

COURSE: RECRUITMENT, TRAINING AND DEVELOPMENT

LECTURE 9 : ON JOB TRAINING METHODS

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Lecture learning outcomes:

At the end of the lecture you will be able to:

- i. Understand the concept of on job training**
- ii. Discuss types of on job training**
- iii. Explore advantages and disadvantages.**

ON JOB TRAINING METHODS

On-the-job training (OJT) refers to new or inexperienced employees learning in the work setting and during work by observing peers or managers performing the job and trying to imitate their behavior. OJT is one of the oldest and most used types of informal training. It is considered informal because it does not necessarily occur as part of a training program and because managers, peers, or mentors serve as trainers. If OJT is too informal, learning will not occur. OJT can be useful for training newly hired employees, upgrading experienced employees' skills when new technology is introduced, cross-training employees within a department or work unit, and orienting transferred or promoted employees to their new jobs.

Selection of the training methods depends on the programme objectives, the trainees, the confidence of trainers among others. However, the following considerations are worth bearing in mind while selecting the training method:

- 1) The method selection depends on what actions the trainees are supposed to take after finishing the course.
- 2) The duration of the training programme and the availability of time.
- 3) The training setting at the disposal of the trainer.
- 4) The level of knowledge about the trainees available to the trainers.
- 5) While selecting a participative experiential method, care should be taken that the trainer selects proven exercises, which they feel confident that it will work. If the exercise fails, the trainer should talk it out with the group members and should never apologize.
- 6) It is always better to have a combination of different methods of training in a programme using a variety of training methods that stimulates learner interest and arouses curiosity.

This training decision as to whether training should be carried out on or off the job cannot be made arbitrarily. A judgment should be made as to which method is more likely to meet the required objectives. On-the-job training generally takes place under normal work situations, the task very often contributing directly to the output of the department.

Regardless of the specific type, effective OJT programs include:

1. A policy statement that describes the purpose of OJT and emphasizes the company's support for it.
2. A clear specification of who is accountable for conducting OJT. If managers conduct OJT, this is mentioned in their job descriptions and is part of their performance evaluations.
3. A thorough review of OJT practices (program content, types of jobs, length of program, cost savings) at other companies in similar industries.
4. Training of managers and peers in the principles of structured OJT
5. Availability of lesson plans, checklists, procedure manuals, training manuals, learning contracts, and progress report forms for use by employees who conduct OJT.
6. Evaluation of employees' levels of basic skills (reading, computation, writing) before OJT.

When an employee learns the job in actual working site in real life situation, and not simulated environment, it is called OJT. Employee learns while working. This type of training, also known as job instruction training, is the most commonly used method. Under this method, the individual is placed on a regular job and taught the skills necessary to perform that job. The trainee learns under the supervision and guidance of a qualified worker or instructor. On-the-job training has the advantage of giving firsthand knowledge and experience under actual working conditions. While the trainee learns how to perform a job, he is also a regular worker rendering the services for which he is paid. The problem of transfer of trainee is also minimised as the person learns on-the-job. The emphasis is placed on rendering services in the most effective manner rather than learning how to perform the job.

On-The-Job Training Methods

- 1. Self-Directed Learning.** Self-directed learning has employees take responsibility for all aspects of learning—including when it is conducted and who will be involved. Trainees master predetermined training content at their own pace without an instructor. Trainers may serve as facilitators. That is, trainers are available to evaluate learning or answer questions for the trainee. The trainer does not control or disseminate instruction. The learning process is controlled by the trainee. Self-directed learning for salespersons could involve reading newspapers or trade publications, talking to experts, or surfing the Internet to find new ideas related to the salesperson industry. Also, self-directed learning could involve the company providing salespersons with information such as databases, training courses, and seminars while still holding the employees responsible for taking the initiative to learn. Because the effectiveness of self-directed learning is based on an employee's

motivation to learn, companies may want to provide seminars on the self-directed learning process, self-management, and how to adapt to the environment, customers, and technology.

It encourages new employees' active involvement in learning and allows flexibility in finding time for training. A peer-review evaluation component motivates employees to complete the questions correctly. And, as a result of participating in the program, employees make contacts throughout the company and gain a better understanding of the technical and personal resources available within the company. Self-directed learning has several advantages and disadvantages. It allows trainees to learn at their own pace and receive feedback about the learning performance. For the company, self-directed learning requires fewer trainers, reduces costs associated with travel and meeting rooms, and makes multiple-site training more realistic. Self-directed learning provides consistent training content that captures the knowledge of experts. Self-directed learning also makes it easier for shift employees to gain access to training materials.

Several steps are necessary to develop effective self-directed learning:

1. Conduct a job analysis to identify the tasks that must be covered.
2. Write trainee-centered learning objectives directly related to the tasks. Because the objectives take the place of the instructor, they must indicate what information is important, what actions the trainee should take, and what the trainee should master.
3. Develop the content for the learning package. This involves developing scripts (for video) or text screens (for computer-based training). The content should be based on the trainee centered learning objectives. Another consideration in developing the content is the media (e.g., paper, video, computer, Web site) that will be used to communicate the content.
4. Break the content into smaller pieces ("chunks"). The chunks should always begin with the objectives that will be covered and include a method for trainees to evaluate their learning. Practice exercises should also appear in each chunk.
5. Develop an evaluation package that includes evaluation of the trainee and evaluation of the self-directed learning package.

Trainee evaluation should be based on the objectives (a process known as criterion referencing). That is, questions should be developed that are written directly from the objectives and can be answered directly from the materials. Evaluation of the self-directed learning package should involve determining ease of use, how up-to-date the material is, whether the package is being used as intended, and whether trainees are mastering the objectives. Self-directed learning is likely to become more common in the future as companies seek to train staff flexibly, take advantage of technology, and encourage employees to be proactive in their learning rather than driven by the employer.

2. **Job Rotation:** This type of training involves the movement of the trainee from one job to another. The trainee receives job knowledge and gains experience from his supervisor or trainer in each of the different job assignments. Though this method of training is common

in training managers for general management positions, trainees can also be rotated from job to job in workshop jobs. This method gives an opportunity to the trainee to understand the problems of employees on other jobs and respect them. Under this method of training candidates are placed in each and every job starts from clerical job, assistant, cashier and managerial job for the purpose of knowing importance in nature of every job before handling the position.

3. **Coaching:** The trainee is placed under a particular supervisor who functions as a coach in training the individual. The supervisor provides feedback to the trainee on his performance and offers him some suggestions for improvement. Often the trainee shares some of the duties and responsibilities of the coach and relieves him of his burden. A limitation of this method of training is that the trainee may not have the freedom or opportunity to express his own ideas.
4. **Job Instruction:** This method is also known as training through step by step. Under this method, trainer explains the trainee the way of doing the jobs, job knowledge and skills and allows him to do the job. The trainer appraises the performance of the trainee, provides feedback information and corrects the trainee.
5. **Committee Assignments:** Under the committee assignment, group of trainees are given and asked to solve an actual organisational problem. The trainees solve the problem jointly. It develops team work.
6. **Apprenticeship:** Apprenticeship is a formalized method of training curriculum program that combines classroom education with on-the-job work under close supervision. The training curriculum is planned in advance and conducted in careful steps from day to day. Most trade apprenticeship programs have a duration of three to four years before an apprentice is considered completely accomplished in that trade or profession. This method is appropriate for training in crafts, trades and technical areas, especially when proficiency in a job is the result of a relatively long training or apprenticeship period, e.g., job of a craftsman, a machinist, a printer, a tool maker, a pattern designer, a mechanic, etc.

Apprenticeship is a work-study training method with both on-the-job and classroom training. In an apprenticeship program, the hours and weeks that must be devoted to completing specific skill units are clearly defined. The on-the-job training involves assisting a certified tradesperson (a journey worker) at the work site. The OJT portion of the apprenticeship follows the guidelines for effective OJT by including modeling, practice, feedback, and evaluation. First, the employer verifies that the trainee has the required knowledge of the operation or process. Next, the trainer (who is usually a more experienced, licensed employee) demonstrates each step of the process, emphasizing safety issues and key steps. The senior employee provides the apprentice with the opportunity to perform the process until all are satisfied that the apprentice can perform it properly and safely.

A major advantage of apprenticeship programs is that learners can earn pay while they learn. This is important because programs can last several years. Learners' wages usually increase automatically as their skills improve. Also, apprenticeships are usually effective learning

experiences because they involve learning why and how a task is performed through classroom instruction provided by local trade schools, high schools, or community colleges. Apprenticeships also usually result in full-time employment for trainees when the program is completed. From the company's perspective, apprenticeship programs meet specific business training needs and help attract talented employees. Apprentice-like programs are also used to prepare new managers.

Besides the development costs and time commitment that management and journey workers have to make to apprenticeship programs, another disadvantage of many programs is limited access for minorities and women. Also, there is no guarantee that jobs will be available when the program is completed. Finally, apprenticeship programs prepare trainees who are well trained in one craft or occupation. Due to the changing nature of jobs (thanks to new technology and use of cross-functional teams), many employers may be reluctant to employ workers from apprenticeship programs. Employers may believe that because apprentices are narrowly trained in one occupation or with one company, program graduates may have only company-specific skills and may be unable to acquire new skills or adapt their skills to changes in the workplace.

7. **Cross-training.** This method allows employees to experience other jobs, which not only enhances employee skills but also gives companies the benefit of having employees who can perform more than one job. Cross-training also gives employees a better appreciation of what co-workers do and how their own jobs fit in with the work of others to achieve company goals.
8. **Demonstrations.** Demonstrations are attention-grabbers. They are an excellent way to teach employees to use new equipment or to teach the steps in a new process. They are also effective in teaching safety skills. Combined with the opportunity for questions and answers, this is a powerful, engaging form of training.
9. **Business Games.** Business games require trainees to gather information, analyze it, and make decisions. Business games are primarily used for management skill development. Games stimulate learning because participants are actively involved and because games mimic the competitive nature of business. The types of decisions that participants make in games include all aspects of management practice: labor relations (agreement in contract negotiations), ethics, marketing (the price to charge for a new product), and finance (financing the purchase of new technology). Typical games have the following characteristics.³⁹ The game involves a contest among trainees or teams of trainees or against an established criterion such as time or quantity. The game is designed to demonstrate an understanding of or application of a knowledge, skill, or behavior. Several alternative courses of action are available to trainees, and trainees can estimate the consequences of each alternative, but only with some uncertainty. Trainees do not know for certain what the consequences of their actions will be because the consequences are partially based on the decisions of other game participants. Finally, rules limit participant behavior.

To ensure learning and transfer of training, games used in training should be simple enough that trainees can play them in a short period of time. The best games generate excitement among the

participants and interest in the game. Meaningfulness of the game is enhanced if it is realistic. Trainees need to feel that they are participating in a business and acquiring knowledge, skills, and behaviors that are useful on the job. Debriefing from a trainer can help trainees understand the game experience and facilitate learning and transfer. Debriefing can include feedback, discussions of the concepts presented during the game, and instructions in how to use at work the knowledge, skills, or behavior emphasized in the game.

Many companies are using board games to teach employees finance because employee pay is based on the financial performance of the business function employees work in. In pay-for-performance plans, companies must ensure that employees understand basic financial concepts such as how to read balance sheets and income statements. Employees also need to understand how their actions and decisions affect profits. Most of the board games are similar to the game Monopoly. Trainees guide their companies through a series of decisions challenged by various obstacles such as a rival introducing a competing product or a strike by plant workers. Trainees have to track key financial measures over two years.

Documentation of learning from games is anecdotal. Games may give team members a quick start at developing a framework for information and may help develop cohesive groups. For some groups (such as senior executives), games may be more meaningful training activities (because the game is realistic) than are presentation techniques such as classroom instruction.

10. Role Plays

Role plays have trainees act out characters assigned to them. Information regarding the situation (e.g., work or interpersonal problem) is provided to the trainees. Role plays differ from simulations on the basis of response choices available to the trainees and the level of detail of the situation given to trainees. Role plays may provide limited information regarding the situation, whereas the information provided for simulation is usually quite detailed. A simulation focuses on physical responses (e.g., pull a lever, move a dial). Role plays focus on interpersonal responses (e.g., ask for more information, resolve conflict). In a simulation, the outcome of the trainees' response depends on a fairly well-defined model of reality. (If a trainee in a flight simulator decreases the angle of the flaps, that action influences the direction of the aircraft.) In a role play, outcomes depend on the emotional (and subjective) reactions of the other trainees.

For role plays to be effective, trainers need to engage in several activities before, during, and after the role play. Before the role play, it is critical to explain the purpose of the activity to the trainees. This increases the chances that they will find the activity meaningful and be motivated to learn. Second, the trainer needs to clearly explain the role play, the characters' roles, and the time allotted for the activity. A short video may also be valuable for quickly showing trainees how the role play works. During the activity, the trainer needs to monitor the time, degree of intensity, and focus of the group's attention. (Is the group playing the roles or discussing other things unrelated to the exercise?) The more meaningful the exercise is to the participants, the less trouble the trainer should have with focus and intensity. At the conclusion of the role play, debriefing is critical. Debriefing helps trainees understand the experience and discuss their insights with each other. Trainees should also be able to discuss their feelings, what happened in the exercise, what they

learned, and how the experience, their actions, and resulting outcomes relate to incidents in the workplace.

11. Behavior Modeling

Behavior modeling presents trainees with a model who demonstrates key behaviors to replicate and provides trainees with the opportunity to practice the key behaviors. Behavior modeling is based on the principles of social learning theory, which emphasize that learning occurs by :

(1) observation of behaviors demonstrated by a model

(2) vicarious reinforcement. Vicarious reinforcement occurs when a trainee sees a model receiving reinforcement for using certain behaviors. Behavior modeling is more appropriate for teaching skills and behaviors than for teaching factual information. Research suggests that behavior modeling is one of the most effective techniques for teaching interpersonal and computer skills.

Activities in a behavior modeling training session.

These activities include an introduction, skill preparation and development, and application planning. Each training session, which typically lasts four hours, focuses on one interpersonal skill such as coaching or communicating ideas. Each session includes a presentation of the rationale behind the key behaviors, a videotape of a model performing the key behaviors, practice opportunities using role playing, evaluation of a model's performance in the videotape, and a planning session devoted to understanding how the key behaviors can be used on the job. In the practice sessions, trainees are provided with feedback regarding how closely their behavior matches the key behaviors demonstrated by the model. The role playing and modeled performance are based on actual incidents in the employment setting in which the trainee needs to demonstrate success. Well-prepared behavior modeling training programs identify the key behaviors, create the modeling display, provide opportunities for practice, and facilitate transfer of training.

The first step in developing behavior modeling training programs is to determine :

(1) the tasks that are not being adequately performed due to lack of skill or behavior and

(2) the key behaviors that are required to perform the task. A key behavior is one of a set of behaviors that are necessary to complete a task. In behavior modeling, key behaviors are typically performed in a specific order for the task to be completed.

Key behaviors are identified through a study of the skills and behaviors necessary to complete the task and the skills or behaviors used by employees who are effective in completing the task.

Another important consideration in developing behavior modeling programs is the modeling display. The modeling display provides the key behaviors that the trainees will practice to develop the same set of behaviors. Videotape is the predominant method used to present modeling displays, although computerized modeling displays are also being used. Effective modeling displays have six characteristics:

1. The display clearly presents the key behaviors. The music and the characteristics of the situation shown in the display do not interfere with the trainee seeing and understanding the key behaviors.
2. The model is credible to the trainees.
3. An overview of the key behaviors is presented.
4. Each key behavior is repeated. The trainee is shown the relationship between the behavior of the model and each key behavior.
5. A review of the key behaviors is included.
6. The display presents models engaging in both positive use of key behaviors and negative use (ineffective models not using the key behaviors)

Providing opportunities for practice involves:

- (1) having trainees cognitively rehearse and think about the key behaviors
- (2) placing trainees in situations (such as role plays) in which they have to use the key behaviors.

Trainees may interact with one other person in the role play or in groups of three or more in which each trainee can practice the key behaviors. The most effective practice session allows trainees to practice the behaviors multiple times, in a small group of trainees where anxiety or evaluation apprehension is reduced, with other trainees who understand the company and the job. Practice sessions should include a method for providing trainees with feedback. This feedback should provide reinforcement to the trainee for behaviors performed correctly as well as information needed to improve behaviors. For example, if role plays are used trainees can receive feedback from the other participants who serve as observers when not playing the role. Practice sessions may also be videotaped and played back to the trainees. The use of video objectively captures the trainees' behavior and provides useful, detailed feedback. Having the trainees view the video shows them specifically how they need to improve their behaviors and identifies behaviors they are successfully replicating. Behavior modeling helps ensure that transfer of training occurs by using application planning. Application planning prepares trainees to use the key behaviors on the job (i.e., enhances transfer of training). Application planning involves having all participants prepare a written document identifying specific situations in which they should use the key behaviors. Some training programs actually have trainees complete a "contract" outlining the key behaviors they agree to use on the job. The trainer may follow up with the trainees to see if they are performing according to the contract. Application planning may also involve preparing trainees to deal with situational factors that may inhibit their use of the key behaviors. As part of the application planning process, a trainee may be paired with another participant, with the stated expectation that the two should periodically communicate with each other to discuss successes and failures in the use of key behaviors.

12. Action Learning

Action learning gives teams or work groups an actual problem, has them work on solving it and committing to an action plan, and then holds them accountable for carrying out the plan.⁶⁸

Companies use action learning to solve important problems, develop leaders, quickly build high-performance teams, and transform the organizational culture. Several types of problems are addressed in action learning, including how to change the business, better utilize technology, remove barriers between the customer and company, and develop global leaders. Typically, action learning involves between 6 and 30 employees. It may also include customers and vendors. There are several variations in the composition of the group. One variation is that the group includes a single customer for the problem being dealt with. Sometimes the groups include cross-functional representatives who all have a stake in the problem. For example, Novartis, a company that has business in pharmaceuticals (such as Sandoz) and in consumer and animal health care, uses action learning to work on issues such as marketing that are important to all of the company's core businesses. Or the group may involve employees from multiple functions who all focus on their own functional problems, each contributing to solving the problems identified. Employees are asked to develop novel ideas and solutions in a short period of time. The teams usually need to gather data for problem solving by visiting customers, employees, academics, and/or industry leaders. Once the teams have gathered data and developed their recommendations they are required to present them to top-level executives.

13. Six Sigma and Black Belt Training

Six Sigma and black belt training programs involve principles of action learning. Six Sigma provides employees with measurement and statistical tools to help reduce defects and to cut costs. Six Sigma is a quality standard with a goal of only defects per million processes. Six Sigma was born at Motorola. It has saved the company an estimated \$15 billion since the early 1990s. There are several levels of Six Sigma training, resulting in employees becoming certified as green belts, champions, or black belts. To become black belts, trainees must participate in workshops and written assignments coached by expert instructors. The training involves four 4-day sessions over about 16 weeks. Between training sessions, candidates apply what they learn to assigned projects and then use them in the next training session. Trainees are also required to complete not only oral and written exams but also two or more projects that have a significant impact on the company's bottom line. After completing black belt training, employees are able to develop, coach, and lead Six Sigma teams; mentor and advise management on determining Six Sigma projects; and provide Six Sigma tools and statistical methods to team members. After black belts lead several project teams, they can take additional training and be certified as master black belts. Master black belts can teach other black belts and help senior managers integrate Six Sigma into the company's business goal.

Although action learning has not been formally evaluated, the process appears to maximize learning and transfer of training because it involves real-time problems that employees are facing. Also, action learning can be useful for identifying dysfunctional team dynamics that can get in the way of effective problem solving. Action learning at General Electric has required employees to use and apply skills to team building, problem solving, change management, conflict resolution, communications, coaching, and facilitation.

14. Internship

Internship is one of the on-the-job training methods. Individuals entering industry in skilled trades like machinist, electrician and laboratory technician are provided with thorough instruction through theoretical and practical aspects. For example, TISCO, TELCO and BHEL select the candidates from polytechnics, engineering colleges and management institutions and provide apprenticeship training. Apprenticeship training programmes are jointly sponsored by colleges, universities and industrial organisations to provide the opportunity to the students to gain real-life experience as well as employment. Exhibit presents the benefits of apprenticeship training.

Most of the Universities and Colleges encourage students for internship as part of the curriculum as it is beneficial to all concerned.

15. Job instruction Technique: This method is very popular in the States for preparing supervisors to train operatives. The JIT method requires skilled trainers, extensive job analysis, training schedules, and prior assessment of the trainee's job knowledge. This method is also known as "training through step-by-step learning." It involves listing all necessary steps in the job, each in proper sequence. Job Instruction Technique (JIT) uses a strategy with focus on knowledge (factual and procedural), skills and attitudes development. Job Instruction Technique consists of four steps:

- Plan-** This step includes a written breakdown of the work to be done because the trainer and the trainee must understand that documentation is most and important for the familiarity of work. A trainer who is aware of the work well is likely to do many things and in the process might miss few things. Therefore, a structured analysis and proper documentation ensures that all the points are covered in the training program. The second step is to find out what the trainee knows and what training should focus on. Then, the next step is to create a comfortable atmosphere for the trainees' proper orientation program, availing the resources, familiarizing trainee with the training program, etc.
- Present-** In this step, trainer provides the synopsis of the job while presenting the different aspects of the work. When the trainer finishes, the trainee demonstrates the procedure while emphasizing the key points and safety instructions.
- Trial-** This step actually a kind of rehearsal step, in which trainee tries to perform the work and the trainer is able to provide instant feedback. In this step, the focus is on improving the method of instruction because a trainer considers that any error if occurring may be a function of training not the trainee. This step allows the trainee to see the after effects of using an incorrect method. The trainer helps the trainee by questioning and guiding to identify the correct procedure.
- Follow-up-** In this step, the trainer checks the trainee's job frequently after the training program is over to prevent bad work habits from developing.

(c) **Vestibule Training (or Training-Centre Training):** This method attempts to duplicate on-the-job situations in a company classroom. It is a classroom training which is often imparted with the help of the equipment and machines which are identical with those in use in the place of work. This technique enables the trainee to concentrate on learning the new skill rather than on performing an actual job.

Theoretical training is given in the classroom, while the practical work is conducted on the production line. Training is generally given in the form of lectures, conferences, case studies, role playing and discussion.

16. Demonstration and Examples (or Learning By Seeing): In the demonstration method, the trainer describes and displays something, as when he teaches an employee how to do something by actually performing the activity himself and by going through a step-by-step explanation of “why” and “what” he is doing. Demonstrations are very effective in teaching because it is much easier to show a person how to do a job than to tell him or ask him to gather instructions from the reading material. Demonstrations are often used in combination with lectures, pictures, text, materials, discussions, etc. Teaching by example is effective in mechanical operations or interpersonal relationships, for job duties and responsibilities, for informal group standards, supervisory expectations, and the like. (e) Simulation: Simulation is a technique which duplicates, as nearly as possible, the actual conditions encountered on a job. The vestibule training method or the businessgame methods are examples of business simulation. Simulation techniques have been most widely used in the aeronautical industry’s Trainee interest and employee motivation are both high in simulation exercise because the actions of a trainee closely duplicate real job conditions. This training is essential in cases in which actual on-the-job practice might result in a serious inquiry, a costly error, or the destruction of valuable materials or resources. It is for this reason that the technique is a very expensive one. (f) Apprenticeship Training: For training in crafts, apprenticeship training is the oldest and most commonly used method, especially when proficiency in a job is the result of a relatively long training period of 2 years to 3 years for persons of superior ability and from 4 years to 5 years for other. The field in which apprenticeship training is offered are numerous and range from the job of a draughtsman, a machinist, a printer, a tool-maker, a pattern designer, a mechanic, carpenters, weavers, fitters, jewelers, diesinkers, engravers, and electricians. A major part of training time is spent on-the-job productive work. Each apprentice is given a programmed of assignments according to a pre-determined schedule, which provides for efficient training in trade skills

Advantages of On-the-Job Training:

- It is directly in the context of job
- It is often informal
- It is most effective because it is learning by experience
- It is least expensive
- Trainees are highly motivated
- It is free from artificial classroom situations

Disadvantages of On-the-Job Training:

- Trainer may not be experienced enough to train or he may not be so inclined.

- It is not systematically organized
- Poorly conducted programs may create safety hazards.

TECHNOLOGY'S INFLUENCE ON TRAINING AND LEARNING

New technologies have made it possible to reduce the costs associated with delivering training to employees, to increase the effectiveness of the learning environment, and to help training contribute to business goals. New training delivery and instructional methods include online learning (also called e-learning), distance learning, simulations, virtual reality, expert systems, electronic support systems, and learning management systems. New technologies have influenced the delivery of training, training administration, and training support.

Technology has made several benefits possible:

- Employees can gain control over when and where they receive training.
- Employees can access knowledge and expert systems on an as-needed basis.
- Through the use of avatars, virtual reality, and simulations, the learning environment can look, feel, and sound just like the work environment.
- Employees can choose the type of media (print, sound, video) they want to use in a training program.
- Course enrollment, testing, and training records can be handled electronically, reducing the paperwork and time needed for administrative activities.
- Employees' accomplishments during training can be monitored.
- Traditional training methods such as classroom instruction and behavior modeling can be delivered to trainees rather than requiring them to come to a central training location.

Technology and Collaboration Technology allows digital collaboration to occur. Digital collaboration is the use of technology to enhance and extend employees' abilities to work together regardless of their geographic proximity. Digital collaboration includes electronic messaging systems, electronic meeting systems, online communities of learning organized by subject where employees can access interactive discussion areas and share training content and Web links, and document-handling systems with collaboration technologies that allow interpersonal interaction.

Digital collaboration requires a computer, but collaborative applications for handheld devices and personal digital assistants are becoming available that will allow employees to collaborate anytime or anywhere. Digital collaboration can be synchronous or asynchronous. In synchronous communication, trainers, experts, and learners interact with each other live and in real time the same way they would in face-to-face classroom instruction. Technologies such as video conferencing and live online courses (virtual classrooms) make synchronous communication possible. Asynchronous communication refers to non-real-time interactions. That is, persons are not online and cannot communicate with each other without a time delay, but learners can still

access information resources when they desire them. E-mail, self-paced courses on the Web or on CD-ROM, discussion groups, and virtual libraries allow asynchronous communication.

TECHNOLOGY AND LEARNING ENVIRONMENT

The Internet is primarily responsible for creating our revolution in learning. Internet technology has permitted the development of electronic networks that integrate voice, video, and data connections among learners, instructors, and experts. Traditionally, the learning environment included only the instructor or trainer and the learners. The trainer was responsible for delivering content, answering questions, and testing learning. Trainees played a passive role in learning. Communication on course content was one-way: from the instructor to the learner. Experts and resource materials were separate from the learning environment. Contact with resource materials and experts beyond the instructor and course materials assigned for the course required learners to go outside the formal learning environment. Also, learners had to wait to access resource materials and experts until instruction was completed. Interaction among learners occurred primarily outside the training room and tended to be limited to those who worked in the same geographic area. Technology has allowed learning to become a more dynamic process.

The trainer may help design the instruction, but the instruction is primarily delivered to the learners through technology such as online learning, simulations, or iPods. The instructor becomes more of a coach and resource person to answer students' questions and is less involved in delivery of training content. Learning occurs primarily through communicating with other learners, working on virtual team projects, participating in games, listening, exchanging ideas, interacting with experts (engineers, managers, etc.), and discovering ideas and applications using hyperlinks that take the learner to other Web sites. Experts and resource materials may be part of the learning environment. While learners interact with the training content through exercises, applications, and simulations, they can discuss what they are learning with other learners or access experts or resource materials available on the Internet. Training delivery and administration (e.g., tracking learner progress) is all done by the computer.

In the blended learning environment, shown at the bottom of Figure 8.1, trainees have access to a blended training curriculum that consists of both online and classroom instruction. Collaboration can occur between learners, between learners and instructors, and between learners and experts. Although new technologies allow for the creation of a dynamic learning environment, it is important to include collaboration, active learner involvement, and access to other resources in the design and development of the training program. Use of new technology requires building these capabilities into the training program. For example, Web 2.0 refers to user-created social networking features on the Internet, including blogs, wikis, and Twitter.⁹ Qualcomm's initiative, Learning 2.0, involves the use of Web 2.0 technologies such as social bookmarking/tagging, blogs, and tools similar to those found on Facebook and YouTube to build relationships between trainees and between trainees and training content. Technology has enabled training to be delivered to different geographical locations, to accompany trainees whether they are at work or at home (mobile technology), and to be completed online using a personal computer. Many of the training methods discussed in this chapter have these features. For example, online learning, or e-learning, includes instruction and delivery of training using the Internet or Web. Distance learning typically

involves videoconferencing and/or computers for delivery of instruction from a trainer to trainees who are not in the same location as the trainer. Mobile technologies allow training to be delivered through iPods, personal data assistants (PDAs), and handheld computers that allow trainees to tune in to training programs at any time or place. Web-based training and e-learning support virtual reality, animation, interactions, communications among trainees and real-time audio and video. As Figure 8.2 shows, there are six levels of technology-based training. The difference between the highest and lowest levels is that at the higher levels, technology methods allow learning to become more job-related and directly meet a business need. For example, employees can access expert systems while they work. The simplest level facilitates communications among trainers and trainees. More complex uses of technology involve the actual delivery of training, and trainees are very actively involved in learning. Sound, automation, and video are used in Web-based training. In addition, trainees are linked to other resources on the Web. They are also required to share information with other trainees and to deposit knowledge and their insights from the training (such as potential applications of the training content) into a database that is accessible to other company employees. At the highest level—electronic performance support systems—employees receive training on an as-needed basis while they perform their jobs.

TECHNOLOGY AND MULTIMEDIA

Technology developments allow the use of a number of different media for training. Multimedia training combines audiovisual training methods with computer-based training. Multimedia training methods include computer-based training, CD-ROM, e-interactive video, the Internet, video, virtual reality, and simulations. Multimedia training integrates text, graphics, animation, video, and audio, and often the trainee can interact with the content.

COMPUTER-BASED TRAINING

Computer-based training (CBT) is an interactive training experience in which the computer provides the learning stimulus, the trainee must respond, and the computer analyzes the responses and provides feedback to the trainee. CBT includes interactive video, CD-ROM, and other systems when they are computer-driven. The most common CBT programs consist of software on a floppy disk that runs on a personal computer. CBT, one of the first new technologies to be used in training, has become more sophisticated with the development of laser disks, DVDs, and CD-ROMs and with increasing use of the Internet. These technologies allow greater use of video and audio than do technologies that rely solely on the computer.

Computer-based training can also involve simulations. For example, during training needs assessment, Bayer Pharmaceuticals discovered that its technical experts needed new skills to manage large projects.¹⁷ These skills related to keeping project managers focused on the task, managing competing priorities, managing large cross-functional teams, and supervising employees who did not report to them. These skills are important to reduce the time needed to bring research discoveries to the marketplace. To train in these skills, Bayer used a computer-based simulation that requires teams of trainees to manage a large-scale project. The management decisions they make impact their odds of being successful. A computer calculates each team's probability of succeeding. The simulation includes obstacles that can negatively impact a project such as

unmotivated employees, absenteeism, and projects being completed late. The simulation also includes online work that trainees complete prior to training. The prework provides trainees with an overview of the steps involved in project management. All trainees complete a self-assessment of their team-related behavior (e.g., conflict resolution). The assessments are used for discussing leader/team-member relationships. After completing the simulation, trainees can access a program Web site that includes a newsletter and tips for project management. Employees who have completed the simulation are demonstrating increased confidence in their ability to manage a project and to handle changing priorities, and they are addressing team issues more quickly.

ONLINE LEARNING:

The Internet, Web-Based Training, E-Learning, and Learning Portals The Internet is a widely used tool for communications, a method for sending and receiving communications quickly and inexpensively, and a way to locate and gather resources such as software and reports. To gain access to the Internet, you need a personal computer with a direct connection via an existing network or a modem to dial into the Internet. Educational institutions, government agencies, and commercial service providers such as Microsoft and America Online provide access to the Internet. Employees can communicate with managers nearby or across the globe, can leave messages or documents, and can gain access to “rooms” designated for conversation on certain topics (the Americans with Disabilities Act, for example). Various newsgroups, bulletin boards, and discussion groups are dedicated to areas of interest. There you can read, post, and respond to messages and articles. Internet sites can have home pages—mailboxes that identify the person or company and contain text, images, sounds, or even video. The World Wide Web (WWW) is a user-friendly service on the Internet. The Web provides browser software (e.g., Microsoft Internet Explorer, Netscape) that enables you to explore the Web. Besides browser software, you also need a search engine (e.g., Yahoo, Google) to find information on topics of your choice. Every home page on the Web has a uniform resource locator (URL), or Web address. The Internet is a valuable source of information on a wide range of topics. The inside of the front cover of this book provides Internet and Web site addresses related to training topics. For example, one manager at Hydro Quebec, a large Canadian utility, used the Internet to research topics related to TQM and business process reengineering. When the company wanted information on diversity and women’s issues, the manager logged onto a Cornell University Web site and quickly downloaded two dozen reports on the topic. When the company needed to develop a satisfaction survey, the manager used the Internet to identify similar-sized companies that had conducted comprehensive surveys. Within one day. .Online learning, or e-learning, refers to instruction and delivery of training by computer online through the Internet or the Web. Online learning includes Web-based training, distance learning, and virtual classrooms; it may involve a CD-ROM. Online learning can include task-based support, simulation-based training, distance learning, and learning portals. There are three important characteristics of online learning. First, online learning involves electronic networks that enable information and instruction to be delivered, shared, and updated instantly. Second, online learning is delivered to the trainee using computers with Internet technology. Third, it focuses on learning solutions that go beyond traditional training by including the delivery of information and tools that improve performance. Internet-based, or Web-based, training refers to training that is delivered on public or private computer networks and displayed by a Web browser.²⁶ Intranet-

based training refers to training that uses the company's own computer network. The training programs are accessible only to the company's employees, not to the general public. Both Internet-based and intranet-based training are stored in a computer and accessed using a computer network. The two types of training use similar technologies. The major difference is that access to the intranet is restricted to a company's employees.

Potential Features of Online

Learning In online learning it is possible to enable learners to interact with the training content and other learners and to decide how they want to learn.²⁸ Figure 8.3 shows the possible features that can be built into online learning. These features include content, collaboration and sharing, links to resources, learner control, delivery, and administration. It is important to note that not all these features are incorporated into online learning methods. One reason is that certain methods make it difficult to incorporate some of these features. For example, as you will see later in the chapter, distance learning that involves teleconferencing may limit the amount of collaboration between trainees and the instructor. Also, in distance learning, trainees do not have control over the content, practice, and speed of learning. Another reason why a feature may not be incorporated is that the designers may have chosen not to include it. Although e-learning can include all the features to facilitate learning that are shown in Figure 8.3, it may fall short of its potential because, for example, program developers do not include opportunities for trainees to collaborate. As Figure 8.3 shows, not only can online learning provide the trainee with content, but it also can give learners the ability to control what they learn, the speed at which they progress through the program, how much they practice, and even when they learn. In addition, online learning can allow learners to collaborate or interact with other trainees and experts and can provide links to other learning resources such as reference materials, company Web sites, and other training programs. Text, video, graphics, and sound can be used to present course content. Online learning may also include various aspects of training administration such as course enrollment, testing and evaluating trainees, and monitoring of trainees' learning progress.

Advantages of Online Learning

The possible features that can be built into online learning give it potential advantages over other training methods. The advantages of e-learning are shown in Table 8.3. E-learning initiatives are designed to contribute to a company's strategic business objectives.²⁹ E-learning supports company initiatives such as expanding the number of customers, initiating new ways to carry out business such as e-business, and speeding the development of new products or services. E-learning may involve a larger audience than traditional training programs that focus on employees. E-learning may involve partners, suppliers, vendors, and potential customers. For example, Lucent Technologies, which designs and delivers communications network technologies, has devoted significant resources to ensure that customers and business partners have access to e-learning.³⁰ Training affects customer satisfaction with Lucent's products and solutions. It also influences employees' ability to sell to and service customers. Product training courses that deal with installing, repairing, and operating Lucent equipment are available to customers on the company's Web site. Users can take the courses, register and pay for the classes, and track their progress.

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