LEARNING SYSTEM

DESIGN

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FOREWORD

Dear Colleague:

In 2004, the SHRM Foundation developed one of the best resources available for busy HR professionals like you. Recognizing that you have little time to keep up with results of academic research—and, let’s face it, some of it is challenging to wade through as well—we created the Effective Practice Guidelines series. This series integrates the latest research findings and expert opinion on how to conduct effective HR practice into a very accessible publication.

The goal of the series is to let you know which HR practices have been shown by research to be effective in order to help you in your role as an HR professional. With that goal in mind, the SHRM Foundation publishes new reports annually on different HR topics. Past reports, available online at www.shrm.org/foundation, include Performance Management, Selection Assessment Methods, Employee Engagement and Commitment, Implementing Total Rewards Strategies, Developing Leadership Talent and Retaining Talent and Human Resource Strategy. You are now reading the eighth report in the series, Learning System Design.

For each report, a subject matter expert is chosen to be the author. After the initial draft is written, the report is reviewed by both academics and practitioners to ensure that the material is research-based, comprehensive and presented in an easy-to-use format. We also include a “Sources and Suggested Readings” section as a convenient reference tool.

Our vision for the SHRM Foundation is to “maximize the impact of the HR profession on organizational decision-making and performance by promoting innovation, education, research and the use of research-based knowledge.” The Foundation also is strategically focused on initiatives designed to help organizations maximize leadership talent. We are confident that the Effective Practice Guidelines series takes us one step closer to making our vision a reality. Feel free to let us know how we are doing!

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Maximizing the contributions of knowledge workers can be critical to an organization’s success. It is therefore vital to design and implement effective learning initiatives to retain these employees.

Why Learning is Critical for Organizational Success

Organizations today rely increasingly on intangible assets such as human capital as a way to gain competitive advantage. Knowledge workers with specialized knowledge and skills are difficult to find, and a skilled workforce is difficult for competitors to imitate or duplicate. Maximizing the contributions of knowledge workers can be critical to an organization’s success. It is therefore vital to design and implement effective learning initiatives to retain these employees. To ensure a positive impact on the organization’s bottom line, learning initiatives must be carefully designed with the business strategy in mind, and they must demonstrate their contribution to organizational stakeholders.

Learning is critical for organizations to successfully deal with workplace challenges. The aging workforce, increased diversity in the workplace and the growing gap between job skill demands and available employee skills are just some of the forces that make learning initiatives so important. Table 1, on page 2, lists additional forces that affect workplaces today.

These forces make learning a strategic imperative. This report will help you use the full range of available learning initiatives, including training, development and knowledge management, to deal with forces influencing business and to build the organization’s competitive advantage. The first section of the report explains how to ensure your learning initiatives contribute to the business strategy and, ultimately, organizational effectiveness. The second section is devoted to a discussion of the design process for developing effective learning initiatives. The report’s conclusion explores future trends in learning.

An Overview of Learning Initiatives

What are learning initiatives? Learning initiatives include training, development and knowledge management. Learning includes acquisition of knowledge, skills, behaviors or competencies. Both tacit and explicit knowledge about the organization, customers and business process is critical for organizational success. Explicit knowledge refers to knowledge that can be formalized, coded and communicated. It is found in manuals, formula and specifications. Tacit knowledge refers to personal, experience-based knowledge that is difficult to explain to others.
Training has been the primary learning method used for helping employees acquire explicit knowledge. However, training programs are not as effective as development activities for disseminating tacit knowledge. Development activities include formal educational courses, job experiences, relationships and assessment (for detailed guidelines on how to use these development practices, see Developing Leadership Talent (Day, 2007) listed in the “Sources and Suggested Readings” section at the end of this report). Knowledge management systems are needed to ensure employees are able to interact with each other to share what they have learned.

Trends in organizational learning investments. You may be asking yourself, “How does the time and money my organization spends on learning initiatives compare to other organizations?” To help you answer this question, Table 2 provides a snapshot of learning practices found in the annual State of the Industry Report prepared by the American Society for Training and Development. U.S. organizations continue to invest large amounts of money in learning initiatives. Here is an overview of some key trends in these investments:

- Direct expenditures as a percentage of payroll and learning hours have remained stable over the last several years.
- There is an increased demand for specialized learning that includes professional or industry-specific content.
- The use of technology-based learning delivery has increased from 11 percent in 2001 to 32 percent in 2007.

### Table 1: Forces That Make Learning Critical

- Globalization
- Talent management
- Increased value of human capital
- Focus on link to business strategy
- Emphasis on customer service and quality
- New technology
- Changing demographics, diversity and skill deficits of the workforce
- High-performance models of work systems


### Table 2: Snapshot of Learning Practices

**Investment and Distribution of Expenditures**
- Amount spent by U.S. organizations on employee learning and development: $134.39 billion
- Average direct expenditure per employee: $1,103
- Average direct expenditure as percentage of payroll: 2.15%
- Average learning hours used per employee: 37.4 hours of formal training

**Efficiency**
- Tuition reimbursement as a percentage of total expenses: 12.6%
- The employee-learning staff ratio: 1:227
- Average cost per learning hour received: $56
- Average cost per formal learning hour: $38
- Average cost of an hour of formal training: $1,135
- Ratio of learning hours used to learning hours available: 44:8

**Delivery Methods**
- Average percentage of learning hours available: 71% instructor-led, 32% technology-based, 25% online
- Percentage of direct learning expenditures allocated to external providers: 25%

• Self-paced online learning was the most frequently used type of technology-based learning.

• Technology-based learning has helped improve learning efficiency, as shown by increases in the reuse ration since 2003. (The “reuse ration” is defined as how much learning content was used or received for every hour of content.)

• Technology-based learning has resulted in a larger employee to learning staff member ratio.

• The percentage of services distributed by external providers (such as consultants, workshops, training programs) dropped from 29% in 2004 to 25% in 2007.

Developing strategic learning initiatives. Organizations can spend considerable time and money on learning initiatives, but this does not guarantee their effectiveness. To be effective, these initiatives need to support the organization’s strategy. Learning initiatives have been shown to have both direct and indirect effects on organizational performance. These initiatives help employees develop skills needed to perform their jobs, and this directly affects the business. Also, providing learning initiatives creates a positive work environment, which can help in attracting new talented employees and retaining current employees.

Learning initiatives are most likely to result in positive business outcomes when they are linked to the business strategy (see Case Studies). This involves defining the business strategy, developing learning initiatives that support the strategy, translating the initiatives into specific training, development and knowledge management initiatives, and using appropriate metrics to determine if learning initiatives are contributing to the business strategy and goals.

The business strategy can be identified by considering the company’s mission, vision and values, conducting a SWOT analysis (strengths, weaknesses, opportunities and threats) or considering competitors in the marketplace. The SWOT analysis involves an assessment of the company’s operating environment, such as product markets and technology, to identify opportunities or threats. It also provides an internal analysis of the company’s strengths and weaknesses, including people, technology and financial resources. It is important to consider decisions about how to compete in the marketplace, including where to compete (markets, products, industries), how to compete (cost, quality, reliability, innovation, etc.) and what resources are needed to compete. Different business strategies call for different human capital requirements and thus place different demands on the training function.

Linking learning initiatives to the strategy is important to make the business case for learning. However, if they are designed or purchased in a haphazard or unsystematic manner, these initiatives will likely be ineffective. The next section presents a systematic approach to guide you in designing effective learning initiatives.

GUIDELINES FOR DEVELOPING EFFECTIVE LEARNING INITIATIVES

The learning design process, shown in Figure 2, on page 4, is often referred to as the ADDIE model because it includes Analysis, Design, Development Implementation and Evaluation. This

Case Studies: Boston Pizza and Seattle City Light

Boston Pizza International, a casual restaurant chain, recognized that most of the managers lacked the soft skills needed to be successful. At Boston Pizza College, managers learn and practice skills needed for successful store management. The learning initiative has paid off. Reports from secret shoppers and quality assurance visits have improved, and the restaurant chain has increased retention in an industry in which turnover can approach 300 percent.

Seattle City Light, the municipally owned electric company, expects more than a quarter of its workforce to retire within the next five years. Seattle City Light is using training courses and interactions with more experienced employees and mentors to help employees learn new and innovative technologies, and learn the electrical systems history to prevent electrical demand from overloading aging dams and power tunnels. A final exam and hands-on field test are administered after training to ensure that new employees have acquired the knowledge and skills needed to be successful operators.

### Figure 1: Strategic Learning Initiatives and Learning Activities

<table>
<thead>
<tr>
<th>Strategic Learning Initiative</th>
<th>Sample Learning Activities</th>
</tr>
</thead>
</table>
| Diversify the learning portfolio | • Facilitate informal learning  
• Use new technology for learning  
• Provide personalized learning opportunities |
| Expand learning focus | • Involve customers, suppliers, employees, students  
• Offer more learning opportunities to nonmanagerial employees |
| Accelerate the pace of learning | • Reduce the time needed to develop learning solutions  
• Provide greater access to learning resources using online or mobile learning  
• More quickly identify learning needs |
| Improve customer service | • Learning focused on product/service knowledge, customer service skills or quality techniques, and customer-based decision-making |
| Provide development opportunities | • Communicate and make available assessment, job experiences, mentors, formal programs  
• Ensure learning opportunities include current jobs as well as future roles |
| Capture and share knowledge | • Organize, store and give employees access to knowledge  
• Provide methods to make knowledge available to employees (e.g., web sites) |
| Align training with the business strategy | • Assess whether learning opportunities map onto business mission, goals and values  
• Trim and add opportunities |
| Ensure learning and transfer of training are supported | • Remove constraints to learning, such as lack of time, resources or equipment  
• Dedicate physical learning space to encourage collaboration and knowledge sharing  
• Ensure employees understand the importance of learning  
• Through performance management and compensation systems, hold managers accountable for supporting learning |

### Figure 2: The Learning Design Process

1. Conduct needs assessment
2. Determine employees' readiness for training
3. Create a learning environment
4. Ensure transfer of learning
5. Develop an evaluation plan
6. Choose the learning method
7. Monitor and evaluate learning
section will explain in detail the seven steps in the learning design process. The process should start with needs assessment and then follow each step to completion. If time does not permit each step in the process to be completed sequentially, consider using rapid instructional design techniques. These include shortcuts such as using existing records for needs assessment, combining different steps in the design process and using existing instructional materials that can be customized with examples, exercises and assignments. For more information, see Rapid Instructional Design (Piskurich, 2006) in the “Sources and Suggested Readings” section at the end of this report.

Step 1: Conduct a Needs Assessment

Needs assessment focuses on determining if a learning need exists. Effective needs assessment involves first conducting an organizational analysis (what is the context of learning?), followed by a task analysis (what needs to be trained?) and person analysis (who needs to be trained?).

Organizational analysis provides an understanding of the scope and type of learning that will occur, if any. Organizational analysis identifies whether learning fits with the company’s strategy and whether time, money and expertise for designing and delivering learning are available. Table 3 shows the relevant questions to ask during this process.

Once the decision is made to allocate resources to learning, it is necessary to determine how they will be allocated. Questions to consider include:

- Are resources going to current programs or to the development of new learning initiatives?
- Will learning initiatives be developed by in-house staff or purchased from outside suppliers?

Person analysis is necessary to identify who needs learning. To determine

<table>
<thead>
<tr>
<th>Table 3: Questions to Ask in an Organizational Analysis</th>
</tr>
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<tbody>
<tr>
<td>• How does learning align with the strategic needs of the business?</td>
</tr>
<tr>
<td>• Should organizational resources be devoted to learning?</td>
</tr>
<tr>
<td>• What do we need from managers for this learning initiative to succeed?</td>
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<tr>
<td>• How might the learning initiative affect our employees’ relationship with customers?</td>
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<tr>
<td>• What features of our culture might interfere (or facilitate) learning?</td>
</tr>
<tr>
<td>• What might suppliers, customers or partners need to know about the learning initiative?</td>
</tr>
<tr>
<td>• How will employees perceive the learning initiative? As an opportunity? Waste of time?</td>
</tr>
</tbody>
</table>


Case Study: Learning Is Strategic at IBM

IBM used training and development to transform it from a high-tech industrial age company to an information- and knowledge-driven company that can better serve its clients’ needs. Implementing this strategy required a massive cultural shift: employees needed to become more dedicated to clients and more adaptable and innovative. The training function was re-oriented toward “learning through work,” where training was conducted on location and was linked explicitly to client needs. For example, learning teams designed training opportunities into the work itself, a concept known as “work-embedded learning.” Employees worked via computers to connect with experts, participate in specialized online communications and complete online learning modules. The amount of time spent on learning and training grew 32 percent from 2003 to 2004 through the expansion of work-embedded learning. IBM committed more than $700 million dollars to learning initiatives deemed to be critical for achieving its business strategy.

Learning System Design

whether learning is the best solution for a performance problem or issue, you must first consider whether other solutions besides learning are feasible. The following questions should be considered:

- Are performance expectations unclear? (input)
- Do employees lack the basic skills needed to perform the job, and are resources available to improve these skills? (input)
- Are employees aware of performance expectations and/or quality standards? (output)
- Was poor performance rewarded? (consequences)
- Do employees fail to receive timely, accurate, constructive and specific feedback about their performance? (feedback)
- Are the proper equipment and technology available? (situational constraint)
- Are other solutions—such as work redesign or transferring employees to new jobs—realistic?

If input, output, consequences or feedback are responsible for the performance problem, then these issues should be addressed using HR systems other than training or development (e.g., hiring or performance management systems). However, if input, output, consequences and feedback are satisfactory, next you need to consider issues related to employees’ learning history. Also, if there are changes in the workplace due to new technology, products, equipment, services or mandated training due to legislation (e.g., safety training), then the next set of questions should be considered. Affirmative answers to one or more of these questions suggest that learning may be the solution.

- Is the performance problem important? Does it have the potential to cost the company money from lost productivity or lost customers?
- Have employees received little or no previous training?
- Was prior training evaluated and found to be ineffective?
- Have employees been trained? If so, how frequently do employees use the training content in their jobs?

The last part of the needs assessment process is task analysis, and it involves four steps:

1. Identify the jobs to be analyzed.
2. Develop a preliminary list of tasks performed on the job by using a combination of needs assessment methods (interviews, observation of the job, etc.).
3. Validate or confirm the preliminary task list by having job incumbents or managers review and rate a) how frequently each task is performed, b) the amount of time spent performing each task, c) how important or critical the task is for successful completion of the job, and d) if performance of the task is expected for entry-level employees. Tasks rated as important, frequently performed and of moderate to high level of difficulty should be included in the learning program. Important tasks that are performed infrequently are also likely candidates for the learning program but will receive less emphasis. Tasks that are not important and infrequently performed should not be included.
4. Once the tasks are identified, determine the knowledge, skill and abilities required to complete the tasks. This information should be collected using interviews, surveys or other needs assessment methods.

Who should be included in needs assessment? Managers and subject matter experts (SMEs) should be included in needs assessment. SMEs are employees, job incumbents, technical experts and even customers or suppliers who are knowledgeable about what and who needs to be trained, the knowledge, skills and abilities required for successful task performance, and the necessary conditions under which learning should occur (equipment, time pressure, etc.). Input from managers is especially critical in determining what types of learning are important for achieving the business strategy, identifying learning objectives for functions or business units, and determining the financial resources available for designing new learning programs or redesigning existing ones.

Table 4 shows the different methods that can be used for needs assessment. Because no one method is superior to the others, multiple methods should be used.

Competency models. A competency is an area of personal capability that enables employees to successfully perform their jobs, such as critical thinking or problem-solving ability. Competency models and competencies can have advantages over tasks, knowledge, skills and abilities that are traditionally identified through a needs assessment. Competency models are more likely to be linked to company
goals and are easier to generalize across occupational groups, jobs and organizations.\textsuperscript{14} Further, competency models can serve as a foundation for integrating systems of human resource management (HRM) practices, thereby creating horizontal fit, a key tenet in strategic HRM.\textsuperscript{15} Competency models are also useful for providing employees with performance feedback that can include links to specific learning initiatives that can help address their weaknesses. This allows employees to self-manage their participation in learning initiatives. Competency models can also be used as a “road map” for identifying and guiding employees for succession planning purposes and allowing managers to analyze the strengths and weakness of their department, positions, function or other categories to identify needed learning initiatives.\textsuperscript{16}

If the goal is to develop competency models, the needs assessment will be different than traditionally conducted. For more information on how to develop competency models, see \textit{The Art and Science of Competency Models} (Lucia \& Lepsinger, 1999) in the “Sources and Suggested Readings” section at the end of this report.

### Case Study: Needs Assessment at NetApp

As a result of company growth, Network Appliances (NetApp) needed to develop recently hired support engineers in order to provide world-class services. Existing training programs were inadequately addressing all aspects of processes, systems, operations and soft skills that were needed in a support center. To conduct a needs assessment, NetApp asked its best performers to participate in focus groups. The focus groups were asked to consider what support engineers needed to know to perform their jobs. From the focus groups, more than 1,400 tasks were identified and ranked according to difficulty, frequency and importance. Five hundred tasks were identified as being critical for support engineers to perform within their first year on the job. To address these tasks, the company developed a new-hire training program that includes self-paced e-learning, hands-on work in the classroom and cases based on the company’s computerized support system or initiated by customers on the web.


### Practice Guidelines: Rapid Needs Assessment

There are several ways to improve the efficiency of needs assessment without sacrificing its quality. If the impact of the “pressure point” seems to be local and has a small impact on the business, then the information gathering part of the needs assessment should consist of only interviews with a few managers or job incumbents. If after interviewing SMEs and job incumbents you recognize that you are not learning anything new, then stop interviewing. Available data used for other purposes, such as error rates, sales, customer complaints and exit interviews, should also be used to help identify the reason for performance problems. The Internet may be useful for conducting interviews with SMEs in different locations.

### Table 4: Needs Assessment Methods

- Observation
- Questionnaires/surveys
- Interviews
- Focus groups
- Documentation (technical manuals, records)
- Online technology (service and productivity databases, electronic monitoring)
Table 5: Learner Characteristics Influencing Motivation to Learn and Strategies for Increasing Readiness to Learn

<table>
<thead>
<tr>
<th>Learner Characteristic</th>
<th>How to Increase Readiness to Learn</th>
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| Basic skills (math, reading, cognitive ability, etc.)                                  | • Perform a literacy audit to ensure math and reading skills required for understanding the learning content match those required for the job.  
• Assess learners’ basic skills, identify deficits and screen out learners who lack basic skills, train them in basic skills or change the type and level of instruction to match their skills. |
| Conscientiousness                                                                     | • Assign learners high in conscientiousness specific learning goals. Learners low in conscientiousness need a more structured learning environment and incentives for learning.                                          |
| Anxiety                                                                               | • To reduce anxiety, create an informal learning environment and use pre-learning activities to increase learners’ familiarity with each other.                                                                                       |
| Goal orientation                                                                      | • To induce a mastery orientation, set goals around learning and experimenting, de-emphasize competition with other learners, create expectations that it is ok to take risks, experiment and fail during learning. |
| Age                                    | • Involve learners through discussion and activities, allow learners to familiarize themselves with any technology used for delivery and instruction, encourage employees to share experiences. |
| Self-efficacy                                                                         | • To improve self-efficacy, communicate to learners that the purpose of the learning program is to improve performance rather than identify their skill deficiencies.  
• Give learners examples of peers who have successfully completed the program and show how the content has been useful to them. |
| Valence or value of learning, job involvement, organizational commitment, career exploration | • Provide information on how learning content will benefit learners (their career, job performance, promotion potential, employability, etc.).  
• Discuss assessment of strengths and weaknesses with learner.  
• Request that the manager and employee discuss and agree on learning goals.  
• Ensure manager follow-up to measure progress toward learning goal attainment. |
| Organizational justice (fairness perceptions)                                         | • Treat learners with respect, sincerity and dignity when providing them with feedback about their skills or assigning them to remedial or basic learning programs.  
• Honestly and completely explain the reason for sending them to a learning event.  
• Provide learners with input into the timing, sequence and choice of learning event, to the extent possible. |
Step 2: Determine Readiness for Learning

Readiness for learning refers to whether learners have the personal characteristics (ability, motivation, attitudes and beliefs) necessary to learn and transfer training. The learner characteristics that have been shown to influence motivation to learn are listed in Table 5, on page 8, along with strategies for enhancing the effects of positive characteristics and neutralizing the effects of negative characteristics.

One perspective is that learning is a dynamic cycle that involves four stages: concrete experience, reflective observation, abstract conceptualization and active experimentation. Questionnaires have been developed to measure learners’ strong and weak points in the learning cycle. According to this view, the key for effective learning is to be competent in each of the four stages.

Step 3: Create a Learning Environment

The next step in the process is to consider how to build or buy instruction that will facilitate learning. Instruction refers to the environment in which learning is to occur. Instructional methods should have the features shown in Table 6 to facilitate the cognitive and physiological processes affecting learning.

a) Objectives, or the expected outcomes of learners, serve as goals that help motivate and direct learners’ effort. A good learning objective includes:

- A statement of what the employee is expected to do.

- The quality or level of performance that is expected.

- The conditions under which the learner is expected to perform the outcome.

b) Meaningful content. Learning is meaningful when it is linked to job experiences, problems or tasks. To enhance meaningfulness:

- Learning content should make use of concepts, terms and examples familiar to the learners.

- Learning context should be as similar to the work environment as possible.

c) Practice. Learners must have time to practice what is being learned. Practice should:

- Allow learners the opportunity to make errors. Learners must be shown techniques for considering why errors occurred and what they can do differently to avoid them.

- Be spaced, such that the learner practices a task but with rest periods.

d) Commit to memory. For learning content to be used on the job, it must be stored in learners’ long-term memory. To create long-term memory:

- Include a concept map to show relationships among ideas.

- Use multiple forms of practice, including writing, drawings and role plays.

- Provide visual images.

- Remind learners of knowledge, behavior and skills that they already have mastered that are relevant to the learning content.

- Limit instruction to relatively small chunks or short sessions in order to not exceed memory limits.

- Allow overpractice, which results in less memory loss over time.

e) Feedback. Learners need feedback on how well they are meeting the learning objectives. Feedback:

- Should focus on specific behaviors.

- Should be provided as soon as possible after learner’s behavior.

- Can be given through tests and quizzes, observation, written comments or by viewing a videotape.

- Should vary in specificity, such that some feedback should be general and some more specific, depending on the situation.

f) Observation or interaction with others. One of the most powerful ways that we learn is by observing others, a process known as modeling.
This can occur through:

- Hands-on experiences.
- Pairing learners with more experienced employees.
- Technology-aided social interaction such as blogs and discussion boards for groups that share a common interest.
- Interacting with other learners in small groups.

Case Study: Creating a Learning Culture at McCormick & Company

At McCormick & Company, a global leader in spice production, the company’s goal is to create a teaching organization in which knowledge and expertise are shared by all employees globally. To accomplish this, McCormick utilizes the following four components, each aligned with business goals:

- **Corporate learning professionals** include full-time learning and development professionals at the company’s learning centers.

- **Site-specific learning professionals** include employees who have responsibility for learning and development at the company’s various locations.

- **Leader-teachers**, defined as anyone with direct reporting responsibility, include senior executives who participate in classes—from leadership programs to new-employee orientations. Managers are rewarded for teaching based on McCormick’s competency model.

- **Peer teachers** participate in on-the-job training, plus a unique opportunity known as multiple management board (MMB) systems. MMBs are cross-functional or cross-divisional groups of employees who work on real-time projects. Goals include idea sharing, developing and educating team members, and making recommendations that contribute to the company’s success.

Before choosing a learning setting, you need to consider how trainees are expected to learn. For example, learning that requires high collaboration with fellow learners and high self-direction might require several small breakout or conference rooms. Fan-type seating is effective for learning that requires learners to analyze problems and synthesize information in groups. Traditional classroom with fixed seating arrangements is most appropriate for learning that involves knowledge acquisition, such as occurs through instructor-led lectures or videoconferencing. Good coordination ensures that learners are not distracted by events such as an uncomfortable room. Particular attention should be given to:

- Communicating courses and programs to learners.
- Enrolling learners in courses.
- Preparing and processing any pre-learning materials such as readings and handouts.
- Preparing materials that will be used in instruction.
- Scheduling the facility and room for learning.
- Testing to make sure that any equipment (LCD panels) or software programs are working properly.
- Having backup materials and equipment (e.g., hard copies of PowerPoint slides, extra projector bulb).
- Preparing evaluation materials (tests and surveys to be distributed at the end of training).
- Facilitating communications between instructor and learners during and after the learning session.
- Recording course completion or certification for learners.

**h) Careful selection of instructors.**

It is important that selected instructors can convey the learning content in as concrete and meaningful a manner as possible. To ensure this, the following should be considered:

- Using managers and employees as instructors can help contribute to the development of a positive learning culture and increase the meaningfulness of the learning content for learners (see the McCormick and Company case study).

- **Train-the-trainer programs** are necessary for managers, employees and subject matter experts who may have knowledge of the learning content but need to improve presentation skills and understand the learning process.24

• Instructors should be enthusiastic and avoid distractions.\textsuperscript{25}

• Instructors should use a relaxed style to make learners comfortable.

• Instructors should recognize that their expectations for trainees’ learning and their stereotypes can result in learners confirming the expectations (i.e., a self-fulfilling prophecy).\textsuperscript{26} Negative expectations held by instructors can relate to learners’ evaluation of the training and the trainer.\textsuperscript{27}

**Step 4: Ensure Transfer of Training**

*Transfer of training* refers to learners effectively applying what they learned in training to their jobs. Organizations that use transfer enhancements before training (e.g., trainee input and involvement, and training attendance policies), during training (e.g., identical elements) and after training (e.g., supervisor and organizational support) report higher levels of transfer. Transfer of training is influenced by the learner, the learning culture, manager and peer support for learning, and the learning environment.\textsuperscript{28}

The types of transfer desired need to be considered prior to training.

a) *Task adaptability* is the degree of flexibility required for successful performance and the degree of supervision under which training content is applied on the job.\textsuperscript{29}

If near transfer is inherent in the learning objectives, the instructional program should mimic the work environment (an identical elements approach), and learners should be provided with an explanation as to any differences between the learning environment and the work environment. Examples of instructional methods that emphasize near transfer include simulations and on-the-job training.

c) *Far transfer* is the learners’ ability to apply learning content to different work environments. Instructional programs that emphasize far transfer should teach general principles and broad concepts that can be applied to a greater set of contexts than those that are presented in the learning environment. Examples of instructional methods that emphasize far transfer include behavior modeling and games.

**Step 5: Develop an Evaluation Plan**

To demonstrate that learning occurred and had an impact on the company’s bottom line, evidence-based learning requires collection of data that goes beyond whether learners liked the program. Table 7, on page 13, shows the valuable information resulting from evaluation. The next step (step 5) in the design process—development of an evaluation plan—includes developing both a formative and summative evaluation plan. The learning method should be chosen after the learning objectives and evaluation outcomes are identified. This allows the best learning method

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**Case Study: Transfer of Training at Vanderbilt University Medical Center**

To improve patient safety and quality, Vanderbilt University Medical Center initiated a team training program to teach participants about patient safety mistakes and ways to avoid them, team building, cross-checking and communications, decision-making, and performance feedback. Several steps are taken to ensure that transfer of training occurs. Before the training starts, VUMC leaders are prepared to help the training succeed. Senior administrators, medical directors and nursing staff attend a boot camp that highlights the team training program.

A safety climate survey is conducted to determine how each department perceives the VUMC attitudes toward safety practices and patient safety issues. Then, each department is reviewed to find built-in errors that are system problems and to evaluate how the team communicates and deals with conflict. After the training, medical supervisors provide observation, coaching and feedback. Checklists are provided for certain procedures, such as patient handoffs, medication administration, and briefing and debriefing sessions. These help participants use the strategies emphasized in training to improve safety and the quality of patient care. Patients also help ensure safety. VUMC has created a video that patients are asked to watch when they are admitted to the hospital. The video emphasizes the importance of asking questions about medications and medical procedures.

Practice Guidelines: Creating Conditions to Achieve Greater Transfer of Training

- Clearly communicate the importance and meaningfulness of instruction—for both the learner and the organization.
- Set explicit and public training goals.
- Find ways to make learners confident that they can succeed in learning, and frame learning events as opportunities rather than threats.
- Demonstrate support for learning initiatives by encouraging managers to participate in and lead training.
- Link employees’ learning and transfer of training, and managers’ support of learning and transfer, to meaningful organizational rewards (performance evaluation, pay, etc.).
- Provide support so learners can:
  - Recognize the support for transfer of training.
  - Identify any obstacles to transfer of training.
  - Set goals for using learning content.
  - Consider how they will apply learning content on the job.
  - Monitor their use of learning content.
  - Commit to getting the support they need from managers or peers.
- Require learners and managers to make a public and written commitment of their intentions to transfer learning.
  - Use action plans to identify what learning content will be and how it will be used on the job, strategies for reaching the learning goal, what the trainee will do differently, support needed from peers and managers, the expected outcome from reaching the goal (what will be different? Who will notice? What will they notice?), and progress check dates.
- Identify the responsibilities of each stakeholder before, during and after learning initiatives to ensure that transfer of training occurs. For example:
  - Executives should communicate their support for learning.
  - Learners are responsible for completing any pre-training assignments such as readings or identifying work problems.
  - Managers should commit to providing learners with job assignments that give them opportunities to use new skills.
- Create a support network among the learners:
  - Create an electronic discussion board that links the learners.
  - Schedule follow-up face-to-face meetings.
  - Provide learners with a more experienced employee or mentor who previously attended the same learning event.
- Reward, promote and support learning, and include learning goals in company objectives.
- Encourage employees to take risks, innovate, explore new ideas and processes, and develop new products and services.


learning objectives and expected outcomes. Then, Step 7 in the design process requires that the evaluation plan of the completed learning initiative be conducted.

Formative evaluation refers to evaluation that occurs during program design and development, and is important because it can identify changes that need to be made to the learning program to facilitate learning and transfer of training—before it is introduced to the intended group of learners. Formative evaluation involves pilot-testing the learning program with SMEs, managers and employees who may attend the program. They are asked to review the program or actually complete it, and using interviews or focus groups, provide information about the clarity or ease of use of the program. Formative evaluation (or beta-testing) is especially critical for technology-based training programs to ensure that learners can navigate through the program and are able to access and complete all aspects of the program.

Summative evaluation occurs after the learning initiative (at Step 7 of the design process) to determine whether the program has achieved the learning objectives. It requires collecting outcomes that measure the learning objectives. Planning for summative evaluation involves choosing the evaluation design and selecting the outcomes that will be measured to determine if learning and transfer of training have occurred.

Evaluation outcomes. The evaluation outcomes are shown in Table 8, on page 14. A recent

Table 7: Why Evaluate Learning?

1. Identify the learning program’s strengths and weaknesses that can be used to determine if the program is meeting learning objectives, if transfer of training is occurring and if the quality of the learning environment is acceptable.
2. Determine whether the content, organization and administration of the program contribute to learning and transfer of training.
3. Identify which learners benefit most (or least).
4. Develop pre-learning interventions for learners to enhance readiness for learning.
5. Assist in marketing programs by collecting information from learners about why they attended the program, the benefits they received and how satisfied they were with the program.
6. Determine the financial costs and benefits.
7. Compare costs and benefits of learning to other types of human capital investments (work redesign or better employee selection).
8. Compare the costs and benefits of different learning programs.

Practice Guidelines: Steps in Determining Return on Investment (ROI)

1. Identify learning outcomes.
2. Place a value on the outcomes.
3. Determine the change in the outcome, eliminating other potential influences besides learning.
4. Obtain an annual amount of benefits from learning by comparing results after learning to results before learning (in dollars).
5. Determine learning costs (direct costs + indirect costs + development costs + overhead costs + compensation for learners while they attend the program).
6. Calculate the total savings by subtracting the learning costs from the benefits.
7. Calculate ROI by dividing the benefits by costs. The ROI gives an estimate of the dollar return expected from each dollar invested in learning.

For more details on how to determine ROI, see Handbook of Training Evaluation and Measurement Methods (Phillips, 1997) listed in the “Sources and Suggested Readings” section at the end of this report.
survey found that while 91 percent of companies report using reaction measures, only slightly more than half (54 percent) report using cognitive outcomes and a much smaller number report using behavior (24 percent), results (8 percent) or return on investment (3 percent). Research on Kirkpatrick’s four-level framework for training outcomes (since expanded to include five levels) shows that the learning outcomes are not causally linked—for example, reactions cause learning, which causes behavior and ROI. To show that resources invested in learning are worthwhile, justifiable and relate to the company’s business strategy and bottom line, it is necessary to go beyond collecting reaction outcomes (level 1) and collect outcomes that show learning and transfer of training (level 2 and 3) have occurred and, if possible, the business consequences and financial benefits of learning (level 4 and 5).

**Evaluation designs.** To isolate the influence of a learning program, you need to use an evaluation design that is practical and rules out alternative explanations for improvements in the evaluation outcomes collected. Table 9, on page 15, shows different types of evaluation designs. Choice of an evaluation design depends on several factors (for details, see Tannenbaum and Woods (1992) listed in the “Sources and Suggested Readings” section at the end of this report). In general, designs that use pre-training and post-training measures of outcomes and a comparison group reduce the risk that factors other than learning are responsible for the evaluation results. Post-test only or pre-test/post-test designs are most appropriate for determining whether a specific level of performance has been achieved. More rigorous designs such as a pre-test/post-test with comparison group should be used if the purpose of evaluation is to measure change from pre-program levels or in comparing two or more learning programs.

**Evaluating the learning function.** To evaluate an organization’s learning function, rather than a specific learning program, learning function metrics need to be collected. Table 10, on page 15, provides examples of these metrics. These metrics are valuable for benchmarking within and across organizations, for understanding the current amount of learning activity in a company and for tracking trends in learning.

### Table 8: Evaluation Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Level</th>
<th>Description</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactions</td>
<td>1</td>
<td>Learners’ satisfaction</td>
<td>Surveys, interviews</td>
</tr>
<tr>
<td>Learning</td>
<td>2</td>
<td>What principles, facts, techniques, procedures, or processes did learners acquire?</td>
<td>Tests, work samples</td>
</tr>
<tr>
<td>Behavior and skills</td>
<td>3</td>
<td>What technical, motor skills or behaviors did learners acquire?</td>
<td>Tests, observations, ratings, work samples</td>
</tr>
<tr>
<td>Affective</td>
<td>3</td>
<td>Learners’ attitudes and motivation</td>
<td>Surveys, interviews</td>
</tr>
<tr>
<td>Results</td>
<td>4</td>
<td>Payoffs for the company, such as increased productivity, lower costs, increase in customer satisfaction</td>
<td>Observation, performance data</td>
</tr>
<tr>
<td>Return on investment</td>
<td>5</td>
<td>Comparison of learning benefits with costs</td>
<td>Economic value</td>
</tr>
</tbody>
</table>

Sources:
Table 9: Possible Evaluation Designs

<table>
<thead>
<tr>
<th>Design</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-test only</td>
<td>Outcomes are collected after learning program.</td>
</tr>
<tr>
<td>Post-test with comparison group</td>
<td>Outcomes are collected after training from the learners and a group that did not participate in the learning program.</td>
</tr>
<tr>
<td>Pre-test/post-test</td>
<td>Outcomes are collected before and after learning.</td>
</tr>
<tr>
<td>Pre-test/post-test with comparison group</td>
<td>Outcomes are collected before and after learning from learners and a group that did not participate in the learning program.</td>
</tr>
<tr>
<td>Time series</td>
<td>Outcomes collected at periodic intervals before and after learning program.</td>
</tr>
<tr>
<td>Solomon four group</td>
<td>Combination of the pre-test/post-test comparison group and the post-test only comparison group designs.</td>
</tr>
</tbody>
</table>

Table 10: Training Metrics

- Learning expenditure per employee
- Learning hours per employee
- Learning expenditure as a percentage of payroll
- Cost per learning hour received
- Percentage of expenditures for external services
- Average percentage of learning hours outsourced
- Averaged percentage of learning content by content area
- Average percentage of learning hours provided by different delivery methods (instructor-led, technology-based)


Case Study: Evaluation at Mayo Clinic

To determine the best type of training for its managers, Mayo Clinic conducted an evaluation using a post-test comparison group design. Mayo held three training sessions. Within each session, approximately 75 managers were divided into three groups: a group that received four days of classroom training, a group that received one-on-one training from a coach, and a group that received no training (a comparison group). Mayo collected reaction (did the trainees like the program?), learning, transfer and results outcomes. The evaluation found that there was no statistically significant difference in the effects of the coaching compared to classroom training. As a result, Mayo decided to rely on classroom courses for new managers (less costly than coaching) and consider coaching only for managers with critical and immediate job issues.

To determine Mayo’s return on investment, the HR department calculated that one-third of the 84 employees retained (29 employees) would have left Mayo as a result of dissatisfaction. The department believed its retention was due to the impact of the training. The company calculated that the cost of a single employee turnover was 75% of average total compensation, or $42,000 per employee at Mayo. Multiplying $42,000 by 29 retained employees equals a savings of $609,000. However, the cost of the training program needs to be considered. If the annual cost of the training program ($125,000) was subtracted from the savings, the new savings were $484,000. These numbers were based on estimates, but even if the net savings figure were cut in half, the ROI is still more than 100 percent. Being able to quantify the benefits delivered by the program has given HR greater credibility at Mayo.

activity. Keep in mind that while these metrics are useful, they do not address whether learning is effective or whether the organization is using the data to make strategic training decisions.

Step 6: Choose the Learning Method

The choice of a learning method should only be made after a thorough needs assessment is conducted to identify the desired learning outcomes (knowledge, skill etc.). Tables 11, 12 and 13, on the following pages, present examples of available learning methods. (Also, see the SHRM Foundation publication Developing Leadership Talent (Day, 2007).)

The learning method used can have a large effect on reaction, learning, behavioral and results outcomes. No one learning method is inherently superior to the others. A combination of learning approaches can overcome the weaknesses of using just one approach and increase learning effectiveness. The box on the left shows how organizations are using one or more learning methods.

Because of the aging workforce, it is important to consider whether particular learning methods are more effective for older workers. Research shows that self-paced learning methods have the largest influence on training performance of trainees over 40 years of age. Self-pacing gives older trainees time to assume responsibility for their learning, to focus on what is required to learn, and to understand the training and its importance. Also, learning that occurs in small groups is advantageous for older trainees.

Research on specific learning methods has shown that for learning to be effective, the instructional method needs to match the desired learning outcomes. For example, behavior modeling, sensitivity training and lecture with discussion, role play or practice led to positive results. The influence varied according to the evaluation criteria used. This emphasizes that it is not the particular method used to deliver learning that is most important. Rather, the choice of the learning method should be based on the desired learning outcomes and the features that facilitate learning and transfer of training.

Table 11: Presentational Learning Methods

<table>
<thead>
<tr>
<th>Description</th>
<th>Methods in which learners are passive recipients of information. Best for knowledge outcomes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pros</td>
<td>Low cost.</td>
</tr>
<tr>
<td>Cons</td>
<td>Lack of interactivity with learners, opportunities to practice and receive feedback, transfer of training.</td>
</tr>
</tbody>
</table>

- **Assessment**: Measuring employees’ behavior, communication style, values, skills or competencies. Includes 360-degree feedback, assessment centers, personality inventories and performance appraisals. Information is shared with employee and suggestions for appropriate learning methods are provided.

- **Lecture** (formal education): Instructor-led classroom instruction that may be supplemented with slides, video and case study. Communication is primarily one-way from the instructor to the learners.

- **Distance learning, videoconferencing, webcasting**: A special case of the lecture method in which instructor-led classroom instruction is distributed via satellite or the Internet to learners in different geographic areas.

- **CDs, DVDs, video**: Video clips, graphics, sound and animation are used to present concepts, models, examples or case studies.

- **Mobile instruction**: Portable devices such as PDAs, iPods and MP3 players with wireless transmission systems such as Wi-Fi and Bluetooth.
Examples of Different Learning Methods

**Anel Corporation** (178 employees) uses an eight-week pre-welding course and a 30-day post-welding course. Two weeks in the classroom are used to discuss welding concepts, followed by six weeks of on-the-job training.

**Scottrade** (1,462 employees) has an online program that mimics a college campus. Some courses are available online while others are taught by branch managers. A customer service simulation training module was developed to enhance employees’ customer service skills.

**Wequassett Resort and Golf Club** (340 employees) created a learning academy that consists of four schools (customer intimacy, technical training, information and technology, and management) and more than 70 courses. Learners can view the course catalog, register for courses and access their transcripts online.

**Cross Country Staffing** (640 employees) uses a web-based learning management system to provide accreditation and regulatory training as well as blended learning and online remediation to health care field employees.

**Libbey Glass** (1,500 employees) has apprenticeship programs in mold making, machine repair, mill righting and maintenance repair.

**The Home Depot** (364,000 employees) uses self-paced materials, a video-based course and instructor-led training to train appliance sales staff. Self-paced training is used to train employees on an appliance category (e.g., dishwashers) and to help them understand the products available at the store. The video-based program helps salespeople learn to emphasize product features and benefits. Salespeople participate in role plays and are evaluated on their ability to follow the company’s selling strategies. Each salesperson must also complete an eight-hour instructor-led course that teaches how to evaluate customer needs, answer questions and make the sale.

**Colorado Springs Utilities’** (1,995 employees) training program begins with a brainstorming session to engage trainees, help them enjoy the training and retain more of what they learn. In a safety training class, students experience a simulated emergency and have to respond using their new skills along with their knowledge of an evacuation plan. The trainees perform different roles and activities in response to power shut-down. Afterwards, the trainer critiques their performance and trainees discuss what they have learned (or still need to learn). Trainees complete a written exam and review to ensure knowledge retention.

**CDW Corporation**’s (6,300 employees) sales training course guides trainees through mock interviews with customers. The avatar introduces the customer situation, and the trainee hears the customer speaking to him or her in a simulated phone conversation. The trainee has to determine, with help from the avatar, what is happening in the sales process by reading the customer’s voice.

**United Airlines** (55,000 employees) supervisor “lead” ramp employees attended Pit Instruction & Training (Pit Crew U), which focuses on preparation, practices and teamwork of NASCAR pit crews. United used the training to develop standardized methods to safely and more efficiently load, unload and prepare planes for departure.

**Canon, Inc.** (10,269 employees) uses a game to train copier repair persons. In the game, the individuals must drag and drop parts onto a copier. A light flashes if the wrong part is chosen. Employees who played the game showed improved training scores compared with trainees who were trained with traditional methods such as workbooks and manuals.

**Capital One** (27,000 employees) provides more than 2,000 iPods for employees enrolled in training courses. Employee surveys suggested a lack of time at work to attend classroom training. Capital One decided to create a new way to deliver training. Books and Harvard Business School cases are provided to employees on the iPod. In addition, employees can access a variety of programs—from leadership development to workshops on conflict management. This method has been used both in executive-level programs to discuss leadership and in new-hire programs to understand customer service. Capital One found that employees liked learning on iPods and were able to access programs they would not have attended in a classroom.

**Practice Guidelines: Using Technology-Based Learning Methods**

Web-based instruction, blended learning or mobile technology should be considered as possible learning methods when:

- Sufficient budget and resources are available to develop and support the use of the new technology.
- Learners are geographically dispersed and travel costs related to training are high.
- Learners are comfortable using technology-based learning methods.
- Learners have access to technology (e.g., mobile technologies, personal computers).
- Greater use of new technology is part of the company’s business strategy.
- Learners have difficulty attending scheduled learning activities.
- Current learning methods allow limited time for practice, feedback and assessment, and these features will be part of the technology-based training method.


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**Table 12: Hands-on Learning Methods**

**Description:** Methods in which learners are active participants in learning.

**Pros:** Learners are actively involved in learning. Ideal for developing specific skills, understanding how skills can be transferred to the job, experiencing all aspects of completing a task or dealing with interpersonal issues. Learning can occur in a “safe” realistic environment with no injury or harm to learners, customers or products and services.

**Cons:** High cost for development, especially for technologically advanced methods.

- **On-the-job training:** Learning that occurs in the workplace during work by observing peers or managers perform and trying to imitate their behavior.
- **Relationships:** Interaction with a more experienced or knowledgeable employee such as a coach or a mentor.
- **Virtual reality:** Computer-based technology providing a three-dimensional learning experience.
- **Behavior modeling:** Learners are presented with a model who demonstrates key behaviors to replicate. Learners have opportunities to practice skills, receive feedback and plan how to apply the skills on the job.
- **Role plays:** Learners act out roles related to the work or interpersonal situation assigned to them.
- **Business games:** Require trainees to gather information, analyze it and make decisions in situations that mimic management decisions and the competitive nature of business.
- **Case study:** Presents a description of how employees or an organization dealt with a difficult situation. Learners are required to analyze and critique the actions taken, suggest more appropriate actions or what might have been done differently.
- **Apprenticeship:** Work-study method primarily used for skilled trades, including both on-the-job and classroom instruction.
- **Simulation:** Mimics a real-life situation with learners’ decisions resulting in outcomes that are similar to what would happen on the job (e.g., flight simulator). Simulations may use the actual equipment used on the job, or employees may go online using avatars (computer depictions of humans who are used as imaginary coaches, co-workers or customers) and/or virtual reality.
- **Job experiences:** Job experiences include temporary assignments, projects, volunteer work, lateral transfer, job rotation, job enlargement or downward moves. Learning is most likely to occur when the experience is a “stretch” assignment (i.e., there is a mismatch between employee’s skills and the skills required for the job).
- **Interactive video:** Combines video and online learning, providing learner control and the ability to interact with the learning content.
- **Blended learning:** Combines online learning and face-to-face instruction.
- **Web instruction (aka online or e-learning):** Instruction and delivery of learning by computer online through the Internet or the web.
Technology-based learning methods. Technology-based learning methods are not inherently more effective than other methods. To create a positive learning environment, technology-based learning should include one or more of the following features:

- Learners should have control over when and where they want to learn, the pace of learning, the content they view and the amount of practice.
- Learners should be linked to other resources (such as useful web sites) and have the ability to collaborate with other learners, trainers, subject matter experts or mentors.
- The use of avatars, virtual reality and simulations can increase the realism and meaningfulness of the learning content.
- Technology-based training methods should allow course enrollment, testing and record-keeping to be handled electronically to reduce the costs of administrative activities related to learning.
- When using mobile technology (e.g., iPods), ensure that employees know when and how to take advantage of the technology by encouraging communication, collaboration and interaction with other employees. Mobile technologies may be best suited for knowledge dissemination or providing learners with access to learning content for review purposes or on an as-needed basis.

Blended learning is a hybrid of technology-based learning and traditional learning methods. It was developed to capitalize on the positive features of both face-to-face and online instruction. It also compensates for the lack of face-to-face networking with the trainer and other learners inherent in online instruction. Knowledge and facts can be delivered using online learning, and then employees can practice applying knowledge and facts through face-to-face instruction using cases, games or other interactive methods.

These different learning methods help employees acquire tacit and explicit knowledge, behaviors, skills and competencies. To sustain a learning culture and encourage learning as an ongoing process, provide employees with access to knowledge management systems. They can then share what they have learned with others and discuss problems, issues and successes in applying their knowledge.

Knowledge management. Knowledge management can occur using the face-to-face or technology-aided methods shown in Table 12, on page 18. To

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Practice Guidelines: Conducting Effective On-the-job Training (OJT)

OJT is one of the oldest and most frequently used learning initiatives. It is often considered informal learning because it does not necessarily occur as part of a formal learning program and because managers or peers serve as instructors. However, for OJT to be effective, it needs to be a structured learning activity that includes the following:

1. A policy statement that describes the purpose for OJT.
2. A clear specification of who is accountable for conducting OJT.
3. Managers and peers who are competent in the principles of OJT. This includes:
   
   a. Preparing for instruction—breaking down the job into steps; preparing the necessary equipment, materials and supplies; deciding how much time will be dedicated to OJT, and how long it will take the employee to become competent.
   
   b. Actual instruction—explain objective and demonstrate for learner, explain key points or behavior, again demonstrate for learner, allow the learner to try one or more parts of the task and praise him or her for correct reproduction, allow the learner to complete the entire task and, if mistakes are made, allow the learner to practice the task and give feedback to shape the learner’s behavior, allow practice until accurate reproduction is achieved.
   
4. Provide lesson plans, checklists, procedure manuals, progress report forms and job aids for use by employees who conduct OJT.
5. Make sure employees have sufficient basic or prerequisite skills before OJT.

encourage knowledge sharing, provide recognition for learning and teaching among employees. For example, Xerox field technicians around the world have an incentive to contribute to the company’s maintenance database because they become known as thought leaders or experts. When the system first became available, technicians did not find it natural to submit what they knew. To facilitate sharing, managers offered rewards such as cash prizes for submitting tips. Managers also featured the names of people who did contribute, resulting in submitters receiving notes from individuals who found their suggestions to be useful. The system now holds more than 70,000 suggestions and saves the company millions of dollars each year in repair costs.40

Step 7: Monitor and Evaluate Learning

In the final phase of the design process, the evaluation plan developed in step 5 should be implemented. Conducted after the learning initiative is completed, this summative evaluation will help determine whether the program has achieved the learning objectives. In this phase, you’ll want to measure the outcomes identified earlier to determine if learning and transfer of training have occurred.

Learning initiatives require significant investments of time and money, so it is critical to evaluate their impact and estimate the return on investment. This final step in the learning design process then leads back to step 1—conducting a needs assessment—as new learning needs are continuously identified. (See Figure 2 on page 4.) Thus, the learning design process is an ongoing cycle that supports your organization’s strategy.
CONCLUSION AND FUTURE CHALLENGES

Learning initiatives are a strategic imperative. These initiatives can develop technical knowledge and interpersonal skills, prepare employees to become environmentally conscious and teach them to embrace a global perspective. For your learning initiatives to be effective, they must be designed using a systematic process and should go beyond formal training programs while supporting the business strategy. Choose your learning methods based on the learning objectives identified in the needs assessment and consider each method’s strengths and weaknesses.

The future will offer new challenges in using learning initiatives. As learning solutions incorporate new technology, the responsibility for learning shifts from the instructor to the learner and the learning location changes from workplace to mobile sites. Organizations will be challenged to develop and use new technology either alone as a supplement to other learning methods or to facilitate learning and transfer of training. Learning management systems—a technology platform that can be used to automate the administration, development and delivery of all learning programs—will be used more frequently. These systems will help organizations reduce travel costs, reduce learning completion time, increase employee accessibility to learning, and track completion of learning and learning outcomes. There will also be a movement to adopt true performance support through embedded learning, learning that occurs on the job involving collaboration, and nonlearning technologies such as instant messaging. Finally, organizations will increase their partnerships with academic institutions to provide basic skills training, develop customized programs and to use as SMEs. Organizations will look to outsource learning initiatives to gain access to best practices and specialized cutting-edge technical knowledge. Despite these challenges, linking learning initiatives to the business strategy and using the systematic design process outlined in this report will help boost your chances of success.
REFERENCES

1 For example, see Barney, J. (2002). *Gaining and sustaining a competitive advantage*. Upper Saddle, NJ: Prentice-Hall.


Learning System Design


14 Ibid.


GLOSSARY OF TERMS

**Abstract Conceptualization** – The third stage of learning, which consists of learning from thinking or analyzing problems in a systematic method.

**Active Experimentation** – The fourth stage of learning, which consists of learning by doing.

**Behavior Modeling** – Employee training in which trainees are encouraged to act and respond as their specified role models do in similar situations.

**Blended Learning** – Combines online learning and face-to-face instruction.

**Career Exploration** – A long, progressive process of choosing education, training and jobs that fit your interests and skills.

**Community of Practice** – Network of peers with diverse skills and experiences in an area of practice or profession. Such groups are held together by the members’ desire to help others (by sharing information) and the need to advance their own knowledge (by learning from others).

**Comparison Group** – In experimentation, a group of subjects or a condition that is matched as closely as possible with the experimental group but is not exposed to any experimental treatment. A comparison group is used as a standard or yardstick to detect and measure changes that may occur in the experimental group due to an experimental treatment. This is also often referred to as a control group.

**Competency Modeling** – Process of analyzing and describing types and range of abilities, knowledge and skills possessed by those who successfully perform in a role or those characteristics that are needed to be successful.

**Concept Map** – A diagram showing the relationships among concepts.

**Concrete Experience** – The first stage of learning, which consists of learning from feelings or reactions to new experiences.

**Cross-Training** – Training that covers several roles or tasks within a department or organization.
Learning System Design

Development – Providing learning and training facilities or avenues for employees to acquire new or advanced skills, knowledge and viewpoints. Development activities include formal educational courses, job experiences, relationships and assessments.

Embedded Learning – When training opportunities are designed into the work itself.

Evaluation Design – The methodology that is used to evaluate a training or development intervention. Some evaluation designs include pre-training and post-training measures of outcomes and pre-test/post-test with comparison group designs.

Evidence-Based Learning – To demonstrate that learning occurred and had an impact on the company’s bottom line, evidence-based learning requires the collection of data that assess how much the learners actually learned and how the intervention affected their performance and productivity.

Explicit Knowledge – Knowledge that can be formalized, coded and communicated. It is found in manuals, formula and specifications.

Far Transfer – The learners’ ability to apply learning content to different work environments. Instructional programs that emphasize far transfer should teach general principles and broad concepts that can be applied to a greater set of contexts than those that are presented in the learning environment. Examples of instructional methods that emphasize far transfer include behavior modeling and games.

Formative Evaluation – Evaluation that occurs during program design and development. It is important because it can identify changes that need to be made to the learning program to facilitate learning and transfer of training before it is introduced to the intended group of learners. Formative evaluation involves pilot-testing the learning program with subject matter experts, managers and employees who may attend the program. They are asked to review the program or actually complete it and, using interviews or focus groups, provide information about the clarity or ease of use of the program.

Goal Orientation – Goal orientation represents a personal disposition to pursue either learning or performance goals in achievement situations.

Human Capital – Refers to the collective value of the organization’s intellectual capital (competencies, knowledge and skills). Human capital is always owned by the individuals who have it and can be lost (e.g., if a person quits) unless it is recorded in a tangible form or is incorporated in the organization’s procedures and structure.

Identical Elements Approach – Refers to instructional programs that mimic the work environment.

Knowledge Management – Strategies and processes designed to identify, capture, structure, leverage and share an organization’s intellectual assets to enhance its performance and competitiveness. It is based on two critical activities: (1) capture and documentation of individual explicit and tacit knowledge, and (2) its dissemination within the organization.
Knowledge Workers – Employees who are engaged primarily in acquisition, analysis and manipulation of information (e.g., researchers, programmers) as opposed to in the production of goods or services.

Learning Culture – An environment in which opportunities for learning are openly valued and supported.

Learning Cycle – A model of the adult learning process that suggests there are four stages that follow from each other: concrete experience, reflective observation, abstract conceptualization and active experimentation. The speed at which an individual moves through the stages varies depending on the topic.

Learning Initiatives – Initiatives that include training, development and knowledge management with the goal of employee acquisition of knowledge, skills, behaviors or competencies.

Mastery Orientation – A mastery learning orientation (also referred to as a learning orientation) is associated with the belief that ability can be developed. Individuals with a mastery orientation are more motivated to persist and increase their competence.

Near Transfer – Learners’ ability to use learning content at work exactly as it was presented in the learning event. If near transfer is inherent in the learning objectives, the instructional program should mimic the work environment (an identical elements approach) and learners should be provided with an explanation as to any differences between the learning environment and the work environment. Examples of instructional methods that emphasize near transfer include simulations and on-the-job training.

Needs Assessment – The first step in the development of an effective learning initiative. Needs assessment focuses on determining if a learning need exists. Effective needs assessment involves first conducting an organizational analysis (what is the context of learning?), followed by a task analysis (what needs to be trained?) and person analysis (who needs to be trained?).

Organizational Analysis – Provides an understanding of the scope and type of learning that will occur, if any. Organizational analysis identifies whether learning fits with the company’s strategy and whether time, money and expertise for designing and delivering learning are available.

Person Analysis – This is part of a needs assessment and is necessary to identify who needs to be trained/developed.

Pre-Learning Activities – Activities that occur prior to the training or development initiative to make learners more receptive to what will be learned. Pre-learning activities might include reviewing the objectives of the learning program, reviewing reading and handouts to be discussed during the learning program, or allowing learners the chance to get to know each other prior to the program.

Rapid Instructional Design Techniques – Techniques that may be used to design learning programs more quickly. Rapid instructional design techniques may include using existing records for needs assessment, combining different steps in the design process and using existing instructional materials that can be customized with examples, exercises and assignments.
Readiness for Learning – Refers to whether learners have the personal characteristics (ability, motivation, attitudes and beliefs) necessary to learn and transfer training.

Reflective Observation – The second phase of the learning cycle, which consists of learning from listening and observing.

Self-Efficacy – Our belief in our ability to succeed in specific situations. Those who believe they can perform well are more likely to view difficult tasks as something to be mastered rather than something to be avoided.

Self-Fulfilling Prophecy – Involves the notion that what you believe to be true will be true. For example, if you believe a person you are training will not learn, he or she might not learn because you will not put the effort needed into teaching this person.

Subject Matter Expert (SME) – Person who has acquired knowledge and skills through study and practice over the years in a particular field or subject. This person’s opinion may be helpful in fact finding, problem solving or understanding of a situation.

Summative Evaluation – This evaluation occurs after the learning initiative is implemented (at Step 7 of the design process) to determine whether the program has achieved the learning objectives. It requires collecting outcomes that measure the learning objectives. Planning for summative evaluation involves choosing the evaluation design and selecting the outcomes that will be measured to determine if learning and transfer of training have occurred.

Tacit Knowledge – Refers to personal knowledge based on experience that is difficult to explain to others.

Task Adaptability – The degree of flexibility required for successful performance and the degree of supervision under which training content is applied on the job.

Task Analysis – This is a part of needs assessment. A task analysis determines what needs to be trained. For instance, it determines what skills and knowledge must be taught during the training. A task analysis involves four steps: 1) identify the jobs to be analyzed, 2) develop a preliminary list of tasks performed on the job by using a combination of needs assessment methods, 3) validate or confirm the preliminary task list by having job incumbents or managers review and rate each task, and 4) determine the knowledge, skills and abilities required to complete the tasks.

Teaching Organization – An organization in which knowledge and expertise are shared by all employees globally.

Thought Leader – A term used to describe a person who is recognized among his or her peers and mentors for innovative ideas and demonstrates the confidence to promote or share those ideas as actionable distilled insights.

Transfer of Training – Refers to learners effectively applying what they learned in training to their jobs.
Valence – The value assigned by a person to something or someone based on its attractiveness to him or her.

Work-Embedded Learning – Designing training opportunities into the work itself.
For your learning initiatives to be effective, they must be designed using a systematic process and should go beyond formal training programs while supporting the business strategy.
SOURCES AND SUGGESTED READINGS

MANAGING THE FUNCTION


This book includes best practices, success stories and ideas for improving the training function and helping it contribute to the organization’s bottom line. Topics covered include staff management, setting the learning agenda, hiring consultants and vendors, managing content, creating and managing a learning resource center, building internal support for training, and integrating learning into the business.


This study investigated the effects of outsourcing training. A model of the factors believed to influence client satisfaction with external training vendors was developed and tested using structural equation modeling. The factors included in the model were based on transaction cost economics, social exchange theory and the resource-based view of the firm. The hypothesized model suggested that the relationship between relationship tenure, vendor dependency, communication behavior, idiosyncratic training, uncertainty and outsourcing of knowledge, skills and abilities was mediated by socially oriented trust and contractual specificity.

The model was tested with survey data collected from training directors and HR directors of 157 organizations that outsourced training and development activities. Results showed that organization’s satisfaction with the outsourcing of learning activities is maximized when trust is developed between the organization and the outsource providers (e.g., through looking out for each others’ interests) and having a very specific contract with clearly outlined responsibilities for both the organization and the outsource provider.

OVERVIEW OF TRAINING AND DEVELOPMENT, BEST PRACTICES


This report, produced yearly by the American Society for Training and Development, provides data related to critical trends, best practices and
innovations in training and development. The report is based on data collected from ASTD Benchmarking Forum organizations and ASTD BEST Award winners. The report provides data from 2007, as well as prior years, on issues such as learning investments, learning content, use of technology, and use of externals services for training and development. Beginning in 2004, data from the ASTD BEST Award Winners are also included. The BEST Award winners are companies that ASTD recognizes based on the following criteria: learning is a valued part of the organization culture, there is a clear learning-performance linkage, the organization leverages technology in learning, and innovative learning practices are used.

Key indicators found in the report include direct expenditure per employee, learning hours per employee, cost per learning hour used and many others. The report allows readers to compare their company’s learning initiatives to industry norms and best practices and to understand how learning, training and development investments compare to other organizations.


Training magazine’s “Industry Report” provides data on training budgets, staffing and programs, including expenditures allocated to different program areas, delivery methods and top learning priorities. The data are based on an annual survey of members from Training magazine’s database.


This book, part of the Society for Industrial an Organizational Psychology Professional Practice Series, reviews best practices in training and development methods and organizational training and learning. Expert practitioners and researchers provide chapters that cover designing and positioning training and development, innovations in training and development methods, and evaluating and institutionalizing training. Examples of chapter titles include “Planning for Training Impact,” “Principles of Training Effectiveness,” “Using Computer Technology in Training: Building an Infrastructure for Active Learning,” and “Decision-Based Evaluation.”


This book includes 13 chapters reflecting the traditional as well as broadening role of training and development in organizations. The chapter coverage includes in-depth discussion of research findings, practices and examples of each step in the instructional design process (needs assessment, learning theory and program design, transfer of training, evaluation), strategic training, traditional and technology-based instructional and delivery methods, employee development, careers and career management, and future of training and development. The first chapter discusses the forces influencing training and development, cites statistics related to training practices and provides an overview of how to design effective training. The book includes current topics such as outsourcing training, the business embedded training function, intangible assets and human capital, implications of the aging workforce for training and development, and use of new technologies such as iPods and avatars for delivery and instruction.


The book brings together researchers from different areas, including industrial organizational psychology, human factors psychology, cognitive psychology, human-computer interaction and computer science. The book is organized around four themes. The first two chapters address societal and institutional issues driving the need for training. The section examines basic learning and skill acquisition research as it applies to training. The third section addresses issues involved in the design and implementation of a training system. The fourth section examines the impact of future technologies and ways of organizing work on training.


This book targets learning at individual, group and organizational
level and demonstrates how learning at one level affects learning at the other two levels. Emphasis is placed on the idea that individuals, groups and organizations are living systems with learning mechanisms. Systems can learn adaptively by reacting to a change in the environment, by generating new knowledge and conditions and/or by creating and applying frame-breaking ideas and creating new conditions. Adaptive, generative and transformative learning is applied to individual, group and organizational level of analysis. The authors describe a contingency model, suggesting that interventions for facilitating learning depend on the match between interconnected systems at different levels and between the environment or task and a given system. Assessment of learning outcomes at each level of analysis is discussed.

**LEARNING AND ORGANIZATIONAL PERFORMANCE**


This report summarizes a study by the American Society of Training and Development of more than 500 publicly traded companies. The results showed that companies making the greatest investment in training and development had a shareholder return that was 86 percent higher than companies in the bottom half of investments and 46 percent higher than the market average.


This study investigated how HRM practices relate to entrepreneurial performance in small and medium-sized organizations. The sample included 99 small and medium-sized organizations. Results showed that HR practices that promoted employee discretionary behavior, knowledge sharing and discretionary learning were positively related to entrepreneurial performance in small and medium firms. Firms in high-technology benefited more from the use of both “strategic” and “discretionary” HR practices than did firms in non-high-technology industries. Discretionary HR practices included investment in socialization and orientation activity, as well as employee participation and empowerment, and incentives.


This chapter provides a conceptualization of strategic training and development, and identifies key issues, reviews relevant research and discusses opportunities for future research attention. The authors emphasize that similar to strategic human resource management, strategic training and development focuses on the design and implementation of training systems to successfully affect organizational performance.


This study is one of the first studies to define and test resource-based view of the firm in a manufacturing plant setting. The study used data from 164 manufacturing plants to investigate whether competitive advantage in manufacturing (measured by superior plant performance) results from three manufacturing capabilities: internal learning, external learning and proprietary processes and equipment. Results showed that competitive advantage in manufacturing was related to use of “internal learning” (e.g., training of multifunctional employees and incorporating employee suggestions into process improvements and product developments) and “external learning” (e.g., establishing problem-solving routines with customers and suppliers). The results suggest that resources such as generic equipment and employees with general skills are not as effective in achieving high levels of plant performance. Also, the study demonstrates that internal and external learning develops human capital that is difficult for competitors to imitate or duplicate.
DESIGNING LEARNING INITIATIVES


This issue of *Advances in Developing Human Resources* revisits the ADDIE design model (analysis, design, develop, implement and evaluate). The 10 articles that make up this special issue provide an overview of the ADDIE training system and other training design models and offer reflections on the current effectiveness and future of the ADDIE design model.


This book discusses how to make learning and instructional design faster. The book covers all of the basics of instructional design, including needs assessment, design, development, evaluation, and asynchronous and synchronous e-learning design. The treatment of the topics is easy to understand. Checklists, questionnaires and interview questions that are useful for needs assessment and instructional design are provided.


This book describes a practical approach for developing competency models and integrating them into HR systems. The book also discusses how competency models can enhance HR systems and how to gain key stakeholder commitment to using competency models.

LEARNER READINESS


This article reviews and integrates training motivation research. Training motivation is the direction, intensity and persistence of learning-directed behavior in training contexts. Meta-analysis was used to summarize research on the antecedents and outcomes of training motivation, including declarative knowledge, skill acquisition and transfer of training. The meta-analysis was based on 106 articles that were published in education, management or applied psychology journals. Individual characteristics, including locus of control, conscientiousness, anxiety, age, cognitive ability, self-efficacy, valence and job involvement and situational characteristics (e.g. climate), predicted training motivation and outcomes. Although cognitive ability was significantly related to training outcomes, training motivation explained incremental variance in the outcomes beyond its effects. The meta-analysis results were used to test a completely mediated version and partially mediated version of a theory of training motivation. The partially mediated model was supported. Personality, age and climate explained incremental variance in motivation to learn, declarative knowledge, skill acquisition, post-training self-efficacy, reactions, transfer and post-training job performance. The model suggests that individual and situational characteristics are critical before training (by influencing training motivation), during training (by influencing learning) and after training (by influencing transfer and job performance). From a practical perspective, the results suggest that personal analysis and organizational analysis parts of needs assessment are important because they provide important information about personality and climate, both of which are related to training motivation and learning. Also, trainers can benefit from using techniques that increase training efficacy and emphasize job and career benefits of training, given the effects of self-efficacy, valence and job involvement.

CREATING A LEARNING ENVIRONMENT


This article provides one of the most comprehensive examinations of the cognitive, motivational and emotional processes underlying active learning approaches and their influence on learning and transfer. The article also examines how core training design elements of active learning (exploration, training frame, emotion control) and individual differences (cognitive ability, trait goal orientation, trait anxiety) influence the cognitive,
motivational and emotional processes. The active learning approach gives learners control over their own learning. It also promotes an inductive learning process in which learners must explore and experiment with a task to determine the rules, principles and strategies for effective performance. Active learning can be part of many different learning methods, including e-learning, error management training and guided exploration. However, the core design elements are part of a wide variety of instructional methods that involve active learning. The authors propose and test a model of how the core design elements influence self-regulatory processes, learning and transfer of training. In the study, 350 university students were trained to operate a complex computer-based simulation. Exploratory learning and error-encouragement framing had a positive relationship with adaptive transfer performance and interacted with cognitive ability and dispositional goal orientation to influence learners’ metacognition and goal orientation. Learners who received the emotion-control strategy had lower levels of anxiety. The results suggest that organizations need to consider the training goals and learner characteristics when deciding whether to use an active learning approach.


This study used meta-analytic technique to summarize the results of 63 studies examining the relationship between massed and distributed practice conditions and task performance. Overall, individuals in distributed practice sessions exhibited significantly higher task performance than individuals in massed practice conditions. However, the type of task and the length of the time interval between spaced practice sessions (the intertrial time interval) moderated the magnitude of the practice effect. The greater the task complexity the smaller the differences between massed and distributed practice. Longer rest periods appeared to be more beneficial for learning complex tasks such as those found in organizational training settings.


This book shows how Gagne’s theory of instruction can be applied to training in business, industrial, governmental and nonprofit organizations. The book covers the nine events of instruction and five types of learning found in Gagne’s information-processing model of human learning and provides training examples and actual case studies in which the theory has been successfully applied.


The purpose of this study was to test the effects of increasing feedback specificity on learning how to correctly respond to good versus poor performance, as mediated by differential learning opportunities during practice. The authors argue that although increasing feedback specificity is beneficial for immediate performance, it can undermine learning needed for independent performance. To test the study hypotheses, an experiment was conducted with undergraduate university students. The students played the role of a department manager in a business simulation that required them to learn how to manage their workers. Students had to determine the correct responses for assigning goals, providing feedback and allocating rewards to their workers. Students were randomly assigned to one of three different feedback conditions (low, moderate, high). Students performed 19 trials (“work weeks”) of the simulation task to allow for practice, performance improvement and rule learning. Two days later, students returned to assess learning that occurred during the 19 trials. The results showed that increasing the specificity of feedback during practice affects learning opportunities during practice, and the effect of feedback specificity on learning depends on the type of the task to be learned. Increasing feedback specificity is beneficial for learning of responses for good performance and detrimental for learning of responses for poor performance. The effects of feedback specificity on the learning of rule for responding to good performance were partially mediated by learning opportunities. The results suggest that it is important to consider what is to be learned when designing feedback interventions. If it is necessary to learn rules for both good


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and poor performance, feedback needs to provide opportunities for testing and learning rules for different aspects of the task. Less specific feedback leads to errors that cause problems and malfunctions, providing opportunities to learn which behaviors are related to problems and malfunctions and how to modify behaviors and fix problems.


The purpose of this study was to investigate how negative expectations of trainers influence trainees’ desire to succeed in training, training performance and evaluations of the training and the trainer. The study is based on research on self-fulfilling prophecies demonstrating that manager, leader or teacher expectations can influence individual’s motivation and effort. This study focuses on investigating stereotypes that are related to obesity, which can cause negative ability and effort-based expectations of trainees. The study used undergraduates who played either the role of trainer or trainee. The results showed that trainee weight (manipulated by photographs) influenced female trainer’s expectations and evaluations of trainer and trainee. The students completed recall and problem-solving tests immediately after listening to the lectures and two days later. The students had the greatest levels of recall after an expressive and highly organized lecture. For problem solving, participants with a high master orientation had their poorest problem-solving performance after listening to an organized and inexpressive lecture. Participants with a low mastery orientation were not influenced by the effects of organization or expressiveness. The findings suggest that if the learning objective is to enhance memorization or increase learner motivation, trainers should be organized and expressive in their delivery.

**TRANSFER OF LEARNING**


This article explores the relationship between training failure and organizational culture. It considers the dominant cultures and subcultures of organizations, including elements of culture, levels of organizational culture and characteristics of the human resource development profession. Training failure is proposed to take four forms, including unskilled practitioners providing training, skilled practitioner providing invalid training, skilled practitioner providing valid training but learning not transferring, and skilled practitioner providing valid training with learning transferring but perceived to be a failure. The implications for training researchers and practitioners are discussed.

This article provides a narrative review of research on training transfer from management, human resource development, training, adult learning, performance improvement and psychology literatures. The review categorizes the articles based on the primary factors that influence transfer (learner characteristics, intervention design and delivery, and work environment influences), identifies the factors receiving the most support for influencing transfer of training, and identifies research gaps. A critique of the transfer literature is provided as well as suggestions to guide future theoretical and empirical research.


This book, part of the Society for Industrial an Organizational Psychology Professional Practice Series, features chapters from experts in learning transfer. The chapters cover how to diagnose transfer systems, create a transfer-ready profile, assess employees to maximize transfer and determine what processes to follow to design learning transfer system interventions. The book emphasizes how to create systems to ensure that employees are learning and retaining knowledge, skills and behaviors needed to successfully complete their work. Chapter topics include new organizational forces affecting learning transfer, diagnosis for learning transfer system change, transfer in an e-learning context and creating a climate for learning transfer.


This article presents a model of a learning transfer system and reports the results of a validation study of a survey designed to measure factors influencing transfer of training. The Learning Transfer System Inventory (LTSI) was administered to more than 1,500 training program participants across a wide range of organizations. Factor analysis found an interpretable factor structure of 16 transfer system constructs. The constructs include scales related to learner readiness, motivation to transfer, different sources of support, transfer design, opportunity to use training content and general scales related to performance coaching, performance self-efficacy, transfer effort-performance and transfer performance-outcome expectations, and openness to change. The process of developing the survey, factor structure and the use of the LTSI in organizations are discussed.


This study investigated the extent to which organizations implement specific activities to facilitate transfer of training before, during and after training. Also, the study investigated the relationship between these activities and transfer of training. In the study, 150 members of a Canadian training and development study completed surveys that included questions related to transfer of training, and pre-, during and post-training activities designed to improve transfer of training. Factor analysis was used to examine the factor structure of the training activities within each period. The items and factor loadings are presented in the article. Results showed that all of the transfer of training activities were significantly and positively related to transfer of training, with the exception of training attendance policy. Low to moderate correlations were observed between the transfer of training activities both within and across time periods. The study participants indicated that 62 percent, 44 percent and 34 percent of employees transfer training immediately, six months and one year after training, respectively. Regression analysis showed significant relationships between transfer of training and trainee input and involvement, attendance policy, and supervisor involvement (pretraining activities), identical elements (during training activity) and supervisor and organization support (post-training activities). The authors emphasize that more research is needed to investigate the low rates for transfer of training and the relationship between individual level outcomes and group or organizational outcomes. The results also suggest that organizations should consider conducting an analysis of transfer of training obstacles as part of training needs assessment. This analysis can provide insight into what types
Learning System Design

of pre-, during and/or post-training activities are needed to support transfer of training.


This article reports the results of a study examining the impact of self-coaching and upward feedback supplements to a training program designed to improve the interpersonal skills for newly hired managers. The sample includes 87 trainees from 75 units of a national restaurant chain. The influence of the supplements was measured by examining post-training performance across four training conditions using a quasi-experimental design, including classroom training only, classroom training with self-coaching, classroom training with upward feedback, and classroom training with self-coaching and upward feedback. The results showed that both self-coaching and upward feedback were similar in their post-training impact. Trainees who participated in either supplement exhibited better performance than trainees who only attended classroom training. Trainees participating in both supplements as a combined intervention were more effective performers than the self-coaching trainees.

EVALUATION


This study uses meta-analytic techniques to examine the relationship between training design and evaluation features and training effectiveness. The final data set used for the analysis included 397 effect sizes from 162 sources, including journal articles, conference papers, dissertations and book chapters. The results suggest that training has medium to large effect size on reaction, learning, behavior and results outcomes. For both learning and behavioral outcomes, the largest effects were found for training that included both cognitive and interpersonal skills or tasks. Medium effects were found for both interpersonal and cognitive skills or tasks. For results criteria, the largest effects were obtained for interpersonal skills or tasks and the smallest for psychomotor skills or tasks. A medium to large effect was found for cognitive skills or tasks. Examination of the time intervals for the collection of the four outcomes in the studies showed that reactions were always collected immediately after training, followed by learning criteria (average of 26 days after training), behavioral outcomes (average of 134 days after training) and results outcomes (average 159 days after training). No clear pattern of results emerged on the relationship between needs assessment and training effectiveness.


This article reviews models and research on training evaluation and training effectiveness for individuals. The authors argue that to improve training effectiveness at the organizational level, training outcomes must be linked to organizational and business outcomes and organizational decision-makers must be involved in training design and evaluation. To increase the relevance of training to organizational decision-makers, several guidelines are discussed. These include developing a theory of impact, reframing the purpose of evaluation from proof to evidence, and establishing accountability for training in trainees, managers and other key players in the organization.


This handbook provides practical guidance on how to evaluate and calculate return on investment for training and development programs. Results-based training and development is emphasized. The book covers how to develop and implement a results-based approach to training and development, reviews and provides recommendations for data-collection methods necessary for evaluating and showing value of training and development programs, demonstrates how to calculate costs and return on
investment, and discusses how to use evaluation results to ensure managerial support for training and development.


This study uses meta-analytic techniques to review the literature on trainee reactions and test hypotheses of the relationships between trainee (pretraining motivation, agreeableness, anxiety and mastery goal orientation) and situational characteristics (instructor style, human interaction, organizational support) and trainee reactions. Also, the study investigates the relationship between trainees’ reactions and affective, cognitive and organizational outcomes. One hundred thirty-six studies contributed data to the meta-analysis. Instructor style and human interaction had the strongest effect on reactions. Trainee characteristics were significant but weaker predictors of reactions. Reactions were found to have the largest relationship with changes in affective learning outcomes. The results also showed that reactions were significantly related to changes in declarative and procedural knowledge, challenging prevailing views that reactions are unrelated to learning. The authors suggest that for courses such as diversity training or ethics training, reactions are especially important because they affect learners’ receptivity to attitude change. Reactions were found to have the strongest relationship with post-training motivation, self-efficacy and declarative knowledge when technology was used for instructional delivery. The authors conclude that especially for technology-based instructional methods, it is important to make them easy to access and ensure they provide meaningful learning content.


The purpose of this article was to understand the effects of training on organizational-level outcomes. The study uses meta-analysis to summarize the results of 67 studies that have examined the linkage between training and human resource outcomes (attitudes and motivation, behaviors, human capital), organizational performance outcomes (performance and productivity) or financial outcomes (profits and financial indicators). The results suggest that organizations that train are likely to have more positive human resource outcomes and greater performance outcomes, although the effects are small. The small effect of training on human resource outcomes is likely due to the influence of other mediating variables. The overall effect size for training was largest for organizational performance outcomes and human resource outcomes and weak for financial outcomes. The authors suggest that this result is not surprising given that training can least affect an organization’s financial performance and may do so through its influence on human resource practices. Several conclusions about the relationship between training and contextual factors are provided, although the authors caution the results are based on a small number of studies. Training appears to be more strongly related to organizational outcomes when it is matched with the organization’s business strategy and capital intensity. Also, training is related independently to organizational outcomes, suggesting that it does not need to fit with other human resource practices such as selection or performance management (the contingency perspective of human resource management). The article concludes with a critique of previous research investigating training and organizational-level outcomes. The authors suggest that future research is needed to integrate individual and organizational-level training research, models and theory.

**METHODS**


Instruction delivered by computer allows individualization. Individualization includes having learners control the amount of practice and time spent in learning. This study investigated which learners were most likely to learn from learner-controlled computer-based training and why. Previous research on learning choices, goal orientation and self-efficacy was reviewed to develop a theoretical model. The model suggested that
the relationship between individual differences (age, education, computer experience, mastery orientation, performance orientation and learning self-efficacy) and knowledge gain was mediated by learner choices related to practice level, time on task and off-task attention. The study included 78 manufacturing firm employees who were taking an intranet-delivered training course teaching a problem-solving process. Off-task attention was predicted positively by performance orientation and negatively by mastery orientation. The relationship between learning self-efficacy was negative for individuals with below average performance orientation and positive for individuals with above average performance orientation. The mediated model was not supported. The employees who learned most from this type of learning environment were those who completed more of the available practice opportunities and took more time to complete the training. The results suggest that despite the importance and meaningfulness of the training content and the appeal of computer-based training to facilitate learning by giving trainees more control, trainees may not appropriately use their control. Trainers and learning designers need to explore ways to get learners to practice and stay on task.


This article investigates the relationship between three instructional methods (lecture, modeling and active participation) and four instructional factors (materials, feedback, pacing and group size) on training performance of learners 40 years of age and older. Meta-analytic techniques were used to summarize the results of 41 studies covering the period from 1890 to 2003. The results showed statistically significant differences in training performance of older learners for each instructional method. Lecture, modeling and active participation methods were all significantly related to training performance of older learners. Training in smaller groups or self-paced training was related to higher levels of training performance for older learners. The results suggest that it may be better to integrate multiple methods rather than using multiple instructional factors to promote learning among older learners.


This chapter reviews the learner control literature related to workplace training and discusses the implications that learner control can have for training using e-learning. The review is organized into instructional design factors that have been used to provide learner control and person issues that moderate the relationship between learner control and outcomes. The review also focuses on the positive and negative effects related to providing learners with control in e-learning environments.


This paper reports the results of a study using meta-analytic techniques to summarize the results of error management training evaluation studies. Error management training involves active exploration and explicit encouragement for learners to make errors during training and learn from them. The mean effect of error management training was positive and significant. Error management training was an effective training method compared with methods that did not encourage errors during training, such as exploratory and proceduralized training. The influence of error management training was larger for post-training transfer than for within-training performance and for performance tasks that were distinct rather than similar to trained tasks. Both active exploration and error encouragement were identified as effective parts of error management training.


This naturally occurring quasi-experiment investigated how learning
goal orientation, delivery mode (classroom vs. blended learning) and perceptions of environmental barriers and enablers believed to influence course performance (e.g., time for school, Internet connectivity, opportunity for social interaction with other students) related to motivation to learn, course grades, course satisfaction and metacognition. Participants of this study were 600 students enrolled in either classroom or blended learning courses. The results showed that learners in the blended learning courses, those high in learning goal orientation and those who perceived environmental features as enablers rather than barriers had significantly higher motivation to learn. Motivation to learn was significantly related to metacognition, course grades and course satisfaction. Exploratory analysis revealed that motivation to learn fully mediated the learning goal orientation-course grade relationship, partially mediated the perceived barriers/enablers-course satisfaction relationship and the delivery mode-metacognition relationship, but did not mediate the relationship between delivery mode and course grades. The study results have several implications for training practice. The use of both asynchronous and synchronous technology for learning facilitates metacognition, which is important in learning environments where less external structure or feedback is given to guide the learner on how to best progress through training. Maximizing learners’ learning goal orientation is beneficial for all learning methods but particularly for web-based distance or blended learning courses where learners have greater control over when and how learning occurs. To increase the effectiveness of blended learning, managers should remove perceived barriers by providing a dedicated time for learning and providing technology support staff.


The study used meta-analysis to summarize the results of 96 studies of web-based instruction involving 19,331 learners who took part in 168 training courses. The results of the study showed that web-based instruction is more effective than classroom instruction for teaching declarative knowledge (cognitive knowledge assessments using written tests designed to measure if trainees remembered concepts presented in training). Web-based instruction and classroom instruction are equally effective in teaching procedural knowledge (the ability of learners to perform the skills taught in training). Learners are equally satisfied with web-based and classroom instruction. The effectiveness of web-based instruction over classroom instruction was enhanced when learners were provided with control over content, sequence and pace in long courses and when learners practiced the content and received feedback. No differences in the effectiveness of web-based instruction and classroom instruction were found when similar instructional methods were used (for example, both approaches used video, practice assignments and learning tests). Web-based instruction used to supplement face-to-face instruction (blended learning) was more effective than classroom instruction alone for teaching both declarative knowledge and procedural knowledge. It appears that blended learning capitalizes on the positive learning features inherent in both a face-to-face and web-based instruction. Interestingly, learners reacted more favorably toward classroom instruction than blended learning. This may be because blended learning courses are more demanding, requiring a greater time commitment because of the use of two learning approaches.


Based on a meta-analysis of 117 studies, this study evaluated the effects of behavior modeling training on declarative knowledge, procedural knowledge, training-related attitudes, job behavior and results outcomes (workgroup productivity and workgroup climate). Also, the study determined how training design characteristics (learning points, models, behavioral rehearsal, hours of training and transfer enhancers) related to the effects of behavior modeling training. Overall, the effects of behavior modeling training were greatest for learning outcomes, smaller for job behavior and smallest for results outcomes. Skill development was greatest for longer training times and when learning points were used and presented as rule codes. Transfer of training was greatest when negative and positive models were used, when practice included scenarios that trainees brought
from their work (rather than provided by the trainer), when trainees’ managers were also trained and when rewards (or sanctions) were provided for trainees who used newly learned skills.


This article reviews academic and practitioner research on e-learning, including unpublished information from interviews with managers and consultants involved in e-learning initiatives. The article focuses on why organizations use e-learning, the potential drawbacks to e-learning, what we know from research on e-learning and the future of e-learning.

**DEVELOPMENT**


This report is published in SHRM Foundation’s Effective Practice Guidelines Series. The report discusses developing leadership talent, succession planning, leadership development and development practices, including education, assessment, coaching and experiential learning. This report complements *Learning System Design*, providing interested readers with in-depth coverage of all aspects of development as a learning initiative.

**KNOWLEDGE MANAGEMENT**


This book, part of the Society for Industrial and Organizational Psychology Organizational Frontiers Series, includes a series of chapters that explain the nature and different type of knowledge and how knowledge-based competition is influencing organizations. The book is divided into four sections, with chapters addressing work and organizational designs, staffing organizations, developing employees for knowledge-based competition and measurement of knowledge-based resources.
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