Instructional Design for Technical Training
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Technical Training ................................................................. 219
  Instructional Design Needs .................................................. 219
  The ADDIE Model .............................................................. 219
  Step 1: Analysis ................................................................. 220
  Step 2: Design .................................................................. 223
  Step 3: Development .......................................................... 225
  Step 4: Implementation ...................................................... 227
  Step 5: Evaluation .............................................................. 229
  Challenges in Technical Training ........................................... 231

References & Resources .......................................................... 232

Job Aid
  Methods for Conducting a Training Needs Analysis ................. 233
Technical Training

It’s no secret that training and improving employees’ skill levels are critical to cultivating and maintaining a qualified workforce. But often those skills require hard, technical knowledge. How do you go about conducting this hard skills training and why is it so important?

Technical training, which is often called hard skills training, helps employees perform the unique aspects of specialized or skilled work and apply specific tools, equipment, and processes to that work. Technical, specialized work can be as simple as performing a rote procedure or as complex as developing software code. Hard skills training focuses on skill development and application of technical concepts, procedures, and processes.

Instructional Design Needs

You can determine whether your organization needs hard skills training in two ways: through a careful look at your company’s competency model (if your organization uses this tool) or through an organizational needs analysis.

Competency Model: This tool can serve as the basis for identifying and prioritizing hard skills training. According to a Mercer Human Resource Consulting survey, 36 percent of companies have competency systems in place and another 16 percent are considering adding a competency system.

Competency models provide a comprehensive and strategic means for identifying key competencies and skills. If you have a competency model in place, you may already know which technical skills to focus on and you may be able to rank the importance of specific technical skills.

Organizational Needs Analysis: Depending on the charter, size, and scope of your technical training function, it may be appropriate to conduct an organizational needs analysis to determine where to focus efforts and resources. This analysis can identify organizational and environmental performance issues, which may or may not be related to technical training. Recommended solutions based on the analysis results include work redesign processes, changes in incentive and reward systems, electronic performance systems/job aids, technical training, among others.

Now that you understand these two basic discovery methods, this Infoline will provide an overview of how to identify and plan hard skills training solutions.

What’s more, this Infoline will help you

- identify and leverage the expertise of important, technical stakeholder groups
- execute a standard instructional design life cycle
- avoid common challenges inherent to hard skills training.

The ADDIE Model

The ADDIE model is the standard template for training development—for technical and non-technical content. ADDIE—analysis, design, development, implementation, and evaluation—describes the instructional design life cycle.

Developing hard skills training involves the following activities within the ADDIE life cycle:

- identify and engage technical stakeholders
- conduct a training needs analysis (getting to a deeper level than what may have been identified through competency development or organizational needs analysis)
- develop prioritized technical training solutions
- partner with technical experts to create the technical training material
- pilot the training
- prepare instructors to teach the material (if instructor led) and technical experts to answer questions in train-the-trainer sessions
- deploy the technical training to the target audience
- evaluate technical training effectiveness.
The first three processes ensure you have clear, prioritized technical training development plans in place that are agreed to and bought into by technical stakeholders. The remaining processes reflect the development work inherent in creating and delivering technical skills training. Data-gathering activities, processes, and key decision points are shown in the flowchart found in the sidebar, *ADDIE Instructional Design Life Cycle*.

**Step 1: Analysis**

The purpose of this first phase of instructional design is to understand the nature of the problem you are trying to solve and learn more about the target audience so you can build an appropriate technical training solution.

There are at least three groups of stakeholders relevant to technical skills training. A stakeholder is anyone who will have a stake in or strong opinions about the technical training. These individuals will
be affected by the training solution, and it is wise to involve them early in the planning process. If technical stakeholders are not involved early on, you risk missing the mark on your solution. There are three important stakeholder groups:

- strategic technical leaders
- technical experts (or subject matter experts)
- future target audience.

For an overview of these three groups, see the sidebar, Engaging Technical Training Stakeholders.

### Strategic Technical Leaders
The strategic technical leaders should provide the initial view of the technical training needs. They can help prioritize the organization’s technical skills and identify the biggest technical gaps. They can also identify the other two stakeholder groups.

### Technical Experts
With the strategic leaders’ input in hand, arrange interviews with technical experts to identify

- key technical problems or opportunities
- tools, equipment, and processes necessary for successful workgroup performance
- environmental conditions needed for successful training transfer
- ways that the technical problem relates to other technical focus areas
- groups of employees to target.

### Target Audience
- resides within the functional area that will implement the new technical strategy
- has the necessary background education and knowledge to achieve proficiency within this new technical realm
- has experience working with similar technical areas
- adopts new technologies and learns new skills.

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### Engaging Technical Training Stakeholders

The following chart outlines the activities and roles of each of the three stakeholder groups. Be sure to understand each of these groups and include them early on when designing hard skills training.

<table>
<thead>
<tr>
<th>Strategic Technical Leaders</th>
<th>Technical Experts</th>
<th>Target Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>● create the technical agenda and strategies</td>
<td>● maintain a depth of technical knowledge, experience, and accomplishments</td>
<td>● resides within the functional area that will implement the new technical strategy</td>
</tr>
<tr>
<td>● align technical opportunities with business strategies</td>
<td>● develop advanced technological principles and concepts that are relevant to business goals</td>
<td>● has the necessary background education and knowledge to achieve proficiency within this new technical realm</td>
</tr>
<tr>
<td>● stay current with technical trends that inform the business</td>
<td>● participate in technical direction setting</td>
<td>● has experience working with similar technical areas</td>
</tr>
<tr>
<td>● cultivate the environment to take advantage of emerging technical opportunities</td>
<td>● generate new publications or patents based on work results</td>
<td>● adopts new technologies and learns new skills.</td>
</tr>
<tr>
<td>● collaborate with customers, technical contributors, and management to optimize technical opportunities</td>
<td>● identify new opportunities to improve technology</td>
<td></td>
</tr>
<tr>
<td>● identify emerging needs and pursue new business opportunities</td>
<td>● drive standardization activities to support technical implementation.</td>
<td></td>
</tr>
<tr>
<td>● communicate technical direction.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Adult Learning Principles

Several things can influence how a person learns and retains knowledge. The more you can learn about your audience, the better prepared you can be when designing appropriate and effective training. The following explains what the audience will need to successfully transfer learning to the job.

To boost their abilities, trainees need
- awareness of how the learning relates to their job
- understanding of how to transfer the learning to their job
- opportunity to use learning on the job
- personal capacity to use learning on the job.

To be motivated, trainees need
- belief in their own ability to apply learning to change their performance
- belief that the learning will change their performance
- trust that the changed performance will lead to useful, valuable outcomes.

To have effective worker-manager relationships, trainees need
- feedback and performance coaching
- demonstrated support for the worker to use new learning.

To have effective peer relationships, trainees need
- peer support using new approaches
- a group norm that fosters openness to change.

To be successful, trainees need
- positive outcomes as a result of transferring training.

These folks also may need to participate in course development or delivery as a trainer, content reviewer, or coach.

As you talk with strategic technical leaders and technical experts, categorize and analyze the responses and prepare a summary of technical views and recommendations—this will help you generate support for your course development plans.

Target Audience
To gain a clear picture of the needs of the target audience, you must determine
- current performance levels
- target audience’s perceptions of its unmet needs
- mix of learning styles.

A representative sample from the target audience can be used as a baseline of current performance levels. For more details about how the target audience can shape your training design, see the sidebar, Adult Learning Principles.

Training Needs Analysis

This analysis method identifies technical problems and opportunities with a view toward developing technical training as the solution. A thorough training needs analysis for technical curriculum development will employ a combination of data-gathering methods and active participation by several important technical stakeholder groups. Strategic leaders, technical experts, and the target audience all need to be involved in this analysis.

Once the purpose of the needs analysis is defined, begin to explore technical needs, issues, and problems by framing questions to the three stakeholder audiences. Decide what methods will be used and what data will be collected. Determine which activities to observe and the types of indicators that are available to better understand the nature of the business problem. Note that each stakeholder group will yield information that can further focus questions and areas of investigation.
Be sure to check out the valuable job aid at the back of this issue—*Methods for Conducting a Training Needs Analysis*—for even more details about this.

Once you have summarized the various sources of disparate data, analyze the information and document the full extent of what is known about the problem and its causes. Prioritize the most important technical issues to address and explore possible solutions. Once you identify the ideal solution, solicit approval from technical stakeholders or the project sponsor to move into the design phase.

**Step 2: Design**

During the design phase, you will write the technical training objectives in a training design document that specifies the overall design—including the purpose and description of the course, the target audience, the delivery method, and the structure of the course content. The document also includes the course length, prerequisites that must be completed in advance of the course, instructional strategies, and training transfer strategies.

Most large companies have standard templates for course design documents; you can find an outline of a typical design document in the sidebar, *Sample Course Design Document Outline*.

**Write Course Objectives**

It’s very important to get the training objectives right! The course structure, content, learning strategies, and testing methods should directly support and align with the training objectives. Define the training objectives in terms of expected performance or behavior levels and standards.

**Determine Delivery Options**

It’s also important to determine what delivery options you will use. While learning technologies are on the rise, remember to consider the relative effectiveness of technical training methodologies. The sidebar, *Technical Training Delivery Methods*, explores the various delivery options.

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**Sample Course Design Document Outline**

The following is a typical course design outline, which can help you get started when designing your hard skills training course.

<table>
<thead>
<tr>
<th>Introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose of the Course</td>
</tr>
<tr>
<td>Course Description</td>
</tr>
<tr>
<td>Target Audience</td>
</tr>
<tr>
<td>Delivery Method</td>
</tr>
<tr>
<td>Schedule of Training Milestones</td>
</tr>
<tr>
<td>Prerequisites</td>
</tr>
<tr>
<td>Content Validation</td>
</tr>
<tr>
<td>List of Technical Concepts and Procedures to Be Trained</td>
</tr>
<tr>
<td>Instructional Strategy</td>
</tr>
<tr>
<td>Training Objectives</td>
</tr>
<tr>
<td>Exercises</td>
</tr>
<tr>
<td>Course Organization</td>
</tr>
<tr>
<td>Welcome and Introduction</td>
</tr>
<tr>
<td>Module 1</td>
</tr>
<tr>
<td>Module 2</td>
</tr>
<tr>
<td>Module x</td>
</tr>
<tr>
<td>Conclusion</td>
</tr>
<tr>
<td>Training Transfer Strategy</td>
</tr>
<tr>
<td>Evaluation Strategy</td>
</tr>
<tr>
<td>Approval</td>
</tr>
</tbody>
</table>
### Technical Training Delivery Methods

The following chart outlines the advantages and disadvantages of each of the training delivery methods.

<table>
<thead>
<tr>
<th>Delivery Method</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
| Instructor-based classroom training    | ● increased focus on learning as employees are removed from their daily responsibilities  
                                          ● personal contact  
                                          ● interactivity with opportunity for questions and comments  
                                          ● elimination of loafing  
                                          ● opportunity to practice and rehearse technical skills. | ● need for an instructor  
                                          ● instructor travel costs  
                                          ● multiple sessions often required. |
| Instructor-based virtual training      | ● increased focus on learning  
                                          ● interactivity  
                                          ● cost and time savings  
                                          ● increased efficiency. | ● need for an instructor  
                                          ● potential for learners to multitask and not pay full attention. |
| E-learning                             | ● accessibility, flexibility, convenience  
                                          ● ability of learners to progress at their own pace  
                                          ● easy and inexpensive worldwide distribution  
                                          ● cost savings on instructor and employee travel  
                                          ● ease of content update. | ● high development time and costs  
                                          ● lack of human contact  
                                          ● reluctant learners  
                                          ● high drop-out rates  
                                          ● incompatibility between applications  
                                          ● lack of interactive capabilities  
                                          ● quick obsolescence of training material. |
| Blended learning                       | ● each method delivers its best  
                                          ● maximum flexibility  
                                          ● optimal delivery, e.g., content and simulations through e-learning with instructor-led sessions for discussion-based formats and reflection  
                                          ● variety of learning accommodates different learning styles. | ● high cost. |

*Modified with permission from the Corporate Leadership Council.*
Classroom learning still exceeds alternate approaches of training delivery for technical skills training because it allows for discussion and interactivity. Technical skills-based learning is best delivered in an interactive classroom where skills are the focus and the following are possible:

- discussion and feedback
- demonstration and role play
- practice
- action planning to adopt new skills.

In contrast, learning that primarily involves information and knowledge acquisition is often best delivered through the various learning technologies. Supplemental material and tools (for example, reference materials, procedures) are also effectively made available to employees through learning technologies. Blended learning offers a flexible, variety-filled delivery method that ensures that the training meets the needs of all trainees and appeals to diverse learning styles.

Ensure Training Transfer

Training transfer refers to learners' ability to apply the skills they learned in training to the job—a critical aspect that you need to include in the design from the outset.

Many factors relate to training transfer. The work environment may be more or less supportive of attempts to practice and apply new skills. Many factors in the work environment can have an impact on training transfer:

- opportunity and time to practice the skills
- consequences of performing the skills (for example, positive reinforcement, negative reinforcement, punishment, lack of reinforcement)
- managers' perceptions of the training and their willingness to provide support, feedback, and coaching
- organizational culture and climate.

Coworkers and peers also play an important role in the effectiveness of training transfer. For example, peers may or may not be supportive of using new approaches, and group norms that foster openness to change and continuous learning may or may not exist.

There are numerous strategies for enhancing the transfer of training. These strategies pertain to manager, instructor, and trainee behaviors before, during, and after training. The goal is to establish a partnership among managers, instructors, and trainees to support the trainee in applying the skills. Strategies that can be planned into the training to enhance training transfer are shown in the sidebar, Strategies for Training Transfer.

Step 3: Development

The development phase takes the longest to complete. This is when you will construct the course storyboard, which orders and sequences the modules, blocks of content, objectives, exercises, and test items. The storyboard is used to organize classroom content and content delivered through the various learning technologies. A sample storyboard layout is shown in the sidebar, Sample Storyboard Format.

Once you complete the storyboard, you can write the course materials, interactive elements, and evaluation materials. These might include instructor and participant guides; exercise instructions; scenarios or case studies; job aids; quizzes and tests; and any demonstration, lab, or simulation components.
## Strategies for Training Transfer

The following chart outlines various activities instructors, managers, and trainees can do before, during, and after training to ensure that hard skills training transfers to the job.

<table>
<thead>
<tr>
<th>Role</th>
<th>Instructors</th>
<th>Managers</th>
<th>Trainees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to</td>
<td>● involve and partner with the business to align training plans to business priorities</td>
<td>● align trainees’ learning goals with performance expectations</td>
<td>● identify needs for training</td>
</tr>
<tr>
<td>Training</td>
<td>● create training and tutoring capabilities that are relevant to the job</td>
<td>● assess trainees’ current performance levels</td>
<td>● explore training options</td>
</tr>
<tr>
<td></td>
<td>● promote the value of the training to trainees and management</td>
<td>● convey the importance of new learning</td>
<td>● participate in training preparation</td>
</tr>
<tr>
<td></td>
<td>● involve and train managers to assist with training transfer.</td>
<td>● demonstrate support for new learning</td>
<td>activities.</td>
</tr>
<tr>
<td>During</td>
<td>● provide job aids and work-related tasks for practice in training</td>
<td>● demonstrate support for the training program and its importance</td>
<td></td>
</tr>
<tr>
<td>Training</td>
<td>● provide individualized feedback</td>
<td>● allow time for trainees to focus on development.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● facilitate trainee action planning.</td>
<td>● assess and provide feedback to trainees on new performance.</td>
<td></td>
</tr>
<tr>
<td>After</td>
<td>● provide follow-up support resources including self-management strategies</td>
<td>● refer trainees to helpful contacts and resources</td>
<td>● review key learning from training</td>
</tr>
<tr>
<td>Training</td>
<td>● evaluate training transfer and usage</td>
<td>● encourage and guide trainees in their learning process</td>
<td>● identify a mentor or role model to</td>
</tr>
<tr>
<td></td>
<td>● provide refresher and problem-solving sessions.</td>
<td>● support trainees’ development of new learning through job and project</td>
<td>support training transfer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>assignments.</td>
<td>● create or join peer network for ongoing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>development.</td>
</tr>
</tbody>
</table>
Step 4: Implementation

Once all the course material is developed, you should conduct a beta test to observe how the content fits together. This involves a full walk-through of the content and all of its elements. This is the first opportunity for feedback since the design document was approved. The beta takes twice as long as the length of the course because questions and discussion occur as the material is presented.

Be sure to check and test the navigation, branching, and menus of online content to ensure everything works and that all content is accessible.

When you need to change some of the content, use the Sample Change Request Form to help guide the process.

Conduct a Pilot

The pilot is another test of the course before deployment starts. The pilot is different from the beta because it mimics the exact parameters of the course to evaluate how the course is received when it is delivered according to the specific instructional parameters. The course material must be final before a pilot is conducted.

Sample Storyboard Format

The following sample can help you construct your own storyboard, which can help you organize your hard skills training content.

<table>
<thead>
<tr>
<th>Page #</th>
<th>Module</th>
<th>Objective</th>
<th>Block of Instruction</th>
<th>Exercises</th>
<th>Test Items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Sample Storyboard Format

The following sample can help you construct your own storyboard, which can help you organize your hard skills training content.

Course Title

Project Manager

Phone #

Deployment Timeframe

Purpose of Storyboard

This document specifies the flow of training. Once the flow is reasonably represented, this document is used to organize modules and instructional strategies.
## Sample Change Request Form

Use the following form after you have determined what changes you need as a result of the beta testing.

### Course Information

<table>
<thead>
<tr>
<th>Course Title</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery Type</td>
<td></td>
</tr>
<tr>
<td>Reviewer</td>
<td></td>
</tr>
</tbody>
</table>

### Purpose of This Form and Instructions

**Purpose**
The purpose of this document is to obtain feedback from technical experts to revise or update course content and materials.

**Instructions**
Please provide the following:
- the module and page number in the course material where the change is needed
- the level of importance for each change in the priority column (!):
  - H = High—Must be changed (incorrect content)
  - M = Medium—Should be changed (format inconsistent, typos)
  - L = Low—Could be changed (suggestions on graphics, wording, and so forth that do not affect the quality of the training material)
- an explanation or description of the problem
- the content to be changed, including the correct information, links, or graphics when existing content is wrong

<table>
<thead>
<tr>
<th>#</th>
<th>Module and Page !</th>
<th>Description of Problem</th>
<th>Desired Change (Include Subject Matter and Alternate Links)</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
<td></td>
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<td></td>
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<tr>
<td>4.</td>
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<td></td>
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<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Employees invited to the pilot should not be familiar with the course content. They should be typical attendees who are either a subset of the target audience or very similar to the target audience. The master instructor or facilitator asks questions of the participants at the end of each module or the end of the course to document participants’ impressions.

The timing of the modules is documented, as is the level of learner engagement and any indications of their comprehension. When a course will be deployed in several countries, pilots may need to be conducted in each culture due to differences in the way in which the course may be received.

**Train the Trainer**

The train-the-trainer event introduces the content to qualified instructors in an effort to familiarize them with the course content. This formal process should allow instructors to observe the course as delivered by a master instructor and practice delivering it.

**Plan for Logistics**

Before the deployment of classroom-based training, set up the training logistics. Doing so at least two months in advance allows enough time to build a deployment schedule and secure classrooms and instructors.

Other training logistics, such as classroom set up and course material copying and assembly, can be completed closer to the actual session dates. Many larger companies rely on a learning management system, an enterprise-wide application, to schedule, deliver, and track blended learning. Some companies also use electronic delivery of course material to the learner before classes rather than the traditional paper-based materials.

**Step 5: Evaluation**

You should conduct evaluation activities throughout the course development, including during the beta and pilot and, of course, during the ongoing course delivery.

During the beta, the course content, sequencing, and instructional design are evaluated. In the pilot, the delivery method, course materials, exercises, interactivity, and course length and timing are evaluated.

Once the course has started, instructors’ performance is monitored. Participants’ perceptions of the quality of the course and their learning also can be assessed on an ongoing basis. This data helps update the course as time goes on.

A challenge in hard skills training is measuring participants’ skill increase as a result of the training or measuring job performance following the training. Various methods exist for measuring skills development. One method has managers rate employees’ skills before and after the training using behaviorally anchored rating scales to show skills development.

Another method measures training costs, such as the following, in an attempt to understand the total cost of developing and delivering training:

- learner and instructor fees
- material reproduction costs
- delivery charges (for example, classrooms, set up and administration, technical support)
- cancelled session charges and no-show fees
- equipment and capital expense costs
- training attendance and seat utilization.
Case Study: Technical Skills Training at Intel

Intel’s information technology (IT) technical skills training curriculums are complex, highly diverse, and wide-ranging. IT technical skills training initiatives cover technical project management, programming languages and tools, technical support functions, technical leadership training, and more. The technical training curriculums, called Academies, focus on specific technical job families: Engineer, Services, Analyst, and Application Developer. Each Academy is a series of employee skills development interventions, including technical and soft skills training, certification tracks, structured mentoring, job coaching, and local technical communities.

The curriculums are based on a robust, systematic competency system. Industry benchmark data shows that only 16 percent of large corporations have a competency-based performance and learning system in place. Intel IT’s competency-based system has been in existence since 2002 and is continually updated based on annual strategic planning. The system is flexible enough to identify job and role competencies and technical specializations within job types.

Within each Academy are a number of technical skills certifications. These rigorous in-house certification tracks include demonstration requirements to certify that technical skills have been demonstrated to a standard level.

The competencies and technical training related to each technical job type are accessible to employees through an automated web interface. Employees can access and complete technical skills assessments and identify and access technical training and other technically oriented development interventions. In total, the IT competency-based system provides training and development for more than 90 percent of Intel’s IT employees worldwide.

The investment in technical skills training is intended to positively affect information technology project outcomes by significantly increasing the technical skill set of IT employees, resulting in:

- increased staffing options due to increased and standardized technical skill sets
- increased technical project/program planning and execution efficiency
- more realistic project/program timelines that are effectively managed and delivered on time, within cost, with high quality
- improved scenario planning
- increased accuracy of data and information requirements documented up front and overall improved data quality (accurate and replicated)
- better integration of business processes, data, applications, and technology
- improved ability to redesign and adopt software management business processes following industry standards
- improved architectural design across IT
- increased knowledge of and compliance with standards, policies, and practices
- reduced redundancy and gaps in business solutions
- consistent software testing processes, increasing production quality of IT solutions.

As direct indicators of the success of technical training efforts, Intel’s IT has seen an immediate increase in technical talent and a huge increase in the technical pipeline, a process to ready technical leaders for future promotions. Individual technical contributors have increased their competence, expertise, influence, leadership, and readiness skills to assume future technical leadership positions.

Used with the permission of the Intel Corporation.
Challenges in Technical Training

Even when technical stakeholders are involved early in the planning, things can go wrong. It is critical to involve the right technical stakeholders in the beginning. It sets the stage for collaboration and partnering between the training function and the business. Explaining the technical experts’ role up front goes a long way in preventing later issues due to misunderstandings. For an example of an effective technical skills training program that uses the concepts presented in this Infoline, see sidebar, Case Study: Technical Skills Training at Intel. You may also find the glossary sidebar to be helpful in understanding and addressing the challenges of hard skills training.

Glossary of Technical Training Terms

Be sure to familiarize yourself with the following essential technical training terms.

**ADDIE:** The phases that describe the instructional design life cycle: analysis, design, development, implementation, and evaluation.

**Assessment:** The process used to systematically evaluate a learner’s skill or knowledge level.

**Beta test:** A complete walk-through of training content prior to implementation. Unlike a pilot test, which follows the exact timing of the course, a beta test takes twice as long in order to allow for questions and discussion.

**Competency model:** A tool that provides a comprehensive and strategic means to identify competencies and skills.

**Hard skills training:** See technical training.

**Pilot test:** A course-run through conducted prior to implementation.

**Soft skills:** Business skills such as communication and presentation, leadership and management, human resources, sales and marketing, professional development, project and time management, customer service, team building, administration, accounting and finance, purchasing, and personal development.

**Storyboard:** An outline of a multimedia project in which each page represents a screen to be designed and developed.

**Technical training:** A process that aims to improve knowledge, skills, attitudes, and/or behaviors in a person to accomplish a specific job task or goal. Technical training focuses on specialized or skilled work that requires specific tools, equipment, and processes. Technical training is also referred to as hard skills training.

**Train-the-trainer:** An event that introduces the trainers to the course content.
References & Resources

Articles


Books


Fuller, Jim, and Jeanne Farrington. *From Training to Performance Improvement: Navigating the Transition.* San Francisco: Jossey-Bass/Pfeiffer, 1999.


Infolines

Methods for Conducting a Training Needs Analysis

The following chart presents sample questions to ask each of the three stakeholder groups when gathering and analyzing data. The chart is divided into two parts: data gathering and data analysis. Once you determine which method or methods you will use to gather and analyze your data, review the questions to ask each stakeholder group. The answers to these questions will yield the results you need to accurately assess your training needs.

### Sample Data-Gathering Activities

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>Strategic Technical Leaders</th>
<th>Technical Experts</th>
<th>Target Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group Processes</strong></td>
<td>Community forums and focus groups are used to gather participants’ views of pressing issues and to identify problems.</td>
<td>● What are the top priority responsibilities for your organization?</td>
<td>● What are the main responsibilities of the job in question?</td>
<td>● What are the most difficult aspects of the job?</td>
</tr>
<tr>
<td>Surveys and Interviews</td>
<td>Interviews, questionnaires, and behavioral rating scales are used to gather information:</td>
<td>● Job analysis: Analyzing a job and breaking it down into its component parts, such as competencies, duties, and tasks.</td>
<td>● What performance challenges is the organization facing?</td>
<td>● How critical are these aspects of the job?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Task analysis: Analyzing a task and breaking it down into its subtasks and required knowledge.</td>
<td>● What factors are causing organizational performance problems?</td>
<td>● What would you change in how the work is done?</td>
</tr>
<tr>
<td>Future-Oriented Needs Analysis</td>
<td>Strategic planning and trend analysis techniques are used to identify future technical training needs and critical skills the organization will require in the future.</td>
<td>● What performance problems are critical to solve for the health of your organization?</td>
<td>● What problems or issues are evident?</td>
<td>● What would make an employee more productive in the job?</td>
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<tr>
<td></td>
<td></td>
<td>● What’s happening in the industry and how will this shape the organization?</td>
<td>● What knowledge, tools, processes, and equipment are required to perform the job successfully?</td>
<td>● What problems must be addressed?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● What technology will the organization need in the future?</td>
<td>● What other contributing factors make an individual successful in this job?</td>
<td>● What factors are contributing to performance problems?</td>
</tr>
<tr>
<td></td>
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<td>● What critical skills will the organization need in the future?</td>
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Methods for Conducting a Training Needs Analysis (continued)

Sample Data-Gathering Activities (continued)

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| Records and Indicators | Review existing records; modify or create new records; and review indicators to analyze and understand facts, important characteristics, and trends in the organization. Ensure confidential data is safeguarded. | ● What indicators in the business point to potential underlying problems?  
● What do the trends suggest?  
● Where are problems evident?  
● What will happen if the trends continue?  
● What is the potential impact? |                                                                                                                                                                                                 |                                                                                                                                                                                                                     |

Sample Data Analysis and Synthesis Activity

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| Causal Analysis | Systems and root cause analysis techniques are used to analyze factors that are causing problems. This analysis involves assessing all theories from stakeholders on probable causes.                             | ● Has the problem been fully defined?  
● Where was this problem first noticed?  
● What is the impact of the problem? Is it increasing?  
● In which areas is the problem occurring?  
● What do we know about why this is happening?  
● What might have created the problem?  
● Where else might this problem occur, but hasn’t yet?  
● Who is affected by the problem? |                                                                                                                                                                                                 |                                                                                                                                                                                                                     |