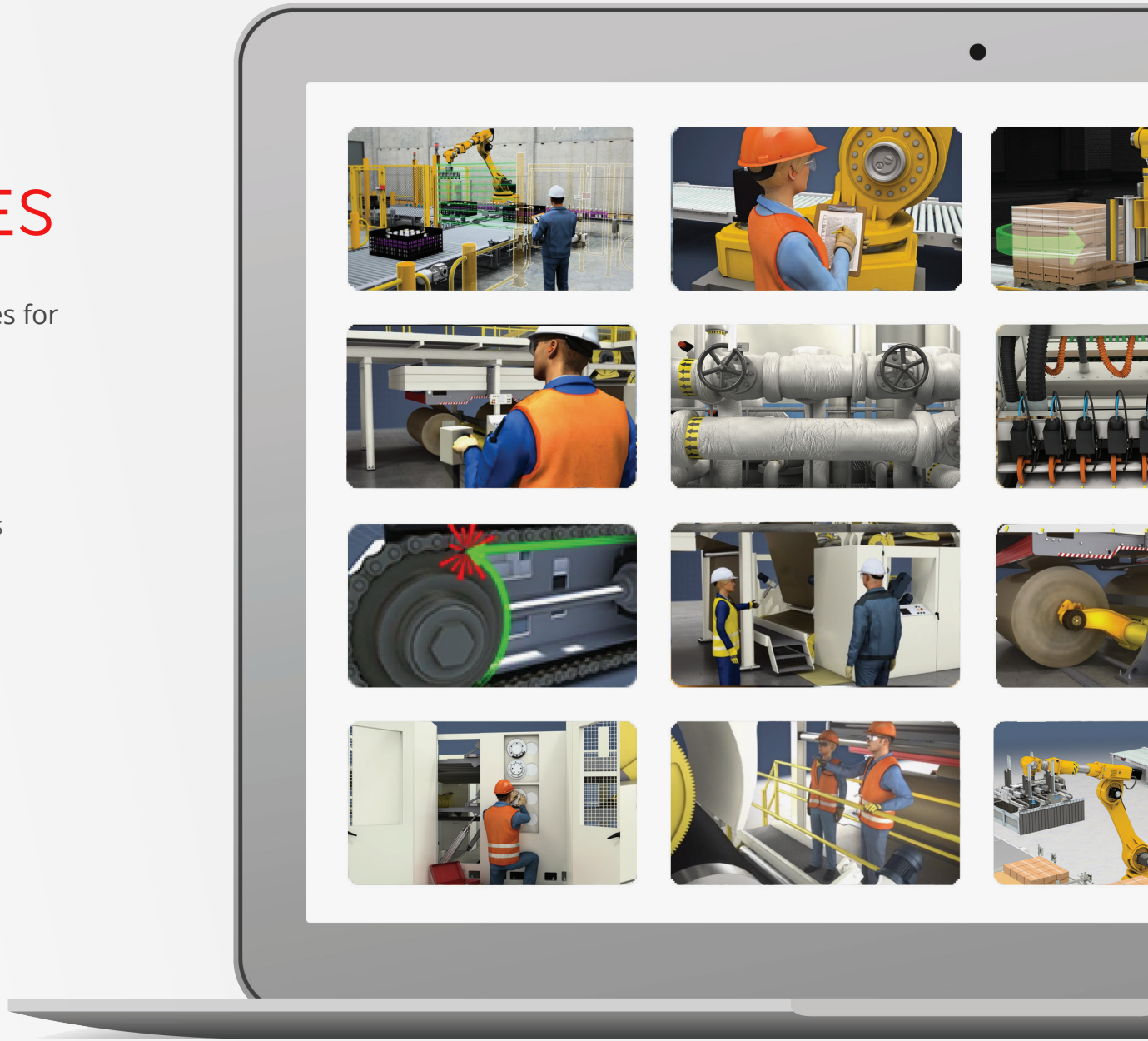


INTRODUCTION

Manufacturers face a series of difficult issues these days. For one, they have to compete with overseas producers who manufacture products at lower labor costs. For another, they've got an aging workforce and the need to quickly "train up" new replacements that are young and bright, but inexperienced.

We have customers who tell us that it has typically taken 20-30 years to train a new hire to fill high-level manufacturing jobs. Faced with the challenges above, manufacturers realize they have to provide more effective training to condense this training cycle. And that's why it's increasingly important to turn to the proven, researched, and scientifically valid techniques of training development and instructional design when creating training material for manufacturing.

In this guide, we provide a step-by-step method to help you design and create the best training program that you can. Follow the process and tips in this guide, and you'll be much further ahead in your training development than you would if you proceed without a sound plan.

PART I

IDENTIFY YOUR TRAINING NEEDS

IDENTIFY YOUR BUSINESS GOALS & KPIs

Business Goals

All job training should ultimately help your business achieve its business goals. So you should start by identifying the goals of your business (or your department, or whatever the appropriate business unit is). These business goals may include things like:

- Increased profit/revenue
- Increased production
- Increased quality
- Improved regulatory compliance
- Decreased expenses
- Decreased waste
- Decreased downtime
- Decreased accidents, injuries, and/or incidents
- Decreased amount of time to train workers to fill specific roles

KPIs

Another helpful thing to do in addition to creating a list of your business goals is to identify the key performance indicators (KPIs) used to measure them. Then you can hold the training and later check the KPIs again. This will help you determine if your training had a positive effect on the KPIs and therefore your business goals.

Getting Business Goals and KPIs

As a trainer, you may not always know exactly what the business goals and KPIs are for the company or specific departments. When you're asked to create training, ask managers and supervisors what business goals the training supports and what KPIs are used to measure those goals. If they're not certain, ask them to try to figure this out. Doing this will give you an important tool to use when you evaluate if the training you later create and deliver was effective.

As you go through the rest of the training development process, you should always ensure you're creating training materials that will help your business achieve these goals. We will return to this idea of measuring the business effect of your training at the end of this guide, but you should also keep this in the back of your mind.

IDENTIFY THE JOB ROLES

The next thing to do would be to identify the job roles at your workplace.

Of course, those roles are going to depend on the type of company you work for. But for an example, at a typical paper mill, the list might look something like this:

- Machine Tender
- Assistant Machine Tender
- Back Tender
- 4th Hand
- 5th Hand
- Winder Operator
- Assistant Winder Operator
- Etc.

It's important to create a list of job roles for the following reasons:

- Your goal is to make a worker qualified for his or her real job. This list will keep you focused so your training doesn't meander into things that aren't actually necessary for the job.
- You will later have to determine the tasks that you have to train workers in each job role to perform. This list prepares you for that.
- You will want to have an effective way of managing training for job transfers. Again, this will set you up nicely when a worker switches form one job to another.
- You will want to be able to create cross-training in some cases. This will help you identify the training a worker needs for different job roles and ease the cross-training logistics.
- You will want to be able to run reports to see who's trained and not trained for various roles. Again, this will help you do that.

IDENTIFY THE TASKS FOR EACH JOB ROLE

Once you've developed the list of the different job roles at your site, create a list of all the job tasks the people assigned to each job role have to perform.

Let's take a warehouse worker as an example. What are all the tasks a person in this role has to complete in order to perform his or her job? It could include tasks like these:

- Start and operate palletizer
- Drive forklift
- Use forklift to pick up pallets and transport them to the warehouse
- Place loaded pallets into warehouse storage
- Place loaded pallets into delivery truck
- Place loaded pallets into railcar

Tip

If it seems daunting to create a list of every task that must be performed by a worker in a given role (or in all roles), start with the major tasks. Include tasks that are most important for production, ones that are most critical for safety, or ones that have the most expenses associated with them. Then create training for those and return to "fill in the gaps" with smaller tasks later.

ANALYZE CURRENT WORKER PERFORMANCE OF TASKS

You've now got a list of the job roles at your company. In addition, you know every task that the workers in each job role have to perform. Eventually, you'll want to create training materials to train workers to perform each task associated with every job role (although as we said earlier, you may focus on the "key" tasks at first). And we'll walk you through those steps of doing all that shortly.

Before you do that, it's a good idea to evaluate the current performance of your workers to see if they are performing their tasks correctly. This will help you identify any current performance gaps between your desired or ideal production state and your current state.

You'll do this by having someone (yourself, department managers, or whoever's appropriate) get out in the field and evaluate your workers' performance and the quality of your product.

If everything's great, fantastic. You'll still need to set up your training programs (or most likely evaluate/revise them) for new hires and future transfers, but things are looking good for now.

On the other hand, if there is a gap between your ideal state and your current state, you'll want to consider that issue further by doing a performance analysis. We've explained how below.

- **State and describe the problem with the performance.** Make sure you know exactly what is wrong or less-than-ideal. Don't just say "they're not doing it right." Instead, shoot for something like this: "Worker isn't making proper weld on corner joint."
- **Ask yourself: Does the performance problem really matter?** Maybe you've got a performance problem but it's not a big deal (for example, maybe training to correct it might cost more than "living with" the problem). Be sure the issue merits creating a training solution.
- **Determine if it's a "skill gap."** Training will only solve the problem if it's a skill gap—meaning, there's a skill your employees need but they don't currently know how to perform it. Make sure you've got a real skill gap before you create training. Sometimes there are other reasons for performance problems—no incentive, competing workplace priorities, etc.
- **Consider a non-training solution if it is a skill gap:** Before you move forward to create training to close a skill gap, try to identify a better solution that doesn't involve training. For example, maybe redesigning the work area, automating a process, or creating a simple job aid workers can refer to in the field can remove the need for the skill.
- **Develop and provide training to close the skill gap:** At this point, you'd know it's time to begin planning, developing, and implementing training. We've got lots of tips for you on how to do this in this guide, so stay tuned and keep reading.

Click to read more information about performance analysis.

ANALYZE THE TASKS

The next thing to do is to perform a task analysis. During the task analysis, you'll take a job task that you plan to create training materials for, and you'll analyze it until you've created a list of the different steps a worker has to perform in order to perform the task as a whole.

The point, as you may have guessed, is so that you can create training materials that teach people each step of the task.

This might seem easy, and it's not rocket science, but it can also be a little trickier than it seems. And that's especially true if you're an "expert" on the task, because there may be steps you take for granted or don't even take notice of anymore.

Pick a Task to Analyze

Start by picking one task associated with a job role. This is the task you'll break down into its different steps or sub-tasks.

Example: "Operate a Forklift."

Identify the Smaller Steps within that Task

Take that one task and break it down into a list of smaller tasks. It will probably help to watch an expert performing the task on the job to come up with this list. You can also talk with department managers or experienced

workers to have them explain to you how to do this. But be careful, as these "experts" often tend to leave out steps that they take for granted. When you write your list, be sure to:

- Put them in chronological order—the first step performed on top of the list, the last step performed on the bottom
- Begin them with an "action word" or "verb"—a behavior the worker performs, like "push," "join," "cut," "open," or something similar

Example: Our "Operate a forklift" task can be broken down into a series of smaller steps, including (but not limited to):

- Perform pre-inspection
- Start forklift
- Drive forklift
- Lift loaded pallets from palletizer

Check Your Steps Again to See if You've Got It Right

Take a moment to review your list and see if you've got it right. The big thing is to make sure you've included the correct level of detail. In general, you're more likely to leave out a step, but be sure you're not going into a ridiculous amount of detail either (for example, there's no reason to include "raise your arm" before "push the Start button").

Keep in mind the knowledge level of the typical employee who'll you'll be creating this training for—that's the level of detail you want to provide.

ANALYZE EMPLOYEES YOU'LL BE TRAINING

Before you develop any training, it's also a good idea to learn more about the people who'll be expected to take that training. This will allow you to create training materials that are most appropriate for your training audience.

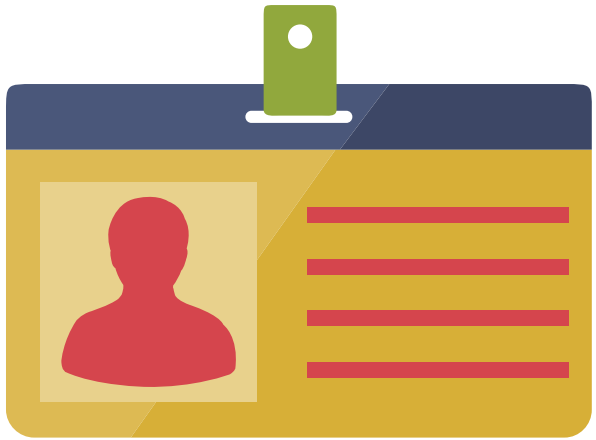
The best way, of course, is to ask the employees themselves, either in one-on-one settings, a larger meeting, or through some form of questionnaire. You might also try general observations and discussions with the employees' manager(s) to find some of this information.

Below is a list of some things to try to find out.

- Which of your job tasks do you think you know well?
- Which of your job tasks could you use help with?
- In general, what do you like about training?
- In general, what do you dislike about training?
- Which types of training do you like: classroom-style; task-based instructions in the work area; guided training on the job with a mentor (job shadowing or following); videos; computers and e-learning; role-playing, simulations, and scenario-based training; written materials;

others?

- What type of training do you dislike: classroom-style; task-based instructions in the work area; guided training on the job with a mentor (job shadowing or following); videos; computers and e-learning; role-playing, simulations, and scenario-based training; written materials; others?
- What's an ideal amount of time to spend per training session?
- What do you like most about work and about your job?
- What do you like least about work and about your job?
- What motivates you to work as hard as possible?
- What causes you to not work hard or care?



You can use this information when you're designing training to try to tailor your training materials to your training audience. For example, some employees may be more open to e-learning courses, while others may prefer classroom-style. Likewise, it can be very helpful to know which tasks employees already think they do well and which tasks they feel the need extra help on—you can skew the training toward the tasks they need help on, while perhaps using a pre-training test to check if they really do know the other tasks well.

PART II

DEVELOP LEARNING OBJECTIVES & TESTS

WHAT ARE LEARNING OBJECTIVES?

Now that you've done all of your analysis, it's time to begin thinking about your training materials. Once you've created a list of tasks and performed the task analysis to break those tasks down into their smaller parts, you're going to want to create your learning objectives.

A learning objective is a simple statement that describes what your learners should be able to do after they complete your training materials. It should reflect something they have to do on their job, and it should also be something that will help the company reach its business goals.

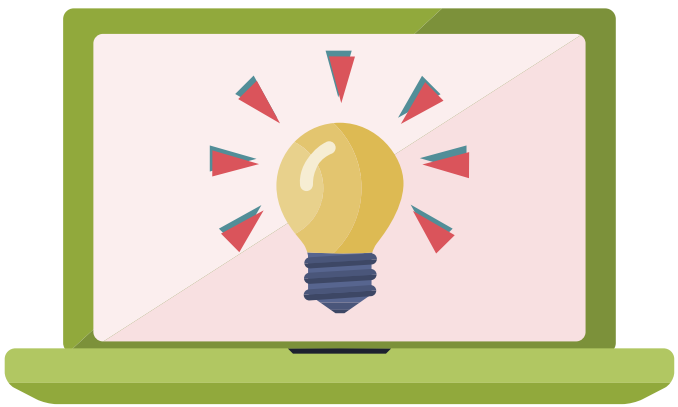
Why Are Learning Objectives Important?

Your learning objectives will function as a sort of "road map" for the rest of the process of creating training materials. Once you've created your objectives, you'll use them as a guide while you're creating:

- The actual training materials that you'll deliver to your workers
- Tests (or other forms of "assessments") to determine if your training materials were effective

Your training materials should only include information and activities designed to help your workers satisfy the learning objectives. Resist the temptation to add additional materials. This is a common desire but actually makes your training materials less effective. In learning, it's true that less is more. That's because you risk overwhelming your employees if you include too much information—read more about this here.

Likewise, your tests and other assessments should evaluate whether or not your workers can satisfy the learning objectives, and should evaluate only that.



HOW TO CREATE A LEARNING OBJECTIVE

A learning objective should ideally include the following three components:

- A performance (performed by the learner and observed by an evaluator)
- Conditions (under which the learner shall perform the performance)
- Criteria (by which the performance is evaluated by another)

In some cases, it may not be necessary to include the conditions, and it's not always practical to include the criteria, but the more you say about them when possible, the better.

Learning Objective Part 1: The Performance

The objective must explain what learners have to do or perform to demonstrate that they have satisfied the objective. The key is the objective must require the learner DO something. And that's the performance. Ideally, that performance will be a task. Like "Start up the boiler." In those cases, the performance is pretty easy to write.

In some other cases, you may create an objective for something knowledge-based. For example, maybe you want the employee to know how a machine or a process operates. Because there's an emphasis on having the learner do something that someone else can observe as evidence that they've done

it, it's important to avoid learning objectives like "know" and "understand." How can you tell if someone "knows" or "understands" something? Instead, restate the objective so that the learner has to do something like "state" or "list" or "explain" to demonstrate that he/she knows or understands.

For example, here's a bad knowledge-based learning objective: ***Understand the process by which sugar is made.*** And here's a good knowledge-based learning objective: ***List each of the steps in the sugar manufacturing process.***

Remember, your performance should be a verb—something your worker has to do. And it should be something observable so that any evaluator can clearly see and agree that the worker has done it. And finally, when the worker performs the objective on his or her job, it will help the company reach one of those business goals we discussed at the beginning of this guide.

Learning Objective Part 2: The Conditions

The next thing to do is to state the conditions in which learners must complete the performance. The conditions will tell the learner the following:

- What can I use while doing the performance? (For example: **Given a threading device,** thread material through the machine.)
- What will be denied to me? (For example: Insert all machine codes **without the use of a written guide.**)
- In which conditions will the performance have to occur? (Example: Successfully operate the machine for eight hours **under normal working conditions.**)

Learning Objective 3: The Criteria

Finally, the third part of a learning objective is the criterion or criteria. You can think of this as telling the worker how well you want them to complete the performance under the stated conditions. Here are some examples:

- Identify **four out five** product defects on a moving manufacturing line.
- Close **ten boxes in a minute.**

Remember, it may not always be necessary or practical to include criteria in a learning objective. When that's true, don't include them.

Click to read more about learning objectives and even more about learning objectives.

CREATE TESTS (AKA ASSESSMENTS)

Once you've determined what your employees need to know or do on the job, and you've created learning objectives to match, then you need to make sure you create tests that match as well. In other words, create tests that allow you to effectively determine if your employees have met those learning objectives.

You'll do this by creating one or more "test items" for each learning objective. By test item, we mean one part of your test. For now, think of this as a question within the test.

There's more to be said about tests, but if you remember that they should match your learning objectives and should test something that will ultimately help your company reach a business goal, you're already most of the way there.

When to Create Your Tests

MANY experts in instructional design and/or learning and development will tell you the best time to create your tests is right after you've created your learning objectives. That's right–AFTER you've created your learning objectives but BEFORE you've created your training content/activities.

This may seem weird, funny, strange, or counter-intuitive to you. It did to me the first time I heard it. But it's worth giving it a shot. Here are a few reasons why this makes sense:

- You just created the learning objectives, so they're fresh in your mind. Now's the time to create those tests–while the fire is hot. Remember your goal in creating tests is to make sure your employees can satisfy the learning objectives, so this linkage makes sense.
- If you create your training materials first and then create your training materials before you create your tests, you run the risk of letting something in the training materials pull your test off-target a bit.

Before You Create Your Tests

Before you begin creating your tests, it's worth your time to create a plan. While planning, consider the following issues:

- For each learning objective, what kind of test items do you need to create–a knowledge test or a task-based test?
- How many test items should you create in total? To determine this, know that you'll need at least one test item for every learning objective. Then, you may decide to create more than one test item for some or all of the objectives. For example, some objectives may be more important than others–if so it's OK to create more test items so you're sure the workers can perform them. Or, your worker may have to perform a skill in different situations on the job–if so, it's OK to create different test items for the performance of the skill in each of the different situations.
- What will be the passing score? To come up with this, you can use what seems to you the lowest level of performance acceptable on the job. Or, you can get advice from subject matter experts (SME) who may have an opinion. One thing to keep in mind is that you may have different passing scores for the different learning objectives within your training–maybe some objectives are absolutely critical and require 100% passing, whereas others are less critical and 80% is OK.

TYPES OF TESTS

Knowledge Tests

Knowledge tests are generally used to determine if your employee can demonstrate that he/she knows something or can apply that knowledge. Knowledge tests include:

- True/false questions
- Multiple-choice questions
- Multiple-response questions
- Matching questions
- Drag and drop questions (some)
- Fill-in-the-blank questions
- Short answer questions
- Essay questions

Your knowledge tests should include one or more test items for each learning objective. Again, in common terms, this means one or more questions per learning objective.

Task-Based Tests

A task-based test is a test of your worker's ability to actually perform a real job task in a real work environment (or a realistic one).

In some cases, your task-based test will ask your employees to perform the skill in real life. In other cases, your task-based test will ask your employees to perform the skill in some form of simulated environment. For example, airplane pilots are tested in sophisticated flight simulators, and I've seen similar simulators for crane operators. Of course, fancy simulators are expensive, and in some cases the simulation may be something a little more simple, like an e-learning course that presents a work-like scenario and then asks the worker a "what would you do in this situation?" kind of question.

You'll frequently have a supervisor evaluate the performance of the employees performing the task-based test. In those cases, you'd create a checklist or some form of rating scale that they can use to record their evaluations.

Click to read more about testing.

PART III

CREATE YOUR TRAINING MATERIALS

TIPS & TECHNIQUES

Keep it Short

The brain isn't an empty vessel you can pour an endless amount of information into. There are limits to how much it can take in at one time.

As a result, it's important to be concise in your training. Sticking to your learning objectives will help you do this. Remember that in training, less is more.

Break Down Your Training Materials into Smaller "Chunks"

There's a limit to how much information people can take in and store at one time. This limit used to be represented by the rule "7 plus or minus 2." More recently, this estimate has been scaled down to about 4 "bits" of information. That's not a lot, and you can see how easy it is to overload your employees with new information.

One thing you can do to is to break your training down into small "chunks." For example, in classroom training, you can introduce a few topics and then arrange for some time to practice or hold a Q&A session to reinforce those ideas. If you're creating an e-learning course, you can break the course down into smaller screens with practice questions every so often. And if you're training people on many topics, you can spread the training out over many days, weeks, or months.

Click to read more about chunking.

Combine Words with Visuals

Studies show that training can be especially effective—meaning your employees will remember and apply more—if it includes words (in the form of written words or spoken words) AND visual images.

Anytime you can create training that includes both, you'll make your training more effective. This can include a classroom-style discussion about a machine with the real machine there (or a picture of it); a simple Power Point that includes words and images or images that you talk about; e-learning courses with images and audio narration; and other types of training that include words and images. So try to avoid training sessions in which you're just standing in front of everyone talking.

Write and Speak Clearly and in Your Employees' "Language"

Your training is going to involve speaking or written materials. This includes classroom-style training, e-learning courses, or something your workers read on their own.

The way that you speak to or write for your workers can make your training more or less effective. Here are some general tips:

- Keep it short; workers get overwhelmed if you linger
- Use conversational language appropriate for your employees; avoid formal or overly academic language
- Use the second person ("you") when addressing the employees; don't just talk about yourself or refer to employees as "the employees"
- Avoid the use of specialized terms and jargon when you can; define them when you have to use them
- Format written materials to make it easier to scan and quickly know what each section is about—use section headers, bullet points, labeled tables, etc. Large sections of dense, unformatted text is more likely to overwhelm your trainees.

Click to read more about writing training materials.

Use Analogies and Comparisons

We've already mentioned that employees come to training with their own life experiences. And this can help you as a trainer, because it's easier for employees to remember new information if you can somehow "connect" that new information with something they already know.

Making analogies during training can be a great way to do that. When you make an analogy, you make a comparison between one thing and another thing. During training, you can make an analogy that compares something that your workers already know to new information you're trying to teach them.

For example, if you're talking about a mixing process in which it's important to get one material evenly distributed throughout a second material, you could make an analogy about chocolate chips in cookie dough or mixing powered lemonade into a pitcher of water.

MATCH YOUR CONTENT TO YOUR TRAINING MATERIALS

Not all of the information included in your training is the same kind of information. For example, your training may include the following:

- **Facts**—Simple statements in an "x is y" format, such as "this is the power boiler" or "our goal is to run at 90 percent capacity or greater."
- **Concepts**—A way to describe a certain kind of thing, such as "all paper machines have wet pulp entering at one end and a dry sheet exiting the other."
- **Processes**—An explanation of how a system works, such as kraft pulping.
- **Procedures**—A step-by-step listing of how to do something, such as thread materials into a converter.
- **Principals**—Instruction in "what, why, and how" to apply guidelines in changing circumstances, such as how to modify raw ingredients to produce paper of optimal quality in changing circumstances.

This is important to know because you can make your training more effective for each of these types of information by designing them in different ways. Here's a quick overview:

Training About Facts

Because facts are essentially "random," they're hard for the brain to remember efficiently. So when possible, instead of training your workers to remember facts, try to create job aids that they can refer to either during training or on the job. For example, if they need to know a series of codes to enter into a machine, create a list of the codes and place it by the machine.

If it IS necessary to train your workers to remember facts, try these tips:

- Diagrams, such as a photo of a machine with the parts labeled, are effective
- Tables and lists are a good way to display numerical information and other data
- Old-fashioned drill-and-practice is still an effective way to remember facts when that's truly necessary; you may try to use e-learning to make this less tedious
- Mnemonic aids, such as "every good boy does fine" for remembering the musical notes "egbdf," can help
- Your learning objectives should require a behavior that demonstrates knowledge (list, name, state, etc.)

Training About Concepts

Most of your training about concepts will be in the form of providing a definition and teaching workers to recognize examples of the concept. Here are some tips:

- Always include a clear definition of the concept so your workers can recognize examples of it
- After defining the concept, provide some examples
- Provide "bad-" or "non-examples" of things that are similar but don't fit the concept—for example, a lion does not fit into the concept of house cat
- Analogies can be helpful
- Your learning objective should require a behavior that asks your learners to demonstrate that they can recognize examples of the concept

Training About Processes

You might want your workers to know how an entire process works so they can understand how to do their job better, why they perform their own tasks, or how their work is related to work at the rest of the mill/site. Providing process training will also help make your workers better troubleshooters.

Here are some tips:

- Clearly identify the different stages/steps/flows in the process
- Use tables, lists, diagrams, and flow charts to present the different steps/phases
- If you want your workers to know how the various steps of the process influence one another, don't just explain the steps but give them practice in answering questions like "what would happen if we did this differently?"
- You may have a learning objective that's purely knowledge-based; in that case, use a verb that asks for a behavior like "list" or "sequence" or "explain"
- If you're creating a "list" or "sequence" objective like we described above, you could have workers do this with drag/drop or sequencing questions in an e-learning course
- Your learning objective may be designed to see the worker apply his or her knowledge of a process to do something (such as optimize or correct the process); if so, use a learning objective that asks for that behavior

Click to read an explanation of how process training can improve troubleshooting.

Training About Procedures

You'll probably provide a lot of training to your workers about how to perform procedures. This could include "this is how we bill for hours" or "this is how we operate the welder safely." Here are some tips for teaching your workers procedures:

- If the procedure is always done the same way, from beginning to end, present it as a linear procedure with a single clear order
- If the procedure includes "decision points" at which the employee may move on to different steps, present it as a "decision" procedure (flow charts work well for this)
- Teach the procedure in three different phases: clearly list the steps; demonstrate the procedure so workers can follow along; and then let the workers perform the procedure while you give helpful feedback
- You will typically teach a procedure not because you want the employee to remember it but because you want them to perform it. Therefore, the learning objectives should require your worker to perform the actual procedure.
- If it's difficult to set up a real-life or in-the-field performance, try e-learning courses to simulate it.

Training About Principles

You train workers about principles when changing circumstances mean they can't always simply follow a procedure. By way of analogy, a master chef applies principles learned in culinary school to make a different meal to satisfy different customers every night. And, in manufacturing terms, a machine operator will apply principles learned during years on the job to keep a machine running optimally and produce product of the highest quality even during changing circumstances.

Or, in lean manufacturing, a lean expert applies many lean principles to make different work processes, areas, or even companies more efficient producers.

Here are some tips for teaching principles:

- Principles are usually made up of a set of guidelines. For example, the principle of lean manufacturing includes guidelines like "increase value for customer" and "decrease waste." Begin by making sure your guidelines are correct.
- Present the guidelines that make up the principle to your workers in a clear, organized manner
- Demonstrate the application of the guidelines in a real work or simulated-work environment; demonstrate the same principles being applied in different circumstances
- Ask for their feedback during demonstrations: Can they identify the principles? What worked and what didn't?
- Let workers practice applying the principles in realistic, work-like scenarios in different circumstances; provide helpful feedback

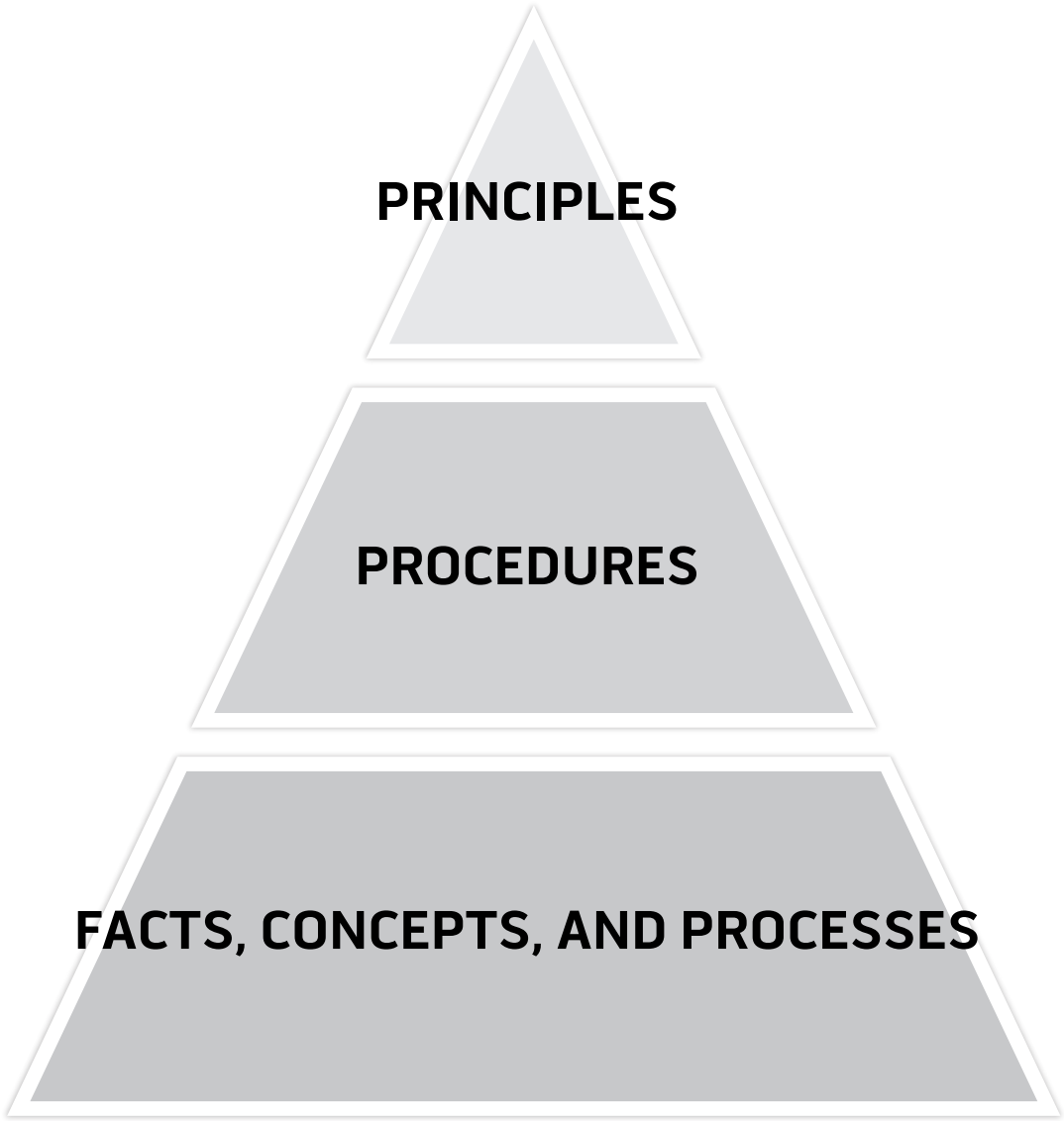
Click to read more about creating different kinds of training materials for different types of learning, and click again to see how different types of visuals in your training materials can help.

MATCHING TRAINING TYPES TO CONTENT

The Training Pyramid

You can think of facts, concepts, processes, procedures, and principles as making a sort of training pyramid, with the foundational information a worker needs to know at the bottom (facts, concepts, and processes), the procedures he/she needs to perform in the middle (procedures), and principles (application of principles, advanced problem-solving, troubleshooting, etc.) at the top.

An effective training program makes use of many different kinds of training for the different types of information in the training pyramid. For example, written materials and e-learning courses can be highly effective in presenting facts, concepts, and processes at the foundation of the pyramid. And, as you go higher up the pyramid, instructor-led training with opportunities for hands-on practice and face-to-face feedback becomes increasingly helpful.



PART IV

IMPLEMENT

REVIEW YOUR MATERIALS

Now you've got your training materials and your tests ready to go. But you shouldn't start training all your workers just yet. Instead, you should review your materials and do a pilot test first.

First, review the materials yourself, or get some help from a subject matter expert. Check to make sure that you've got the right learning objectives and that your tests and your training materials match the objectives. Check to make sure they support a real business goal. And check to see if your materials match the guidelines listed above for effective training (active learning, adult learning principles, written at appropriate level, takes advantage of visuals when possible, etc.).

You'll also want to check your materials and your tests to make sure they're clearly written and not confusing. Remember that it's easy to not notice if something you created is confusing, so getting the advice of a second person is very helpful here.

In general, look for anything that might confuse your workers or detract from your goals of (a) training your workers to satisfy the learning objectives, (b) testing to see if they can satisfy the learning objectives, and (c) having them apply the training in their jobs. If you find problems, make some changes now to address them.

DO A PILOT TEST

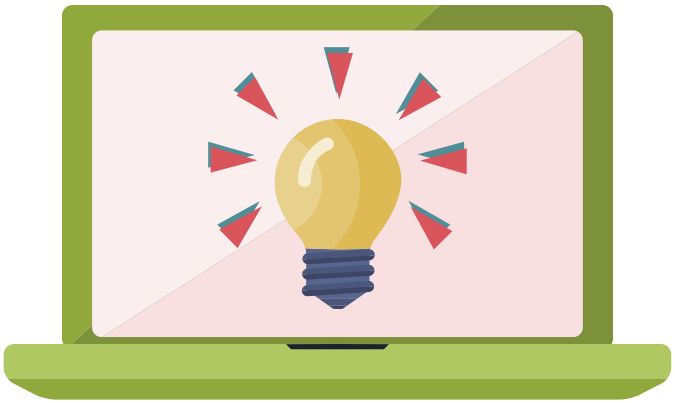
Next, if you can, perform a pilot test of your training materials with a small number of employees. The employees should match the larger population of employees who will take the training later as much as possible. If you can't get a small group together, see if you can do this with just one employee.

Ask for their feedback on the materials, observe their behaviors during the training, and carefully check their results on the tests. Are there parts that they find confusing? Are there tests or test items that everyone gets right or everyone gets wrong? If so, you may need to do some revision.

If your testing includes some form of checklist or rating scale that supervisors will use to evaluate task-based training, make sure that's properly written too. See if your evaluators are confused or if they're giving different scores for the same performance.

And, most importantly, check to make sure your pilot test audience is able to perform the learning objectives when they're done. That's the goal, after all.

If you find some kinks, here's a chance to iron them out. Otherwise, now it's time to deliver the materials to your larger training audience.



DELIVER YOUR TRAINING

Congratulations—it's time to deliver the training to the employees! As a result of all your careful planning and work, you're going to see some great results.

Notifying Employees

It may seem obvious, but one of the most critical things you'll have to do in this phase is inform the employees that will attend the training. Give them plenty of time in advance so that they can work it into their schedules and complete any necessary pre-training preparation.

Other Notifications and Scheduling Logistics

In addition, you may also have to do things like inform the workers' supervisor, reserve rooms for training, buy any necessary supplies, work through any scheduling or traveling logistics, and perhaps even have food and drinks available. Get your ducks in order in advance, so your training goes off as smoothly as possible.

The Training Day

Implementing training can take a variety of forms. It may be classroom instruction; practice opportunities such as role-playing exercises, focus groups, case studies, or small group assignments; on-the-job skills-based training; the delivery of paper-based hand-outs for individual reading and

study; the completion of e-learning modules on a computer; a combination of some or all of these; or more.

If your training includes an on-the-job skills-based component, make sure you know exactly what the employees must do to demonstrate competence. You should have defined this in advance, when you're creating your learning objectives, and don't leave it unstated or vague.

If your training includes a classroom instruction component, there are a number of things you can do to make this more productive. Although the key things involve letting the employees be active participants instead of passive and bored listeners, more mundane things like room temperature, lighting, table and chair set-up, visual aids, and the instructor's presentation style also play a role. There are a number of good books and websites that can you help you with this; the Association for Talent Development's website is a good place to start looking.

Learning Management Systems

Using a learning management system (LMS) can play a big role in helping you during this step. An LMS is a software application used assign, deliver, track, and report on training. If you use an LMS at work, it's easy for your employees to log in and see a list of training they've been assigned. Many LMSs even include notification systems that send emails to the workers when new assignments are made or due dates are approaching. In short, an LMS can automate a lot of the clerical, scheduling, and notification procedures you'd have to do yourself in this step (and they do a lot more than that, too).

PART V

EVALUATE & REVISE

HOW TO EVALUATE TRAINING

Once your training materials have "gone live," you'll want to collect information and data about it so you can ensure it's effective. The standard method for this is the Kirkpatrick Four-Level Evaluation. We'll explain that in the following section, and give some additional thoughts to close out this guide.

The process of evaluating and revising training materials takes place at different times and continues indefinitely from there. The goal is to gather data about the training materials, your workers' performance, and the ultimate effect on your company's KPIs and business goals, and to continually improve the training.

Four Levels of Training Evaluation

You can evaluate your training program at four different levels. They are:

- **Level 1-employee reaction**—How did your employees feel about the training?
- **Level 2-learning/testing**—Did your employees satisfy the learning objectives?
- **Level 3-on-the-job behavior**—Are your employees performing the new skill on the job?
- **Level 4-business results**—Are the new skills having a positive effect on a defined business goal?

Survey Employee Reaction

Level 1 evaluation makes use of surveys and Q&A forms handed out to employees immediately after training. These can help get first impressions from your employees. People have a tendency to give high marks on surveys, so keep a close eye out for remarks that are less positive.

Many surveys like this are done using checkboxes and/or numerical ratings. While these can provide good information, try to also include a place where your employees can enter their own, off-the-cuff comments. You may find these especially helpful.

Test Employee Knowledge

Level 2 evaluation looks at your workers' abilities to satisfy the learning objectives of their training. You will find this information by looking at the results of the tests delivered after training. Delivering a pre-training test and a post-training test can be an especially effective way to measure this, because you'll get good data to show the results of the training.

Your tests may take many forms, including tests your learners complete online, task-based tests, and more. If you deliver tests online in a learning management system (LMS), you can then use the reporting features to collect, present, and analyze that data. This can be very helpful for measuring training effectiveness over time, for one learner, and/or for various departments.

Click to read more about learning management systems (LMSs).

Observe On-The-Job Behavior

Level 3 evaluation checks to see if workers are applying the skills on the job. You can collect level 3 evaluation data by observing workers yourself or having department managers do the observations.

If everything's going well, your employees will be applying their new skills on the job just as you planned. If so, congratulations.

However, you may find that employees are not applying the new skills. There may be a few reasons for this:

- They know how but something else is preventing them from doing so or contributing to their not doing it. Check out the section about the Performance Analysis early in this guide to review this type of situation.

- They were able to perform the skill long enough to pass your level 2 test but forgot how to do it during their real job. Consider revising your training and providing refresher training, providing on-the-job feedback, and/or creating some type of job aid that they can refer to while they're working.
- There's some non-training factor at play. Maybe an incentive system can create additional motivation.

Measure Business Results

You may remember at the very beginning of this guide, we mentioned the importance of creating a list of your company's business goals. Once you had that list of goals, you were supposed to keep them in mind as you went through the process of creating training materials. The idea being that your training materials should always contribute toward helping your company reach those goals.

Now's the time to check the key performance indicators (KPIs) that track your company's progress toward its business goals. You'll remember we mentioned these near the beginning of this guide. If you measured your KPIs both before and after the training program (and continue evaluating them as time passes after the workers get to work), you can begin to track if your training is having the desired effect.

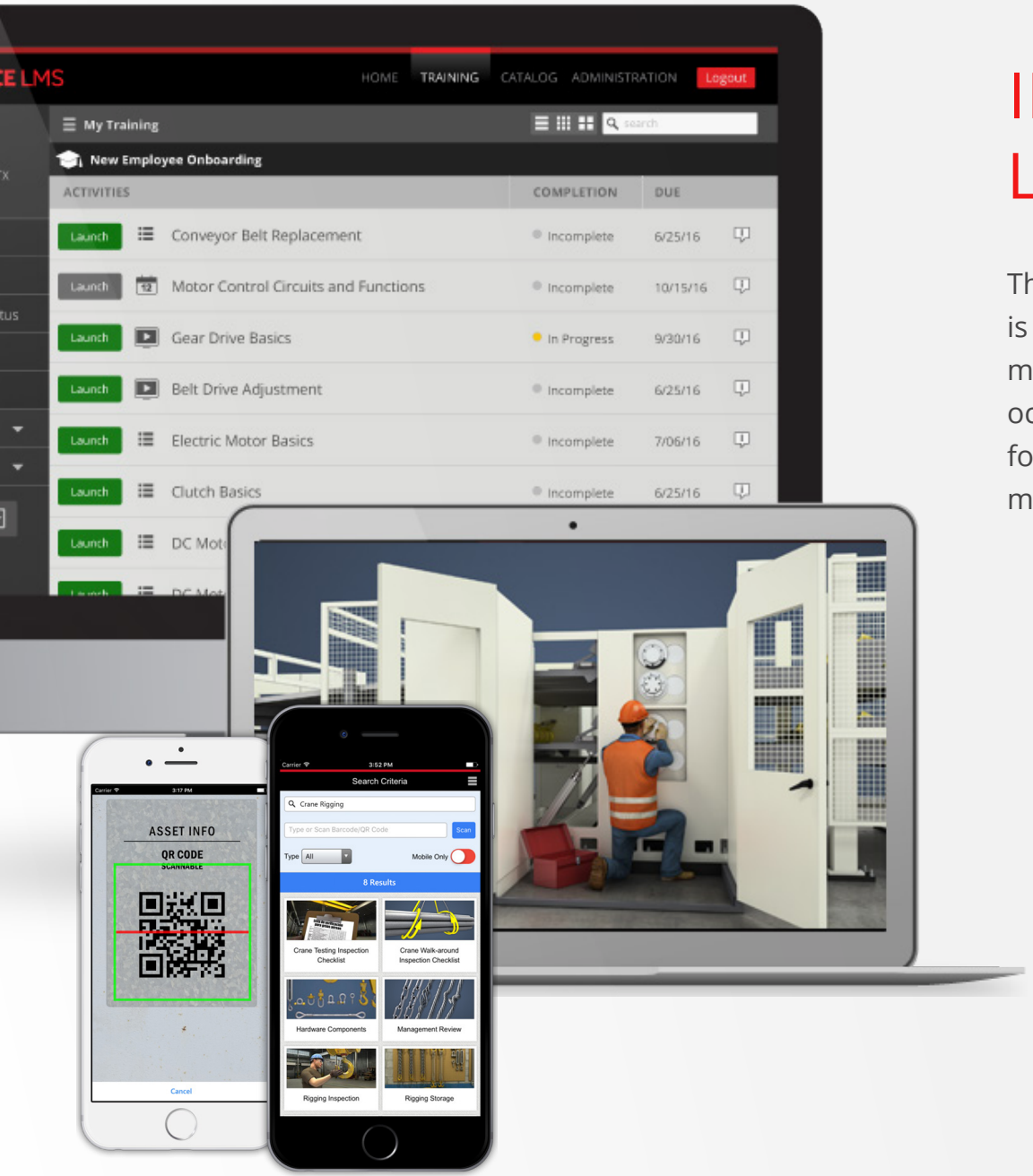
Conclusion: An Orderly Manner for Creating Effective Training

That wraps up our guide to help you create more effective training materials for the workers at your manufacturing site.

Following these steps will help you create more effective training materials. You'll find having an orderly, logical manner of designing, creating, and evaluating training should make your training program more efficient and effective.

Good luck with this and have fun. Remember that by providing effective training, you're helping your workers succeed and helping your company reach its goals. What a great opportunity!

Click to read more about developing effective training programs.



INDUSTRIAL-STRENGTH LEARNING MANAGEMENT

The Convergence Learning Management System (LMS) is a web-based software system that administers your manufacturing training program, including training that occurs "offline" as well as online. It's designed specifically for use in manufacturing and industrial settings and makes the following a snap:

- Assigning
- Notifying
- Delivering
- Tracking
- Storing records
- Reporting
- Mobile compatibility

We also offer an integrated Incident Management System for reporting, correcting, and tracking workplace incidents.

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