CHAPTER FOUR

Learning: theories and program design

LEARNING OBJECTIVES

After reading this chapter, you should be able to:

1. Discuss the five types of learner outcomes
2. Explain the implications of learning theory for instructional design
3. Incorporate adult learning theory into the design of a training program
4. Describe how learners receive, process, store, retrieve and act upon information
5. Discuss the internal conditions (within the learner) and external conditions (the learning environment) necessary for the trainee to learn each type of capability
6. Be able to choose and prepare a training site
7. Explain the three components of program design: course parameters, objectives and a detailed training session plan.

Supportive learning environments enhance training

A useful model against which to examine learning theories and program design is offered by New Zealand's Road Infrastructure Management Steering Group project. This project aimed to implement a nationwide Pavement Management System using a computer software application called dTIMS (Deighton's Total Infrastructure Management System). A key aspect of this project was an assessment of training needs and of the training methods necessary to optimise learning, to underpin the framework of a training program. As part of the lead-up work, a survey of those attending the seminars marking the inception of the project brought to light significant variation in the training needs of different management levels. As a consequence, different objectives, methods and related training content were devised for people at the policy, management and operational levels. Pilot training courses were developed initially and delivered at four different sites around New Zealand, enabling the materials and presentation methods to be progressively refined, based on questionnaires completed by participants in each pilot. For example, at the policy level, more was required on the general principles of asset management and less on technical detail. Other courses were regarded as needing more practical illustrations, while still others were considered as requiring a guide along the lines of a 'dTIMS for Dummies'. Feedback from the pilot training courses and from a subsequent technical workshop facilitated the design of the eventual training courses, which were structured in incremental levels for each group of participants. The design was such that participants were able to interrupt their advancement by spending periods in their workplaces, enhancing their understanding of the training material with practical experience.

In another example, Ernst & Young, a global accounting and consulting firm with offices in all major cities in Australia and New Zealand, promote what they consider to be a unique aspect of working with them—the combination of guiding and encouraging staff to develop their own direction, yielding many learning opportunities. New staff in the member firms of Ernst & Young work on a development plan that details technical training in knowledge or skills required in the course of their daily work (in areas such as the firm's audit methodology, new accounting standards, financial modelling and risk management), as well as personal development learning (focusing on such skills as leadership, coaching, mentoring, communication and negotiation) designed to help the new staff perform in their jobs.

A performance coach works with each new member of staff to create the training plan best suited to them, which the staff member is able to revise every year. Some of the learning is created and delivered within the firm in traditional classroom settings, while some training and development courses are run by external specialists. Ernst & Young also offers web-based courses, enabling staff to learn new skills or 'top up' their current skills, even when they're working out of the office. The Ernst & Young programs stress learning on the job alongside talented, experienced people, on the premise that this is among the most powerful development opportunities available, particularly when there is the right level of feedback.[1]

INTRODUCTION

Although they use different methods, the purpose of the training at each of the organisations described above is to help employees learn so they can successfully perform their jobs. Regardless of the training method, certain conditions must be present for learning to occur. These include (1) providing opportunities for trainees to practise and receive feedback, (2) offering meaningful training content, (3) identifying any prerequisites that trainees need to successfully complete the program and (4) allowing trainees to learn through observation and experience. To illustrate some of these conditions, in the New Zealand road infrastructure project, participants were able to enhance their understanding of the training material through practical workplace experience, while at Ernst & Young, feedback from performance coaches was provided, together with learning on the job with experienced people providing further feedback. The meaningfulness of training content is enhanced in the New Zealand road infrastructure project by differentiating the training materials to the three target levels of system users. At Ernst & Young, the technical learning (training) was complementary to the personal learning (development).

For learning to occur it is important to identify *what* is to be learnt—that is, to identify learning outcomes. Learning outcomes should be related to what is required to successfully perform the job. As the examples above highlight, this may include effectively managing road infrastructure or providing quality accounting and financial consulting services. As a student you are probably most familiar with one type of learning outcome: intellectual skills. However, training programs often focus on other outcomes such as motor skills (such as those required by teams working on road infrastructure) and attitudes. Understanding learning outcomes is crucial because they influence the characteristics of the training environment that are necessary for learning to occur. For example, if trainees are to master the motor skills required for repairing roads, they must have opportunities to practise doing so and to receive feedback about their skills.

The design of the training program is also important for learning to occur. This includes creating the program schedule, providing a physically comfortable training environment and arranging the seating in the training environment to facilitate interaction among trainees and between trainer and trainees.

This chapter begins by defining learning and acquainting you with the different learning outcomes. Next is a discussion of various theories of learning and their implications for creating a learning environment designed to help the trainee learn the desired outcomes. The last section of the chapter looks at practical issues in training program design, including selecting and preparing a training site and developing training session plans.

WHAT IS LEARNING? WHAT IS LEARNT?

Learning is a relatively permanent change in human capabilities that is not a result of growth processes.[2] These capabilities are related to specific learning outcomes, as Table 4.1 shows.

Verbal information includes names or labels, facts and bodies of knowledge. It includes specialised knowledge that employees need in their jobs. For example, a

manager must know the names of different types of equipment as well as the body of knowledge related to Total Quality Management.

TABLE 4.1 Learning outcomes

Type of learning outcome	Description of capability	Example
Verbal information	State, tell or describe previously stored information	State three reasons for following organisation safety procedures
Intellectual skills	Apply generalisable concepts and rules to solve problems and generate novel products	Design and code a computer program that meets customer requirements
Motor skills	Execute a physical action with precision and timing	Shoot a gun and consistently hit a small moving target
Attitudes	Choose a personal course of action	Choose to respond to all incoming mail within 24 hours
Cognitive strategies	Manage one's own thinking and learning processes	Selectively use three different strategies to diagnose engine malfunctions

SOURCE: R. Gagne and K. Medsker, *The Conditions of Learning* (New York: Harcourt-Brace, 1996).

Intellectual skills include concepts and rules. These are critical for solving problems, serving customers and creating products. For example, a manager must know the steps in the performance appraisal process (gather data, summarise data, prepare for appraisal interview with employee and so on) in order to conduct an employee appraisal.

Motor skills include coordination of physical movements. For example, a telephone repair person must have the coordination and dexterity necessary to climb ladders and telephone poles.

Attitudes are a combination of beliefs and feelings that predispose a person to behave in a certain way. Attitudes include a cognitive component (beliefs), an affective component (feelings) and an intentional component (the way a person intends to behave with regard to the subject of the attitude). Important work-related attitudes include job satisfaction, commitment to the organisation and job involvement. Suppose you say that an employee has a 'positive attitude' towards their work. This means that they like their job (the affective component). They may like their job because it is challenging and provides an opportunity to meet people (the cognitive component). Because they like their job, they intend to stay with the organisation and do their best at work (the intentional component). Training programs may be used to develop or change attitudes, because attitudes have been shown to be related to physical and mental withdrawal from work, turnover and behaviours that affect the wellbeing of the organisation (such as helping new employees).

Cognitive strategies regulate the processes of learning. They relate to the learner's decision regarding what information to attend to (that is, pay attention to), how to remember and how to solve problems. For example, a physicist might recall the colours of the light spectrum by remembering the name 'Roy G. Biv' (red, orange, yellow, green, blue, indigo, violet).

As this chapter points out, each learning outcome requires a different set of conditions for learning to occur. Before this chapter investigates the learning process in detail, it looks at the theories that help to explain how people learn.

LEARNING THEORIES

Several theories relate to how people learn. Each theory relates to different aspects of the learning process. Many of the theories also relate to trainees' motivation to learn, which was discussed in Chapter 3.

Reinforcement theory

Reinforcement theory emphasises that people are motivated to perform or avoid certain behaviours because of past outcomes that have resulted from those behaviours.[3] There are several processes included in reinforcement theory. Positive reinforcement is a pleasurable outcome resulting from a behaviour. Negative reinforcement is the removal of an unpleasant outcome. For example, consider a machine that makes screeching and grinding noises unless the operator holds levers in a certain position. The operator will learn to hold the levers in that position to avoid the noises. The process of withdrawing positive or negative reinforcers to eliminate a behaviour is known as extinction. Punishment is presenting an unpleasant outcome after a behaviour, leading to a decrease in that behaviour. For example, if a manager yells at employees when they are late, they may avoid the yelling by being on time (but they may also call in sick, quit or trick the boss into not noticing when they arrive late).

From a training perspective, reinforcement theory suggests that for learners to acquire knowledge, change behaviour or modify skills, the trainer needs to identify what outcomes the learner finds most positive (and negative). Trainers then need to link these outcomes to learners' acquiring knowledge or skills or changing behaviours. As was mentioned in Chapter 3, learners can obtain several types of benefits from participating in training programs. The benefits may include learning an easier or more interesting way to perform their job (job-related), meeting other employees who can serve as resources when problems occur (personal) or increasing opportunities to consider new positions in the organisation (career-related). According to reinforcement theory, trainers can withhold or provide these benefits to learners who master program content. The effectiveness of learning depends on the pattern or schedule for providing these reinforcers or benefits. Schedules of reinforcement are shown in Table 4.2.

Behaviour modification is a training method that is primarily based on reinforcement theory. For example, a training program in a bakery focused on eliminating unsafe behaviours, such as climbing over conveyor belts rather than walking around them and sticking hands into equipment to dislodge jammed materials without turning off the equipment.[4] Employees were shown slides depicting safe and unsafe work behaviours. After viewing the slides, employees were shown a graph of the number of times safe behaviours had been observed during past weeks. Employees were encouraged to increase the number of safe behaviours they demonstrated on the job. They were given several reasons for doing so: for their own protection, to decrease costs for the organisation and to help their plant get out of last place in the safety rankings of the organisation's plants. Immediately after the training, safety reminders were posted in

TABLE 4.2 Schedules of reinforcement

Type of schedule	Description	Effectiveness
Ratio schedules		
Fixed-ratio schedule	Reinforcement whenever target behaviour has taken place a given number of times	Rapid learning; frequent instances of target behaviour; rapid extinction
Continuous reinforcement	Reinforcement after each occurrence of target behaviour	Same direction of behaviour as with fixed-ratio schedules but more extreme
Variable-ratio schedule	Reinforcement after several occurrences of target behaviour; number of occurrences before reinforcement may differ each time	Target behaviour less susceptible to extinction than with fixed-ratio schedules
Interval schedules		
Fixed-interval schedule	Reinforcement at a given time interval after performance of target behaviour	Lower performance of target behaviour than with ratio schedules; lower effectiveness if time interval is long
Variable-interval schedule	Reinforcement occurring periodically after performance of target behaviour; time intervals may differ each time	Target behaviour less susceptible to extinction than with fixed-interval schedules; lower performance of target behaviour than with ratio schedules

SOURCE: P. Wright and R. A. Noe, *Management of Organisations* (Burr Ridge, IL: Irwin/McGraw-Hill, 1996).

employees' work areas. Also, after training, data about the number of safe behaviours performed by employees continued to be collected and displayed on the graph in the work area. Employees' supervisors were also instructed to recognise the workers whenever they saw them perform a safe work behaviour. In this example, the data of safe behaviour posted in the work areas and supervisors' recognition of safe work behaviour represent positive reinforcers.

Social learning theory

Social learning theory emphasises that people learn by observing other people (models) whom they believe are credible and knowledgeable.[5] Social learning theory also recognises that behaviour that is reinforced or rewarded tends to be repeated. The models' behaviour or skill that is rewarded is adopted by the observer. According to social learning theory, learning new skills or behaviours comes from (1) directly experiencing the consequences of using that behaviour or skill, or (2) the process of observing others and seeing the consequences of their behaviour.[6]

According to social learning theory, learning is also influenced by a person's self-efficacy. **Self-efficacy** is a person's judgement about whether he or she can successfully

learn knowledge and skills. Chapter 3 emphasises self-efficacy as an important factor to consider in the person analysis phase of needs assessment. Why? Self-efficacy is one determinant of readiness to learn. A trainee with high self-efficacy will put forth effort to learn in a training program and is most likely to persist in learning even if an environment is not conducive to learning (for example, in a noisy training room). In contrast, a person with low self-efficacy will have self-doubts about mastering the content of a training program and is more likely to withdraw psychologically and/or physically (to daydream or fail to attend the program). These people believe that they are unable to learn, and regardless of their effort level, they will be unable to learn.

A person's self-efficacy can be increased using several methods: verbal persuasion, logical verification, observation of others (modelling) and/or past accomplishments.[7] **Verbal persuasion** means offering words of encouragement to convince others they can learn. *Logical verification* involves perceiving a relationship between a new task and a task already mastered. Trainers and managers can remind employees when they encounter learning difficulties that they have been successful at learning similar tasks. **Modelling** involves having employees who have already mastered the learning outcomes demonstrate them for trainees. As a result, the trainees are likely to be motivated by the confidence and success of their successful peers. Past accomplishments refers to allowing employees to build a history of successful accomplishments. Managers can place employees in situations where they are likely to succeed and provide training so that employees know what to do and how to do it.

Social learning theory suggests that four processes are involved in learning: attention, retention, motor reproduction and motivational processes (see Figure 4.1).

Attention suggests that people cannot learn by observation unless they are aware of the important aspects of a model's performance. Attention is influenced by characteristics of the model and the learner. Learners must be aware of the skills or behaviour they are supposed to observe. The model must be clearly identified and credible. The learner must have the physical capability (sensory capability) to observe the model. Also, a learner who has successfully learnt other skills or behaviour by observing the model is more likely to attend to the model.

Learners must remember the behaviours or skills that they observe. This is the role of *retention*. Learners have to code the observed behaviour and skills in memory in an organised manner so they can recall them for the appropriate situation. Behaviours or skills can be coded as visual images (symbols) or verbal statements.

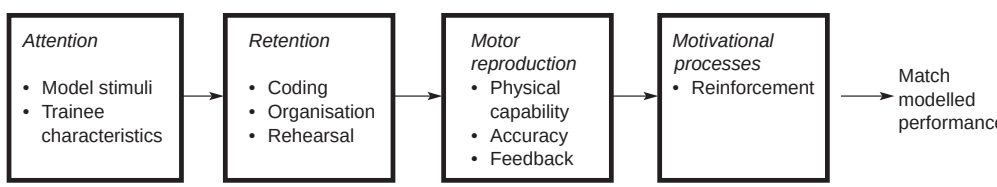

FIGURE 4.1 Processes of social learning theory

SOURCE: Based on A. Bandura, *Social Foundations of Thoughts and Actions* (Englewood Cliffs, NJ: Prentice Hall, 1986); P. Taylor, D. Russ-Eft and D. Chan, 'A Meta-analytic Review of Behavior Modeling Training', *Journal of Applied Psychology* 90 (2005): 692–709.

Motor reproduction involves trying out the observed behaviours to see whether they result in the same reinforcement that the model received. The ability to reproduce the behaviours or skills depends on the extent to which the learner can recall the skills or behaviour. The learner must also have the physical capability to perform the behaviour or exhibit the skill. For example, a firefighter can learn the behaviours necessary to carry a person away from a dangerous situation, but may be unable to demonstrate the behaviour because of a lack of upper body strength. Note that performance of behaviour is usually not perfect on the first attempt. Learners must have the opportunity to practise and receive feedback to modify their behaviour to be similar to the model's behaviour.

Learners are more likely to adopt a modelled behaviour if it results in positive outcomes. Social learning theory emphasises that behaviours that are reinforced (a *motivational process*) will be repeated in the future. For example, a major source of conflict and stress for managers often relates to the performance appraisal interview. A manager may, through observing successful managers, learn behaviours that allow employees to be more participative in a performance appraisal interview (for example, giving employees the opportunity to voice their concerns). If the manager then uses this behaviour in the performance appraisal interview and the behaviour is rewarded by employees (for example, if they make comments such as 'I really felt the feedback meeting was the best we have ever had') or the new behaviour leads to reduced conflicts with employees (negative reinforcement), the manager will be more likely to use this behaviour in subsequent appraisal interviews.

As you will see in the discussion of training methods in Chapters 7 and 8, social learning theory is the primary basis for behaviour modelling training and has influenced the development of multimedia training programs. For example, in a training program called 'Getting Your Ideas Across', trainees are first presented with the five key behaviours for getting their ideas across: (1) state the point and purpose of the message, (2) present points to aid understanding, (3) check the audience for reactions and understanding, (4) handle reactions from the audience to what was presented and (5) summarise the main point. The trainer provides a rationale for each key behaviour. Next, trainees view a video of a business meeting in which a manager is having difficulty getting subordinates to accept his ideas regarding how to manage an impending office move. The manager, who is the model, is ineffective in getting his ideas across to his subordinates. As a result, the video shows that the subordinates are dissatisfied with the manager and his ideas. The video is turned off and the trainer leads the trainees in a discussion of what the manager did wrong in trying to get his ideas across. Trainees again view the video. But this time the manager, in the same situation, is shown using the key behaviours. As a result, subordinates react quite positively to their boss (the model). Following this video segment, the trainer leads a discussion of how the model used the key behaviours to successfully get his ideas across.

After observing the model and discussing the key behaviours, each trainee is paired with another trainee for practice. Each group is given a situation and message to communicate. The trainees take turns trying to get their ideas across to each other using the key behaviours. Each trainee is expected to provide feedback regarding the partner's use of the key behaviours. The trainer also observes and provides feedback to each group. Before leaving training, the trainees are given a pocket-sized card with the key behaviours, which they take back with them to the job. They also complete a planning guide in which they describe a situation where they want to use the key behaviours and how they plan to use them.

Goal theories

Goal-setting theory

Goal-setting theory assumes that behaviour results from a person's conscious goals and intentions.[8] Goals influence a person's behaviour by directing energy and attention, sustaining effort over time and motivating the person to develop strategies for goal attainment.[9] Research suggests that specific challenging goals result in better performance than vague, unchallenging goals.[10] Goals have been shown to lead to high performance only if people are committed to the goal. Employees are less likely to be committed to a goal if they believe it is too difficult.

An example of how goal-setting theory influences training methods can be seen in a program designed to improve pizza deliverers' driving practices.[11] The majority of pizza deliverers are young (aged 18 to 24), inexperienced drivers, who are compensated based on the number of pizzas they can deliver. This creates a situation in which deliverers are rewarded for fast but unsafe driving practices—for example, not wearing a seatbelt, failing to use the indicator and not coming to a complete stop at intersections. These unsafe practices have resulted in a high driving accident rate.

Prior to goal setting, pizza deliverers were observed by their managers leaving the shop and then returning from deliveries. The managers observed the number of complete stops at intersections over a one-week period. In the training session, managers and trainers presented the deliverers with a series of questions for discussion. Here are some examples: In what situations should you come to a complete stop? What are the reasons for coming to a complete stop? What are the reasons for not coming to a complete stop?

After the discussion, the pizza deliverers were asked to agree on the need to come to a complete stop at intersections. Following the deliverers' agreement, the managers shared the data they had collected regarding the number of complete stops at intersections they had observed the previous week. (Complete stops were made 55 per cent of the time.) The trainer asked the pizza deliverers to set a goal for complete stopping over the next month. They decided on a goal of 75 per cent complete stops.

After the goal-setting session, managers at each shop continued observing their drivers' intersection stops. The following month, a poster was displayed in the work area showing the percentages of complete stops for every four-day period. The current percentage of total complete stops was also displayed.

Goal-setting theory is also used in training program design. Goal-setting theory suggests that learning can be facilitated by providing trainees with specific challenging goals and objectives. Specifically, the influence of goal-setting theory can be seen in the development of training session plans. As explained later in this chapter, these training session plans begin with specific goals providing information regarding the expected action that the learner will demonstrate, conditions under which learning will occur and the level of performance that will be judged acceptable.

Goal orientation

Goal orientation refers to the goals held by a trainee in a learning situation. Goal orientation can include a learning orientation or a performance orientation. Learning

orientation relates to trying to increase ability or competence in a task. People with a learning orientation believe that training success is defined as showing improvement and making progress; they prefer trainers who are more interested in how trainees are learning than in how they are performing; and they view errors and mistakes as part of the learning process. Performance orientation refers to a focus of learners on task performance and how they compare to others. People with a performance orientation define success as high performance relative to others; they value high ability more than learning; and they find that errors and mistakes cause anxiety and want to avoid them.

Goal orientation is believed to affect the amount of effort a trainee will expend in learning (motivation to learn). Learners with a high learning orientation will direct greater attention to the task and learn for the sake of learning, in comparison to learners with a performance orientation. Learners with a performance orientation will direct more attention to performing well and less effort to learning. Research has shown that trainees with a learning orientation exert greater effort to learn and use more complex learning strategies than do trainees with a performance orientation.[12] There are several ways to create a learning orientation in trainees.[13] These include setting goals relating to learning and experimenting with new ways of having trainees perform trained tasks rather than emphasising trained-task performance; de-emphasising competition among trainees; creating a community of learning (discussed later in this chapter); and allowing trainees to make errors and to experiment with new knowledge, skills and behaviours during training.

Need theories

Need theories help to explain the value that a person places on certain outcomes. A need is a deficiency that a person is experiencing at any point in time. A need motivates a person to behave in a manner to satisfy the deficiency. Maslow's and Alderfer's need theories focused on physiological needs, relatedness needs (needs to interact with other people) and growth needs (self-esteem, self-actualisation).[14] Maslow's hierarchy is typically represented as comprising five levels (physiological, safety and security, social, esteem—both self-esteem and the esteem of others—and self-actualisation). These are the 'conative' needs; however, Maslow has described other levels, one of which is particularly relevant to training and development—cognitive needs. These involve the desire to know, to solve mysteries, to understand and to be curious. These cognitive needs have an interdependence with the conative needs; however, they belong to a different dimension. It is important to note that, when cognitive needs are blocked, all other needs are threatened. Knowledge is necessary to satisfy each of the five conative needs. For example, people can gratify their physiological needs by *knowing* how to obtain food, their safety needs by *knowing* how to build or obtain shelter, their social needs by *knowing* how to relate to people, their esteem needs by attaining some *knowledge* and acquiring some level of self-confidence with that knowledge, and their self-actualisation needs by fully using their cognitive potential. The need to know is important in itself, and is not always specifically related to the satisfaction of another need. Both Maslow and Alderfer believed that people start by trying to satisfy needs at the lowest level, then progress up the hierarchy as their lower-level needs are satisfied. That is, if physiological needs are not met, a person's behaviour will focus first on satisfying these needs before their relatedness or growth needs receive attention. The major difference between Alderfer's and Maslow's hierarchies of needs is that

Alderfer allows the possibility that if higher-level needs are not satisfied, employees will refocus on lower-level needs.

McClelland's need theory focused primarily on needs for achievement, affiliation and power.[15] According to McClelland, these needs can be learnt. Need for achievement relates to a concern for attaining and maintaining self-set standards of excellence. Need for affiliation involves concern for building and maintaining relationships with other people and for being accepted by others. The need for power is a concern for obtaining responsibility, influence and reputation.

Need theories suggest that to motivate learning, trainers should identify trainees' needs and communicate how training program content relates to fulfilling these needs. Also, if certain basic needs of trainees (such as physiological and safety needs) are not met, they are unlikely to be motivated to learn. For example, consider a word-processing training class for secretaries in a downsizing organisation. It is doubtful that even the best-designed training class will result in learning if employees believe their job security is threatened (unmet need for security) by the organisation's downsizing strategy. It is also unlikely that the secretaries will be motivated to learn if they believe that the word-processing skills emphasised in the program cannot help them keep their current employment or increase their chances of finding another job inside or outside the organisation.

Another implication of need theory relates to providing employees with a choice of training programs to attend. Giving employees a choice of which training course to attend can increase their motivation to learn. This is because trainees are able to choose programs that best match their needs.

Expectancy theory

Expectancy theory suggests that a person's behaviour is based on three factors: expectancy, instrumentality and valence.[16] Beliefs about the link between trying to perform a behaviour and actually performing well are called **expectancies**. Expectancy is similar to self-efficacy. In expectancy theory, a belief that performing a given behaviour (for example, attending a training program) is associated with a particular outcome (for example, being able to better perform your job) is called **instrumentality**. **Valence** is the value that a person places on an outcome (for example, how important it is to perform better on the job).

According to expectancy theory, various choices of behaviour are evaluated according to their expectancy, instrumentality and valence. Figure 4.2 shows how behaviour is determined, based on finding the mathematical product of expectancy, instrumentality and valence. People choose the behaviour with the highest value.

From a training perspective, expectancy theory suggests that learning is most likely to occur when employees believe they can learn the content of the program (expectancy); learning is linked to outcomes such as better job performance, a salary increase or peer recognition (instrumentality); and employees value these outcomes.

Adult learning theory

Adult learning theory was developed out of a need for a specific theory of how adults learn. Most educational theories as well as formal educational institutions were

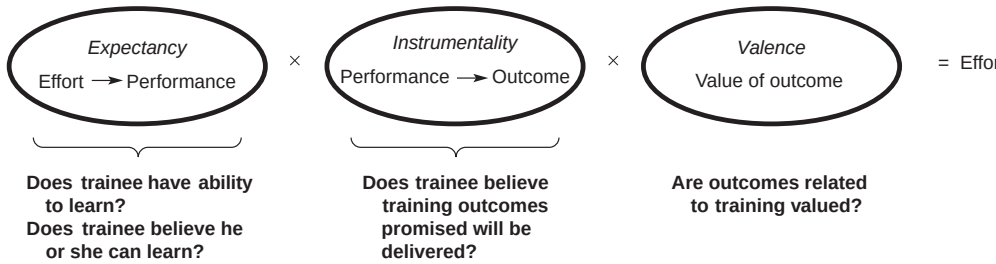

FIGURE 4.2 Expectancy theory of motivation

developed exclusively to educate children and youth. Pedagogy, the art and science of teaching children, dominated educational theory. In the pedagogical model, the instructor has full responsibility for making decisions about *what* will be learnt, *how* it will be learnt and *when* it will be learnt, and for evaluating *whether* the material has been learnt. That is, the instructor has primary responsibility for making decisions about learning content, method and evaluation. Students are generally seen as (1) being passive recipients of directions and content and (2) bringing few experiences that may serve as resources to the learning environment.[17]

In many ways, the pedagogical approach fails to take into account the developmental changes in adults, such as increasing independence and sense of responsibility for their own actions, that accompany maturation, and the manner in which they are frequently motivated to learn—by a genuine desire to solve immediate problems in their own lives. This failure to allow for such changes has the potential, at least, to produce tension, resentment and resistance.

Educational psychologists, recognising the limitations of formal education theories, developed **andragogy**, the theory of adult learning popularised by Malcolm Knowles. This model is based on the following assumptions.[18]

1. Adults need to know why they are learning something.
2. Adults need to be self-directed.
3. Adults bring more work-related experiences into the learning situation.
4. Adults enter into a learning experience with a problem-centred approach to learning.
5. Adults are motivated to learn by both extrinsic and intrinsic motivators.

Adult learning theory is especially important to consider in developing training programs because the audience for many such programs tends to be adults, most of whom have not spent the majority of their time in a formal education setting. Table 4.3 shows the implications of adult learning theory for learning. For example, many adults are intimidated by mathematics and finance.[19] In a day-long seminar to teach basic accounting principles, the course designers considered the trainees' readiness. They created a program, filled with fun and music, in which participants start their own lemonade stand. This reduced trainees' anxiety, which could have inhibited their learning. Many adults believe that they learn through experience. As a result, trainers need to provide opportunities for trainees to experience something new and discuss it or review training materials based on their experiences.

Note that a common theme in these applications is mutuality. That is, the learner and the trainer are both involved in creating the learning experience and making sure that learning occurs.

TABLE 4.3 Implications of adult learning theory for training

Design issue	Implications
Self-concept	Mutual planning and collaboration in instruction
Experience	Use learner experience as basis for examples and applications
Readiness	Develop instruction based on the learner's interests and competencies
Time perspective	Immediate application of content
Orientation to learning	Problem-centred rather than subject-centred

SOURCE: Based on M. Knowles, *The Adult Learner,* 4th edn (Houston, Texas: Gulf Publishing, 1990).

Perhaps Knowles' most useful contribution lies in his contention that:

> andragogy is simply another model of assumptions about adult learners to be used *alongside* the pedagogical model of assumptions, thereby providing two alternative models for testing out the assumptions as to their 'fit' with particular situations. Furthermore, the models are probably most useful when seen not as dichotomous but rather as two ends of a spectrum, with a realistic assumption (about learners) in a given situation falling in between the two ends.[20]

From this standpoint, the trainer should assess each adult learner in order to determine the most appropriate mix of approaches—that is, to assess where each learner is likely to benefit most on the continuum between pedagogy and andragogy.

Information-processing theories

Compared to other learning theories, information-processing theories give more emphasis to the internal processes that occur when training content is learnt and retained. Figure 4.3 shows a model of information processing. Information-processing theories propose that information or messages taken in by the learner undergo several transformations in the human brain.[21] Information processing begins when a message or stimulus (which could be sound, smell, touch or pictures) from the environment is received by receptors (ears, nose, skin, eyes). The message is registered in the senses and stored in short-term memory. The message is then transformed or coded for storage in long-term memory. A search process occurs in memory during which time a response to the message or stimulus is organised. The response generated relates to one of the five learning outcomes: verbal information, cognitive skills, motor skills, intellectual skills or attitudes. The final link in the model is feedback from the environment. This feedback provides the learner with an evaluation of the response given. This information can come from another person or the learner's own observation of the results of his or her action. A positive evaluation of the response provides reinforcement that the behaviour is desirable to be stored in long-term memory for use in similar situations.

Besides emphasising the internal processes needed to capture, store, retrieve and respond to messages, the information-processing model highlights how external events influence learning. These events include:[22]

1. changes in the intensity or frequency of the stimulus that affects attention
2. informing the learner of the objectives to establish an expectation

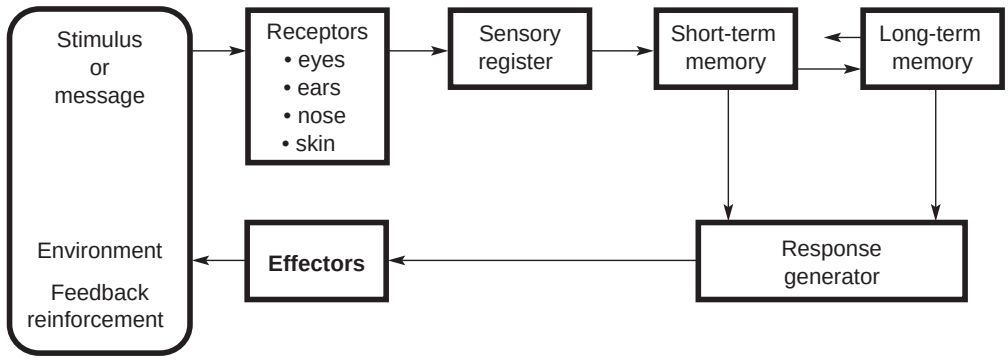

FIGURE 4.3 A model of human information processing

SOURCE: Adapted from R. Gagne, 'Learning Processes and Instruction', *Training Research Journal* 1 (1995/96): 17–28.

3. enhancing perceptual features of the material (stimulus), drawing the attention of the learner to certain features
4. verbal instructions, pictures, diagrams and maps suggesting ways to code the training content so that it can be stored in memory
5. meaningful learning context (examples, problems) creating cues that facilitate coding
6. demonstration or verbal instructions helping to organise the learner's response as well as facilitating the selection of the correct response.

THE LEARNING PROCESS

Now that you have reviewed learning theories, you are ready to address three questions: What are the physical and mental processes involved in learning? How does learning occur? Do trainees have different learning styles?

Mental and physical processes

Table 4.4 shows the learning processes—expectancy, perception, working storage, semantic encoding, long-term storage, retrieval, generalising and gratification.[23] **Expectancy** refers to the mental state that the learner brings to the instructional process. This includes factors such as readiness for training (motivation to learn, basic skills) as well as an understanding of the purpose of the instruction and the likely benefits that may result from learning and from using the learned capabilities on the job. Perception refers to the ability to organise the message from the environment so that it can be processed and acted upon. Both working storage and semantic encoding relate to short-term memory. In **working storage,** rehearsal and repetition of information occur, allowing material to be coded for memory.

Working storage is limited by the amount of material that can be processed at any one time. Research suggests that no more than five messages can be prepared for storage at any one time. Semantic encoding refers to the actual coding process of incoming messages.

Different learning strategies influence how training content is coded. Learning strategies include rehearsal, organising and elaboration.[24] Rehearsal, the simplest

TABLE 4.4 The relationship among learning processes, instructional events and forms of instruction

Processes of learning	External instructional events	Forms of instruction
1. Expectancy	1. Informing the learner of the training session objective	1a. Demonstrate the expected performance 1b. Indicate the kind of verbal question to be answered
2. Perception	2. Presenting stimuli with distinctive features	2a. Emphasise the features of the subject to be perceived 2b. Use formatting and figures in text to emphasise features
3. Working storage	3. Limiting the amount to be learnt	3a. Chunk lengthier material 3b. Provide a visual image of material to be learnt 3c. Provide practice and overlearning to aid the attainment of automaticity
4. Semantic encoding	4. Providing learning guidance	4a. Provide verbal cues to proper combining sequence 4b. Provide verbal links to a larger meaningful context 4c. Use diagrams and models to show relationships among concepts
5. Long-term storage	5. Elaborating the amount to be learnt	5a. Vary the context and setting for presentation and recall of material 5b. Relate newly learnt material to previously learnt information 5c. Provide a variety of contexts and situations during practice
6. Retrieval	6. Providing cues that are used in recall	6a. Suggest cues that elicit the recall of material 6b. Use familiar sounds or rhymes as cues
7. Generalising	7. Enhancing retention and learning transfer	7a. Design the learning situation to share elements with the situation of use 7b. Provide verbal links to additional complexes of information
8. Gratifying	8. Providing feedback about performance correctness	8a. Provide feedback on degree of accuracy and timing of performance 8b. Confirm whether original expectancies were met

SOURCE: R. Gagne, 'Learning Processes and Instruction', *Training Research Journal* 1 (1995/96): 17–28.

learning strategy, focuses on learning through repetition (memorisation). **Organising** requires the learner to find similarities and themes in the training material. Elaboration requires the trainee to relate the training material to other, more familiar knowledge,

skills or behaviours. Trainees use a combination of these strategies to learn. The 'best' strategy depends on the learning outcome. For knowledge outcomes, rehearsal and organisation are most appropriate. For skill application, elaboration is necessary. After messages have been attended to, rehearsed and coded, they are ready for storage in long-term memory.

To use learnt material (such as cognitive skills or verbal information), it must be retrieved. **Retrieval** involves identifying learnt material in long-term memory and using it to influence performance. An important part of the learning process is being able not only to reproduce exactly what was learnt but also to adapt the learning to use in similar but not identical situations. This is known as generalising**.** Finally, gratifying refers to the feedback that the learner receives as a result of using learning content. Feedback is necessary to allow the learner to adapt responses to be more appropriate. Feedback also provides information about the incentives or reinforcers that may result from performance.

The learning cycle

Learning can be considered a dynamic cycle that involves four stages: concrete experience, reflective observation, abstract conceptualisation and active experimentation.[25] First, a trainee encounters a concrete experience (for example, a work problem). This is followed by thinking and reflective observation about the problem, which leads to generation of ideas about how to solve the problem (abstract conceptualisation) and finally to implementation of the ideas directly to the problem (active experimentation). Implementing the ideas provides feedback as to their effectiveness, so the learner can see the results and start the learning process over again. Trainees continually develop concepts, translate them into ideas, implement them and adapt them as a result of their personal observations about their experiences.

Researchers have developed questionnaires to measure trainees' weak and strong points in the learning cycle. Some people have a tendency to over- or underemphasise one stage of the learning cycle, or to avoid certain stages. The key to effective learning is to be competent in each of the four stages.

Four fundamental learning styles are believed to exist. These learning styles combine elements of each of the four stages of the learning cycle. Table 4.5 shows the characteristics and dominant learning stage of these styles, called divergers, assimilators, convergers and accommodators.[26] Although the questionnaires have been widely used as part of training programs, few studies have investigated the reliability and validity of the learning styles.

Trainers who are aware of trainees' learning styles can try to customise instruction to match their preferences. If a group of trainees tend to be hands-on learners, trying to teach the mechanics of a technical application by having them read it online will not result in learning. They need applications and the ability to get feedback from an instructor. (Effective online learning is discussed in Chapter 8.)

Age influences on learning

There is biological evidence that certain mental capacities decrease from age 20 to age 70.[27] Short-term memory and the speed at which people process information decline as we age. However, with age comes experience, which can compensate for the loss of memory and mental quickness. Although mental quickness and memory losses diminish at a steady pace, at older ages the memory loss is much greater because

TABLE 4.5 Learning styles

Learning style type	Dominant learning abilities	Learning characteristics
Diverger	▪ Concrete experience ▪ Reflective observation	▪ Is good at generating ideas, seeing a situation from multiple perspectives and being aware of meaning and value ▪ Tends to be interested in people, culture and the arts
Assimilator	▪ Abstract conceptualisation ▪ Reflective observation	▪ Is good at inductive reasoning, creating theoretical models and combining disparate observations into an integrated explanation ▪ Tends to be less concerned with people than with ideas and abstract concepts
Converger	▪ Abstract conceptualisation ▪ Active experimentation	▪ Is good at decisiveness, practical application of ideas and hypothetical deductive reasoning ▪ Prefers dealing with technical tasks rather than interpersonal issues
Accommodator	▪ Concrete experience ▪ Active experimentation	▪ Is good at implementing decisions, carrying out plans and getting involved in new experiences ▪ Tends to be at ease with people but may be seen as impatient or pushy

SOURCE: Based on D. Kolb, *Learning Style Inventory, Version 3* (Boston, Massachusetts: Hay/McBer Training Resources Group, 1999).

mental resources are more depleted than at earlier ages. One approach recognises that there are four or five generations of employees with distinct attitudes towards work and preferred ways to learn. Those generations have been given a variety of labels, both in Australia and New Zealand and in the US, a selection of which is shown in Table 4.6.

TABLE 4.6 Generational labels

Year of birth	Generational label (Australia and New Zealand)	Generational label (US)
1925–1944	Builders	Traditionalists
1945–1964	Boomers	Baby boomers
1965–1979	Generation X	Generation X
1980–1993	Generation Y	Millenniums or Nexters
1994–	Generation Z	

Each generation may be characterised by certain features that can influence learning. However, note that members of the same generation are no more alike than members of the same gender or ethnic background. Also, there has been no research following the different generations of employees over their life spans to identify differences.

Trainers should therefore consider generational differences in designing learning environments, but keep in mind that definite conclusions regarding generational differences cannot be made.

Generations Y and Z are considered optimistic, willing to work and learn, technologically literate and appreciative of diversity. Generation X is considered to need feedback and flexibility, and to dislike close supervision. They have experienced change all their lives (in terms of parents, homes and cities). Generation X values a balance between work and non-work. Boomers (baby boomers) are considered competitive, hard-working and concerned that all employees be fairly treated. Builders (traditionalists) are considered patriotic and loyal, with a great deal of knowledge of the history of organisations and work life.

In view of these characteristics, each generation may have specific preferences for the arrangement of the learning environment, type of instruction and learning activities.[28] (Chapter 11 discusses implications of generational differences for career management.) Builders prefer a traditional training room with a stable, orderly learning environment. They do not like to be put on the spot in front of other trainees. They value direct presentation of information and training materials organised logically. They like trainers to ask them to share their experiences or anecdotes, but they also look to the trainer to provide expertise.

Boomers respond well to interactive training activities—they like group activities. They also like well-organised training materials with an overview of the information and an easy way to access more detailed information. Compared to the other groups, they are especially motivated to learn if they believe that the training content will benefit them personally. Boomers need to work on translating the knowledge they have into skills.

Generation X prefers a self-directed learning environment. They respond best to training methods that allow them to work at their own pace: video, CD-ROM and web-based training. They are highly motivated learners who view training as a way to increase their employability. They like to learn by doing, through experimentation and feedback. They respond best to training materials that provide visual stimulation with relatively few words.

Generations Y and Z prefer a learning environment that includes teamwork and technology. They like to learn by both working alone and helping others. They are motivated to learn skills and acquire knowledge that will help make their working lives less stressful and increase their employability. They place a high value on money, so linking training to monetary incentives may facilitate learning. Like Generation X, these generations prefer entertaining training activities. Training needs to be interactive and to use music, art and games.

The potential for generational differences to affect learning suggests that trainers need to be aware of trainees' ages before the session so they can try to create a learning environment and develop materials that meet their preferences. Recent research summarising the findings of studies on the influence of age on performance in training found that self-paced training had the largest influence on training performance of trainees over 40 years of age.[29] 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. Training that occurred in small groups was also found to be advantageous for older trainees. Most training groups probably have a mix of generations. Employees can learn much from cross-generation interaction if it is managed well. Trainees of all age groups need to feel that participation in the

session through questioning, providing answers and discussing issues is valued and rewarded. If a group of trainees includes all generations, the training must take a blended approach—use examples that include people from different generations and use different training approaches (experts, audience involvement, group work and self-directed learning activities).

Implications of the learning process for instruction

Instruction refers to the characteristics of the environment in which learning is to occur.[30] The right-hand side of Table 4.4 shows the forms of instruction that support the learning process. These forms of instruction can also be considered features of a positive learning environment or of good instruction. Subsequent sections discuss the features of good instruction.

Employees need to know why they should learn

Employees learn best when they understand the objective of the training program. The objective refers to the purpose and expected outcome of training activities. There may be objectives for each training session as well as overall objectives for the program. Recall the discussion of goal-setting theory earlier in the chapter. Because objectives can serve as goals, trainees need to understand, accept and be committed to achieving the training objectives for learning to occur. Training objectives based on the training needs analysis help employees understand why they need training and what they need to learn. Objectives are also useful for identifying the types of training outcomes that should be measured to evaluate a training program's effectiveness.

A training objective has three components:[31]

1. a statement of what the employee is expected to do (performance or outcome)
2. a statement of the quality or level of performance that is acceptable (criterion)
3. a statement of the conditions under which the trainee is expected to perform the desired outcome (conditions).

The objective should not describe performance that cannot be observed, such as 'understand' or 'know'. Table 4.7 shows verbs that can be used for cognitive, affective and psychomotor (physical abilities and skills) outcomes. For example, a training objective for a customer-service training program for retail salespeople might be: 'After training, the employee will be able to express concern [performance] to irate customers by means of a brief (fewer than 10 words) apology, only after the customer has stopped talking [criteria] and no matter how upset the customer is [conditions].'

Good training objectives provide a clear idea of what the trainees are expected to do at the end of training. Good training should include standards of satisfactory performance that can be measured or evaluated (for example, speed, quality, products, reactions). The program needs to spell out any resources (equipment, tools) that the trainees need in order to perform the action or behaviour specified in the objective. Good training objectives also describe the conditions under which performance of the objective is expected to occur. These conditions can relate to the physical work setting (for example, at night), mental stresses (for example, an angry customer) or equipment failure (for example, malfunctioning landing gear on an aeroplane).

TABLE 4.7 Examples of performance or outcomes for objectives

Domain	Performance
Knowledge (recall information)	Arrange, define, label, list, recall, repeat
Comprehension (interpret in own words)	Classify, discuss, explain, review, translate
Application (apply to new situation)	Apply, choose, demonstrate, illustrate, prepare
Analysis (break down into parts and show relationships)	Analyse, categorise, compare, diagram, test
Synthesis (bring together to form a whole)	Arrange, collect, assemble, propose, set up
Evaluation (make judgements based on criteria)	Appraise, attack, argue, choose, compare
Receiving (pay attention)	Listen to, perceive, be alert to
Responding (minimal participation)	Reply, answer, approve, obey
Valuing (preferences)	Attain, assume, support, participate
Organisation (development of values)	Judge, decide, identify with, select
Characterisation (total philosophy of life)	Believe, practise, carry out
Reflexes (involuntary movement)	Stiffen, extend, flex
Fundamental movements (simple movements)	Crawl, walk, run, reach
Perception (response to stimuli)	Turn, bend, balance, crawl
Physical abilities (psychomotor movements)	Move heavy objects, make quick motions
Skilled movements (advanced learnt movements)	Play an instrument, use a hand tool

SOURCE: Based on H. Sredl and W. Rothwell, 'Setting Instructional Objectives', Chapter 16 in *The ASTD Reference Guide to Professional Training Roles and Competencies, Vol. II* (New York: Random House, 1987); and R. Mager, *Preparing Instructional Objectives,* 3rd edn (Atlanta, GA: Center for Effective Performance, 1997).

Employees need meaningful training content

Employees are most likely to learn when the training is linked to their current job experiences and tasks—that is, when it is meaningful to them.[32] To enhance the meaningfulness of training content, the message should be presented using concepts, terms and examples familiar to the trainees. Also, the training context should mirror the work environment. The training context refers to the physical, intellectual and emotional environment in which training occurs. For example, in a retail salesperson customer-service program, the meaningfulness of the material will be increased by using scenarios of unhappy customers actually encountered by salespeople in shops. Some useful techniques for convincing trainees that the training program content is meaningful include:[33]

- telling stories about others' success in applying training content, especially former trainees
- showing how training relates to organisation goals and strategy

- showing how trainees can use training content ideas at work
- discussing examples or cases that remind trainees of the good and poor work they have seen
- repeating the application of ideas in different contexts
- presenting evidence of the effectiveness of knowledge, skills and behaviours
- showing how the conditions that trainees face in training are similar to those on the job
- providing practice or application activities that can be used on the job
- providing copies of or electronic access to well-organised materials so trainees can refer to them on the job or use them to teach others
- allowing trainees to choose their practice strategy and how they want the training content presented (for example, verbally, visually, problem-based or a combination of approaches).

Employees need opportunities to practise

Practice refers to the physical or mental rehearsal of a task, knowledge or skill to achieve proficiency in performing the task or skill or demonstrating the knowledge. Practice involves having the employee demonstrate the learned capability (for example, cognitive strategy, verbal information) emphasised in the training objectives under conditions and performance standards specified by the objectives. For practice to be effective, it needs to actively involve the trainee, include overlearning (repeated practice), take the appropriate amount of time and include the appropriate unit of learning (amount of material). Practice also needs to be relevant to the training objectives. Some examples of ways to practise include case studies, simulations, role plays, games and oral and written questions.

Pre-practice conditions Trainers need to focus not just on training content but also on how to enable trainees to process information in a way that will facilitate learning and use of training on the job. There are several steps trainers can take within the training course prior to practice to enhance trainees' motivation to learn and facilitate retention of training content. Before practice, trainers can do the following.[34]

1. Provide information about the process or strategy that will result in the greatest learning. For example, let trainees in a customer-service class know about the types of calls they will receive (irate customer, request for information on a product, challenge of an invoice), how to recognise such calls and how to complete the calls.
2. Encourage trainees to develop a strategy (metacognition) to reflect on their own learning process. **Metacognition** refers to individual control over one's thinking. Two ways in which individuals engage in metacognition are monitoring and control.[35] Monitoring includes identifying the problem or task, evaluating one's own learning progress and predicting what will occur as a result of learning. Control includes identifying the specific steps for completing a task or solving a problem, deciding how quickly or how much attention to devote to the task and deciding how to prioritise learning. Trainees who engage in metacognition ask themselves questions such as, 'Why am I choosing this type of action?' 'Do I understand the relationship between this material and my job?' and 'What is the next step in the task?' Metacognition helps trainees to monitor learning and to decide what content needs more energy and attention.

3. Provide **advance organisers**—outlines, texts, diagrams and graphs that help trainees to organise the information that will be presented and practised.
4. Help trainees to set challenging mastery or learning goals.
5. Create realistic expectations for the trainees by communicating what will occur in training.
6. When training employees in teams, communicate performance expectations and clarify roles and responsibilities of team members.

Practice involves experience Learning will not occur if employees practise only by talking about what they are expected to do. For example, using the objective for the customer-service course previously discussed, practice would involve having trainees participate in role playing with unhappy customers (customers upset with poor service, poor merchandise or exchange policies). Trainees need to continue to practise even if they have been able to perform the objective several times (overlearning). Overlearning helps the trainee to become more comfortable using new knowledge and skills, and increases the length of time the trainee will retain the knowledge, skill or behaviour.

Conventional wisdom is that we all learn the most from our errors. However, most people feel that errors are frustrating and lead to anger and despair. Research suggests that from a training perspective, errors can be useful.[36] **Error management training** refers to giving trainees the opportunity to make errors during training. In error management training, trainees are instructed that errors can help learning, and they are encouraged to make errors and learn from them. Trainees may actually commit more errors and may take longer to complete training that incorporates error management training. However, error management training helps improve employee performance on the job (a concept known as transfer of training, which is discussed in Chapter 5).

Error management training is effective because it provides the opportunity for trainees to engage in metacognition, that is, to plan how to use training content, to monitor use of training content and to evaluate how training content was used. This results in a deeper level of cognitive processing, leading to better memory and recall of training. Trainers should consider using error management training in the training program along with traditional approaches by giving trainees the opportunity to make errors when they work alone on difficult problems and tasks while encouraging them to use errors as a way to learn.

It is important to note that simply allowing trainees to make errors does not help learning. For errors to have a positive influence on learning, trainees need to be taught to use errors as a chance to learn. Error management training may be particularly useful whenever the training content to be learnt cannot be completely covered during a training session and, as a result, trainees will have to discover on their own what to do when confronted with new tasks or problems.

Massed versus spaced practice The frequency of practice has been shown to influence learning, depending on the type of task being trained.[37] Massed practice conditions are those in which individuals practise a task continuously without rest. In spaced practice conditions, individuals are given rest intervals within the practice session. Spaced practice is superior to massed practice. However, the effectiveness of massed versus spaced practice varies according to the characteristics of the task. Task characteristics include overall task complexity, mental requirements and physical requirements. Overall task complexity refers to the degree to which a task requires a number of distinct

behaviours, the number of choices involved in performing the task and the degree of uncertainty in performing the task. Mental requirements refer to the degree to which the task requires the subject to use or demonstrate mental skills or cognitive skills or abilities to perform the task. Physical requirements refer to the degree to which the task requires the person to use or demonstrate physical skills and abilities to perform and complete the task. Table 4.8 shows how various tasks can differ in these ways.

TABLE 4.8 Mental, overall and physical requirements of various tasks

Mental requirements	Overall complexity	Physical requirements	Tasks
Low	Low	High	Rotary pursuit, typing, ball toss, ladder climb, peg reversal, bilateral transfer, crank turning
High	Average	Low	Free recall task, video games, foreign language, slide bar task, voice recognition, classroom lecture, sound localisation, word processing, stoop task, verbal discrimination, maze learning, connecting numbers, upside-down alphabet printing, distance learning, web training
Low	High	High	Gymnastic skills, balancing task
High	High	High	Air traffic controller simulation, milk pasteurisation simulation, aeroplane control simulation, hand movement memorisation, puzzle box task, music memorisation and performance

SOURCE: J. Donovan and D. Radosevich, 'A Meta-analytic Review of the Distribution of Practice Effect: Now You See It, Now You Don't', *Journal of Applied Psychology* 84 (1999): 795–805.

For more complex tasks (including those that are representative of training settings such as web-based instruction, lecture and distance learning), relatively long rest periods appear to be beneficial for task learning.

After practice, trainees need specific feedback to enhance learning. This includes feedback from the task or job itself, as well as feedback from trainers, managers and peers.

Whole versus part practice A final issue relating to practice is how much of the training should be practised at one time. One option is that all tasks or objectives should be practised at the same time (**whole practice**). Another option is that an objective or task should be practised individually as soon as each is introduced in the training program (**part practice**). It is probably best to employ both whole and part practice in a training session. Trainees should have the opportunity to practise individual skills or behaviours. If the skills or behaviours introduced in training are related to one another, the trainee should demonstrate all of them in a practice session after they have been practised individually.

For example, one objective of the customer-service training for retail salespeople is learning how to deal with an unhappy customer. Salespeople are likely to have to

learn three key behaviours: (1) greeting disgruntled customers, (2) understanding their complaints and then (3) identifying and taking appropriate action. Practice sessions should be held for each of the three behaviours (part practice). Then another practice session should be held so that trainees can practise all three skills together (whole practice). If trainees were only given the opportunity to practise the behaviours individually, it is unlikely that they would be able to deal with an unhappy customer.

Effective practice conditions For practice to be relevant to the training objectives, several conditions must be met.[38] Practice must involve the actions emphasised in the training objectives, be completed under the conditions specified in the training objectives, help trainees perform to meet the criteria or standard that was set, provide some means to evaluate the extent to which trainees' performance meets the standards and must allow trainees to correct their mistakes.

Practice must be related to the training objectives. The trainer should identify what trainees will be doing when practising the objectives (performance), the criteria for attainment of the objective and the conditions under which they may perform. These conditions should be present in the practice session. Next, the trainer needs to consider the adequacy of the trainees' performance. That is, how will trainees know whether their performance meets performance standards? Will they see a model of desired performance? Will they be provided with a checklist or description of desired performance? Can the trainees decide whether their performance meets standards, or will the trainer or a piece of equipment compare their performance with standards?

If trainees' performance does not meet standards, the trainer must also decide whether trainees understand what is wrong and how to fix it. That is, trainers need to consider whether trainees can diagnose their own performance and take corrective action, or whether they will need help from the trainer or from a fellow trainee.

Employees need to commit training content to memory

Memory works by processing the stimuli that we perceive through our senses into short-term memory. If the information is determined to be 'important', it moves to long-term memory where new interconnections are made between neurons or electrical connections in the brain. There are several ways that trainers can help trainees to store knowledge, skills, behaviour and other training in long-term memory.[39] One way is to make trainees aware of how they are creating, processing and accessing memory. It is important for trainees to understand how they learn. A presentation of learning styles (discussed earlier in this chapter) can be a useful way to determine how trainees prefer to learn.

To create long-term memory, training programs must be explicit in content and elaborate in details. There are several ways to create long-term memory. One approach trainers use is to create a concept map to show relationships among ideas. Another is to use multiple forms of review, including writing, drawing and role plays, to access memory through multiple methods. Teaching key words, a procedure or a sequence, or providing a visual image, gives trainees another way to retrieve information. Reminding trainees of knowledge, behaviour and skills that they already know that is relevant to the current training content creates a link to long-term memory that provides a framework for recalling the new training content. External retrieval cues can also be useful. Consider a time when you misplaced your keys or wallet. In trying to remember,

we often review all the information we can recall that was close in time to the event or preceded the loss. We often go to the place where we were when we last saw the item because the environment can provide cues that aid in recall.

Research suggests that no more than four or five items can be attended to at one time. If a lengthy process or procedure is to be taught, instruction needs to be delivered in relatively small chunks or short sessions in order not to exceed memory limits.[40] Long-term memory is also enhanced by going beyond one-trial learning. That is, once trainees have correctly demonstrated a behaviour or skill or correctly recalled knowledge, it is often assumed that they have learnt it, but this is not always true. Having trainees review and practise over multiple days (overlearning) can help them retain information in long-term memory. Overlearning also helps to automatise a task.

Automatisation refers to making performance of a task, recall of knowledge or demonstration of a skill so automatic that it requires little thought or attention. Automatisation also helps reduce memory demands. The more that automatisation occurs, the more that memory is freed up to concentrate on other learning and thinking. The more active a trainee is in rehearsal and practice, the greater the amount of information retained in long-term memory and the less memory decay occurs over time.

Employees need feedback

Feedback is information about how well people are meeting the training objectives. To be effective, feedback should focus on specific behaviours and be provided as soon as possible after the trainees' behaviour.[41] Also, positive trainee behaviour should be verbally praised or reinforced. Videorecording trainee behaviour can be a powerful tool for giving feedback. Trainers should view the video with trainees, provide specific information about how behaviours need to be modified, and praise trainee behaviours that meet objectives. Feedback can also come from tests and quizzes, on-the-job observation, performance data, a mentor or coach, written communications or interpersonal interactions.

The specificity of the level of feedback provided to trainees needs to vary if trainees are expected to understand what leads to poor performance as well as good performance.[42] For example, employees may need to learn how to respond when equipment is malfunctioning as well as when it is working properly; therefore, feedback provided during training should not be so specific that it leads only to employee knowledge about equipment that is working properly. Less specific feedback can cause trainees to make errors that lead to equipment problems, providing trainees with opportunities to learn which behaviours lead to equipment problems and how to fix those problems. Difficulties encountered during practice as a result of errors or reduced frequency of feedback can help trainees engage more in exploration and information processing to identify correct responses.

Employees learn through observation, experience and interacting with others

As mentioned earlier in the chapter, one way employees learn is through observing and imitating the actions of models. For the model to be effective, the desired behaviours or skills need to be clearly specified, and the model should have characteristics (such as age and/or position) similar to the target audience.[43] After observing the model, trainees should have the opportunity in practice sessions to reproduce the skills or

behaviour shown by the model. According to adult learning theory, employees also learn best if they learn by doing.[44] This involves giving employees hands-on experiences or putting them with more experienced employees and providing them with the tools and materials needed to manage their knowledge gaps.

Learning also occurs through interacting with other trainees in small groups during the training session as well as back at work. By working in small groups, trainees can obtain diverse perspectives on problems and issues—perspectives they would never have heard if they had learnt alone. Problem-based learning may also be useful for stimulating and holding trainees' attention.[45] In problem-based learning, trainees are divided into small groups. (Action learning, a type of problem-based learning, will be discussed in Chapter 7.) The groups are presented with a problem, such as a real problem the organisation is facing or a case study. In each group, trainees are asked to identify the problem and to identify what they know and do not know (learning issues). Each group has to decide how it will better understand the learning issues. Part of the training program is designed to allow trainees to access the web, experts in the field and organisation records and documents to solve the learning issues. After trainees gather information, they discuss what they have learnt and how to use that information to solve the problem. Table 4.9 shows the types of situations, with examples, in which learning through observation, experience and interacting with others may be most valuable.

TABLE 4.9 Situations, skills and knowledge best learnt through observation, experience and interacting with others

Situations/knowledge	Examples
Interpersonal skills	Negotiating a merger, handling a problem employee
Personal knowledge based on experience	Closing a sale, creating a new chocolate bar, reducing tension between employees
Context-specific knowledge	Managing in an international location, handling union grievances, manufacturing with special equipment
Uncertainty or new situations	Marketing a new product or service, using a new technology for service or manufacturing

SOURCE: Based on D. Leonard and W. Swap, 'Deep Smarts', *Harvard Business Review* (September 2004): 88–97.

Communities of practice, as discussed in Chapter 2 in relation to the evolution of training's role, refer to groups of employees who work together, learn from each other and develop a common understanding of how to get work accomplished.[46] The idea of communities of practice suggests that learning occurs on the job as a result of social interaction. Every organisation has naturally occurring communities of practice that arise as a result of the relationships that employees develop to accomplish their work, and as a result of the design of the work environment. The example of the Ford Motor Company given in Chapter 2 is worth re-visiting in the context of the implications of the learning process for instruction. Ford uses communities of practice organised according to functions, with 'focal points' in each trade in each of their plants, each of these focal points belonging to the same worldwide community of practice.

Communities of practice can also take the form of discussion boards, list servers or other forms of computer-mediated communication in which employees communicate

electronically. In doing so, each employee's knowledge can be accessed in a relatively quick manner. It is as if employees are having a conversation with a group of experts. Schlumberger, an oil-field services provider headquartered in New York, has online communities of practice.[47] Schlumberger uses online communities of practice to connect experts such as geologists, physicists, managers and engineers in remote locations around the world to help each other solve problems. This naturally extends through the firm's Middle Eastern and Asian region, of which the Australian and New Zealand office, located in Perth in Western Australia, forms an integral part. As part of the organisation's knowledge-management resources, a Schlumberger engineer would be able to find what they needed to get started on an offshore extended-reach drilling project in West Africa through the Schlumberger InTouch system. InTouch helps to ensure that engineers in the field have access to the best available knowledge. If a field engineer can't find the answer to a knowledge problem, they contact the help desk via email, online or by telephone, accessing full-time InTouch engineers who staff 75 help desks. The challenge here is to create and nurture a knowledge-sharing culture in which people share knowledge as a matter of course.[48]

Despite the benefits of improved communication, a drawback to these communities is that participation is often voluntary, so some employees may not share their knowledge unless the organisational culture supports participation. That is, employees may be reluctant to participate without an incentive, or may be fearful that if they share their knowledge with others, they will give away their personal advantage in salary and promotion decisions.[49] (The role of organisational culture in learning is discussed in Chapter 5.) Another potential drawback is information overload. Employees may receive so much information that they fail to process it. This may cause them to withdraw from the community of practice.

Employees need the training program to be properly coordinated and arranged

Training coordination is one of several aspects of training administration. Training administration refers to coordinating activities before, during and after the program.[50] Training administration involves:

1. communicating courses and programs to employees
2. enrolling employees in courses and programs
3. preparing and processing any pre-training materials such as readings or tests
4. preparing materials that will be used in instruction (such as PowerPoint presentations and cases)
5. arranging the training facility and room
6. testing equipment that will be used in instruction
7. having backup equipment (such as a printed copy of PowerPoint presentations, a laptop backup battery) should equipment fail
8. providing support during instruction
9. distributing evaluation materials (such as tests, reaction measures and surveys)
10. facilitating communications between trainer and trainees during and after training (for example, coordinating the exchange of email addresses)
11. recording course completion in the trainees' training records or personnel files.

Good coordination ensures that trainees are not distracted by events (such as an uncomfortable room or poorly organised materials) that could interfere with learning. Activities to be done before the program include communicating to trainees the purpose

of the program, where it will be held, the name of a person to contact if they have questions and any pre-program work they are required to complete. Books, speakers, handouts and presentations need to be prepared. Any necessary arrangements to secure rooms and equipment (such as audiovisual equipment) should be made. The physical arrangement of the training room should complement the training technique. For example, it would be difficult for a team-building session to be effective if the seats could not be moved for group activities. If visual aids will be used, all trainees should be able to see them. Make sure that the room is physically comfortable, with adequate lighting and ventilation. Trainees should be informed of starting and finishing times, break times and location of toilet facilities. Minimise distractions such as phone messages; request that trainees turn off mobile phones and pagers. If trainees will be asked to evaluate the program or take tests to determine what they have learnt, allot time for this activity at the end of the program. Following the program, any credits or recording of the names of trainees who completed the program should be done. Handouts and other training materials should be stored or returned to the consultant. The end of the program is also a good time to consider how the program could be improved if it will be offered again. Practical issues in selecting and preparing a training site and designing a program are discussed later in this chapter.

INSTRUCTIONAL EMPHASIS FOR LEARNING OUTCOMES

The discussion of the implications of the learning process for instruction provided general principles regarding how to facilitate learning. However, you should understand the relationship between these general principles and the learning process. Different internal and external conditions are necessary for learning each outcome. Internal conditions refer to processes within the learner that must be present for learning to occur. These processes include how information is registered, stored in memory and recalled. External conditions refer to processes in the learning environment that facilitate learning. These conditions include the physical learning environment, as well as opportunities to practise and to receive feedback and reinforcement. The external conditions should directly influence the design or form of instruction. Table 4.10 shows what is needed during instruction at each step of the learning process. For example, during the process of committing training content to memory, verbal cues, verbal links to a meaningful context and diagrams and models are necessary. If training content is not coded (or is incorrectly coded), learning will be inhibited.

CONSIDERATIONS IN DESIGNING EFFECTIVE TRAINING PROGRAMS

This chapter has discussed implications of learning theory for instruction, emphasising the importance of objectives, meaningful material, properly coordinated and arranged training and opportunities for practice and feedback. How do trainers ensure that these conditions are present in training programs? This last section of the chapter discusses the practical steps in designing effective training programs, courses and training sessions. This includes selecting and preparing the training site and program design.

TABLE 4.10 Internal and external conditions necessary for learning outcomes

Learning outcome	Internal conditions	External conditions
Verbal information Labels, facts and propositions	Previously learnt knowledge and verbal information Strategies for coding information into memory	Repeated practice Meaningful chunks Advance organisers Recall cues
Intellectual skills Knowing how		Link between new and previously learnt knowledge
Cognitive strategies Process of thinking and learning	Recall of prerequisites, similar tasks and strategies	Verbal description of strategy Strategy demonstration Practice with feedback Variety of tasks that provide opportunity to apply strategy
Attitudes Choice of personal action	Mastery of prerequisites Identification with model Cognitive dissonance	Demonstration by a model Positive learning environment Strong message from credible source Reinforcement
Motor skills Muscular actions	Recall of part skills Coordination program	Practice Demonstration Gradual decrease of external feedback

SOURCE: Based on R. M. Gagne and K. L. Medsker, *The Conditions of Learning* (Fort Worth, Texas: Harcourt-Brace College Publishers, 1996).

Selecting and preparing the training site

The training site refers to the room where training will be conducted. A good training site offers the following features.[51]

1. It is comfortable and accessible.
2. It is quiet, private and free from interruptions.
3. It has sufficient space for trainees to move easily around in, offers enough room for trainees to have adequate work space and has good visibility for trainees to see each other, the trainer and any visual displays or examples that will be used in training (such as videos, product samples, charts and slides).

Details to be considered in the training room

Table 4.11 presents characteristics of the training room that a trainer, program designer or manager should use to evaluate a training site. Keep in mind that often trainers

do not have the luxury of choosing the 'perfect' training site. Rather, they use their evaluation of the training site to familiarise themselves with the site's strengths and weaknesses in order to adjust the training program and/or physical arrangements of the site (for example, by rearranging the trainer's position so it is closer to the power points needed to run a computer or audiovisual equipment).

TABLE 4.11 Details to consider when evaluating a training room

Noise. Check for noise from heating and air-conditioning systems, from adjacent rooms and corridors and from outside the building.
Colours. Pastel hues such as oranges, greens, blues and yellows are warm colours. Variations of white are cold and sterile. Blacks and browns will close the room in psychologically and become fatiguing.
Room structure. Use rooms that are somewhat square in shape. Long, narrow rooms make it difficult for trainees to see, hear and identify with the discussion.
Lighting. The main source of lighting should be fluorescent lights. Incandescent lighting should be spread throughout the room and used with dimmers when projection is required.
Wall and floor coverings. The training area should be carpeted. Solid colours are preferable because they are not distracting. Only training-related materials should be on the training-room walls.
Chairs. Chairs should have wheels, should swivel and should have backs that provide support for the lower lumbar region.
Glare. Check and eliminate glare from metal surfaces, screens, monitors and mirrors.
Ceiling. Three-metre-high ceilings are preferable.
Electrical outlets. Electrical outlets should be available every two metres around the room. A telephone outlet, internet/intranet cables and any necessary peripheral equipment should be next to the electrical outlets. Outlets for the trainer should also be available.
Acoustics. Check the 'bounce' or absorption of sound from the walls, ceiling, floor and furniture. Try voice checks with three or four different people, monitoring voice clarity and level.

SOURCE: Based on C. L. Finkel, 'Meeting Facilities', in *The ASTD Training and Development Handbook,* 3rd edn, R. L. Craig (ed.) (New York: McGraw-Hill, 1996): 978–89.

Because of technology's impact on the delivery of training programs, many training sites include instructor- and trainee-controlled equipment. For example, at Microsoft's customer briefing centre in Chicago, 16 different computer platforms, ranging from laptops to mainframe systems, are available to use for training. Two seminar rooms include videoconferencing technology, which allows training sessions to be transmitted from Microsoft's corporate headquarters to Chicago. The Chicago site can link up to any of 25 Microsoft locations or a combination of 11 sites at once. Presenters have access to a range of audiovisual equipment, and the seminar rooms have touchscreen systems controlling both the audiovisual equipment and the room environment.[52]

Although the use of technology in training is discussed in more detail in Chapter 8, it is important to note that laptop computers create a desktop training environment that is replacing trainers as the primary way to present training content. For example, in some of the member firms of Ernst & Young (the global accounting and consulting firm mentioned in the opening case study), laptops are used by employees in tax,

finance, consulting and auditing training courses to view visuals, work on case-study exercises, ask questions and access other information stored on the organisation's intranet.[53] The laptop connects employees to web-based training designed to help them gain the prerequisites for training sessions as well as to provide follow-up information after they attend training. Instead of playing a major role as presenters of content, trainers devote their time to coaching, providing feedback and monitoring the progress of trainees. Trainers can 'see' how trainees are working and provide individualised feedback and coaching. Trainers can use the computer to ask questions about what trainees are finding difficult in a particular training session. These responses can be shared with other trainees or used to guide the trainer to hold special 'help' sessions or provide supplemental learning modules. The desktop training environment can handle different sizes of training groups even if they are in diverse geographical areas.

Seating arrangements Seating arrangements at the training site should be based on an understanding of the desired type of trainee interaction and trainee–trainer interaction.[54] Figure 4.4 shows several types of seating arrangements.

Fan-type seating is conducive to allowing trainees to see from any point in the room. Trainees can easily switch from listening to a presentation to practising in groups, and

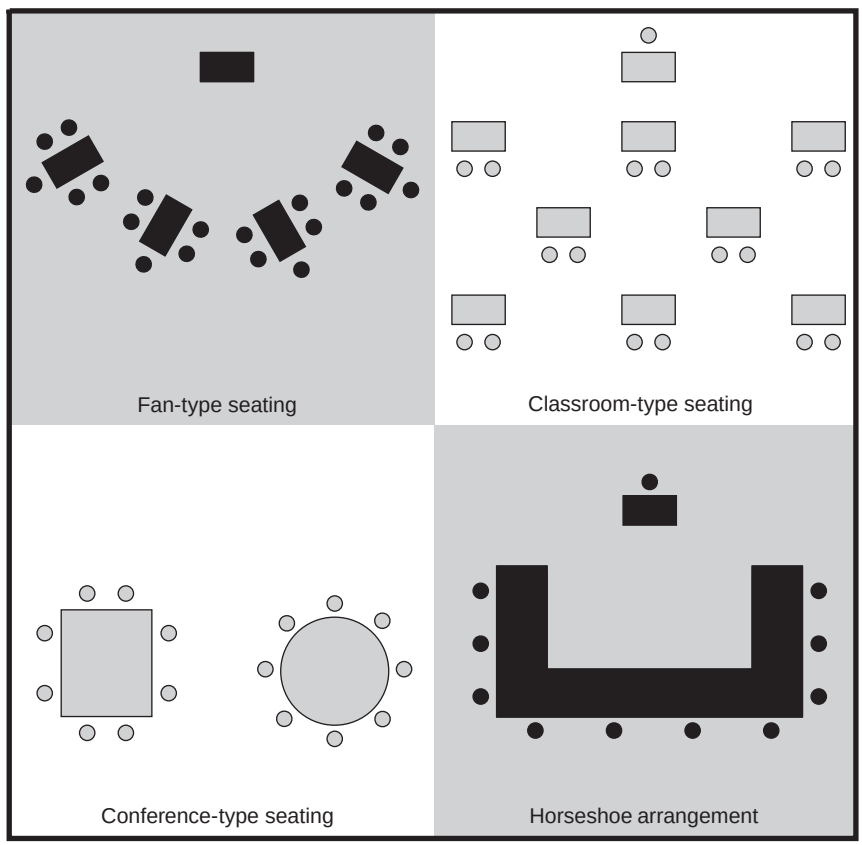

FIGURE 4.4 Examples of seating arrangements

SOURCE: Based on F. H. Margolis and C. R. Bell, *Managing the Learning Process* (Minneapolis, MN: Lakewood Publications, 1984).

trainees can communicate easily with everyone in the room. Fan-type seating is effective for training that includes trainees working in groups and teams to analyse problems and synthesise information.

If the training primarily involves knowledge acquisition, with lecture and audiovisual presentation being the primary training method used, traditional classroom-type seating is appropriate. Traditional classroom instruction allows for trainee interaction with the trainer, but makes it difficult for trainees to work in teams (particularly if the seats are not movable to other locations in the room).

If training emphasises total-group discussion with limited presentation and no small-group interaction, a conference-type arrangement may be most effective. If the training requires both presentation and total-group instruction, the horseshoe arrangement will be useful.

Selecting trainers

Selecting professional trainers or consultants is one obvious possibility for organisations. Trainers, whether from inside or outside the organisation, should have expertise in the topic and experience in training.[55] Train-the-trainer programs are necessary for managers, employees and 'experts' who may have content knowledge but need to improve presentation and communications skills, gain an understanding of the key components of the learning process (such as feedback and practice) or learn to develop training session plans. This may involve having employees and managers earn a certificate that verifies that they have the skills needed to be effective trainers. To increase their chances of success in their first courses, new trainers should be observed and should receive coaching and feedback from more experienced trainers. When organisations use in-house experts for training, it is important to emphasise that these experts convey training content in as concrete a manner as possible (such as by using examples), especially if the audience is unfamiliar with the content. Experts may have a tendency to use more abstract and advanced concepts, which may confuse trainees.[56]

Using managers and employees as trainers may help to increase the perceived meaningfulness of the training content. Because they understand the organisation's business, employee and manager trainers tend to make the training content more directly applicable to the trainees' work. The use of managers and employees can also help to increase their support for learning and reduce the organisation's dependency on expensive outside consultants. Serving as trainers can be rewarding for employees and managers if they are recognised by the organisation or if the training experience is linked to their personal development plans.

How trainers can make the training site and instruction conducive to learning

As a trainer, you can take several steps to make the room and instruction conducive to learning.[57]

Creating a learning setting

Before choosing a training room, consider how the trainees are expected to learn. That is, determine the extent to which trainees decide when, where and how they

will learn (self-direction), and whether learning will occur by interactions with others (collaboration).[58] Table 4.12 describes the types of training rooms that are appropriate for the amount of self-direction and collaboration necessary for learning. For example, a classroom with easy-to-move furniture supports high collaboration but low self-direction; this classroom can be used for lectures, presentations, discussions and small groups. A distance learning room that includes computers, cameras and data equipment supports learning that requires low collaboration but high self-direction. Self-directed learning that requires little collaboration is best suited to labs equipped with computers and software that supports online learning, computer-based training or software instruction. Of course, a dedicated training space may not be necessary for these learning requirements because trainees can work from their own personal computer at home or at work. The advantages and disadvantages of online learning are discussed in Chapter 8, but be aware that employees may not like the lack of face-to-face collaboration that occurs in online learning programs.

TABLE 4.12 Matching training rooms with learning requirements

Learning requirements	Suggested training rooms
High collaboration, low self-direction	Training room with breakout rooms Lecture hall with breakout rooms
High collaboration, high self-direction	Breakout rooms Project room Conference room
Low collaboration, low self-direction	Training room Computer training room Lecture hall
Low collaboration, high self-direction	Distance learning room Media lab Computer lab

SOURCE: Based on 'Workplace Issues: One in a Series. Learning Environments for the Information Age', available from the Steelcase website, http://www.steelcase.com (1 March 2006).

Think about the physical requirements of the training room. Do the trainees need to be able to concentrate and write? Do they need to be able to see detailed visuals? Choose a room large enough to meet your purpose, not just to accommodate a certain number of trainees. Avoid putting 25 people in a room that can seat 250. A small number of trainees in a large room makes it impersonal and leaves people feeling insignificant. Consider the room design well in advance of the session and work with the training site coordinator to design a setting that meets your learning needs.

Preparation

You need to know your content very well. Use mental and physical rehearsals to help build confidence and to evaluate the pace and timing of material. Observe master

trainers to get new ideas. Design the training from the audience's perspective—ask, 'So what?' about everything you plan to do. If you are using computers, PowerPoint slides, CD-ROMs, DVDs, the internet, distance learning or other technologies, make sure you know how to operate the equipment and have backup materials in case the technology fails. Make sure your visuals are available in at least two formats (for example, PowerPoint slides and overheads). Arrive at the training room at least 15 minutes early to make sure the room is set up correctly, the materials are available and the technology is functioning. Greet the trainees as they enter the room.

Training room management

Monitor the room for extra chairs, overflowing rubbish bins and piles of materials left over from previous training sessions. A messy, disorganised, uninviting training room creates learning distractions. Give trainees frequent breaks so that they can leave the room and return ready to learn.

Engaging trainees

You as a trainer carry the responsibility for the trainees' learning experience. You need to communicate the topics that will be covered, the learning approach that will be used and the expectations for trainees. You need to be dramatic to draw attention to important points. Research suggests that trainees have the best recall of training content when the trainer is enthusiastic and avoids vocal distractions (such as the use of 'um' and 'er').[59]

How you should engage trainees is based on both the size of the room and the number of trainees. The larger the room, the more your gestures and movements must be exaggerated to get the audience's attention. To create intimacy with the training group, you must move close to them. Standing in the front of the room is a way to establish authority. One of the best ways to gain trainees' attention is to facilitate discussion from different places in the room. Strive to lead the instruction but focus on the trainees. Help trainees develop their own answers, apply tools and techniques and use reference materials to reach solutions that are effective in training and on the job. Use questions that lead trainees to answers or points you want to make. Continually strive for interaction with trainees—trainees may have more real-life experiences, exposure to or applications related to the training topics than you do. Create a training environment where trainees can learn from each other. Listen to trainees, summarise learning points and provide feedback.

How can you deal with employees who don't want to be trained despite being informed in advance of the course and how it relates to the business?[60] Firstly, take charge of the session immediately, communicate your credentials and in a friendly but assertive way tell employees why the training is important and how it will help them. Then let them vent their frustrations. Useful methods for this activity are to have trainees describe what they would be doing if they were not in the program, or have trainees break into groups and then ask some groups to make a list of the top 10 reasons not to be in the class and the other groups to list 10 reasons to be in the class. Reassemble the class and discuss first the reasons not to be in the class, and then end with the reasons why the trainees should be in the class. For trainees who disrupt, doze off

or constantly interrupt the training sessions, consider using activities that get trainees moving, engaged and energised.

Managing group dynamics

To ensure an even distribution of knowledge or expertise in groups, ask trainees to indicate whether they consider themselves novices, experienced or experts on a topic. Arrange the groups so that they contain a mix of novice, experienced and expert trainees. Group dynamics can be changed by changing learners' positions in the room. Pay attention to group dynamics by wandering through the room and noticing which groups are frustrated or stalled, who is withdrawn and who is dominating the group. Your role is to make sure that everyone in a group has an opportunity to contribute. Seating arrangements such as rectangular tables often give trainees authority based on where they are seated. For example, the end of a rectangular table is the position of authority. Putting a quiet person in the 'power seat' creates an opportunity for that person to assume a leadership role within the group.

Program design

For learning to occur, training programs require meaningful material, clear objectives and opportunities for practice and feedback. However, even if a training program contains all these conditions, it still may not result in learning for several reasons. Proper equipment and materials may not be available during the session, trainers may be rushed to present content and fail to allow adequate time for practice, or the actual activities that occur in the training session may not relate to the learning objectives. **Program design** refers to the organisation and coordination of the training program. A training program may include one or several courses. Each course may contain one or more training sessions. Program design includes considering the purpose of the program as well as designing specific training sessions within the program. Effective program design includes course parameters, objectives and a detailed training session plan.[61]

Keep in mind that although the responsibility for designing the training program may belong to the instructional designer, human resource professional or manager, the 'clients' of the program should also be involved in program design. As already discussed in Chapter 3, managers and employees should be involved in the needs assessment process. In addition, their role may include reviewing prototypes of the program, providing examples and program content and participating in the program as instructors.[62]

The following explanations of each feature of effective program design are accompanied by an example based on a training program developed by an organisation to increase its managers' effectiveness in conducting performance appraisal feedback interviews. Performance appraisal feedback sessions are meetings between managers and subordinates during which the strengths and weaknesses of an employee's performance are discussed and improvement goals are usually agreed upon. Based on a needs assessment, this organisation discovered that its managers were uncomfortable conducting performance appraisal feedback sessions. These managers were often very authoritarian in the sessions. That is, they tended to tell employees what aspects of their

job performance needed to be improved rather than allowing the employees to participate in the session or working with them to identify and solve performance problems.

Course parameters

The course parameters refer to general information about the training program, including the course title, description of the audience, statement of purpose, goals of the course, location, time, prerequisites and name of the trainer. The course parameters are based on the information obtained from the needs assessment as discussed in Chapter 3.

Table 4.13 presents the course parameters for the performance appraisal feedback course. The course was designed for managers. The purpose of the course was to prepare managers to conduct effective performance appraisal feedback sessions with their subordinates.

TABLE 4.13 Course parameters

Course title: Conducting an effective performance feedback session
Target audience: Managers
Purpose: To prepare managers to conduct effective performance feedback sessions with their direct subordinates
Goals: Managers will be able to conduct a performance feedback session using the problem-solving approach
Total time: 1 day
Number of participants per session: 20–25
Locations: Various
Prerequisites: None
Instructor: Caroline O'Connell

Objectives

Earlier in this chapter was a discussion about characteristics of good objectives. Within a training program, there are usually different types of objectives. **Program objectives** are broad summary statements of the purpose of the program. **Course objectives** (also called **training session objectives**) relate to the goals of the course or the training session. These objectives are more specific than the program objectives in terms of the expected behaviours, the content, the conditions and the standards.

For the performance appraisal feedback training program, objectives included 'Describe the eight steps in the problem-solving approach without error' and 'Demonstrate the eight steps in the problem-solving approach in a role-play exercise without error'. The eight steps were: explain the purpose of the meeting; ask the employee to describe what they have done that deserves recognition; ask the employee to describe what they should stop doing, start doing or do differently; ask the employee for areas in which you can provide assistance; give the employee your

opinion of their performance; ask for and listen to the employee's concerns about your evaluation; agree on steps to be taken by each of you; and agree to a follow-up date.[63]

The training session plan

Training session plans can be designed for programs lasting a week, a day or several hours. If training takes place over several days, a separate training session plan is prepared for each day.

The training session plan translates the content and sequence of training activities into a guide that is used by the trainer to help deliver the training. That is, training session plans include the sequence of activities that will be conducted in the training session and identify the administrative details. Table 4.14 shows a training session plan. The training session plan provides a 'table of contents' for the training activity. This helps to ensure that the training activities used are consistent regardless of the trainer. Training session plans also help to ensure that both the trainee and the trainer are aware of the course and program objectives. Most training departments have written training session plans that are stored in notebooks or in electronic databases. Because training session plans are documented, they can be shared with trainees and customers of the training department (such as managers who pay for training services) to provide them with detailed information of program activities and objectives.

Table 4.15 shows the features of an effective training session plan. The training session plan includes the course title, learning objective, topics to be covered, target audience, time of session, instructor activity (what the instructor will do during the session), learner activity (for example, listen, practise, ask questions) and any prerequisites.[64] Completing a training session plan helps the trainer to determine the amount of time that needs to be allocated for each topic covered in the program. The training session plan is also useful in determining when trainers are needed during a program; time demands on trainees; program breaks for morning tea, lunch and afternoon tea; and opportunities for practice and feedback. For the performance appraisal feedback, the training session plan shows that approximately half of the training time is devoted to active learning by the trainees (discussion, role plays, question-and-answer session).

In developing the training session outline, trainers need to consider the proper sequencing of topics. Trainers must answer questions such as 'What knowledge and skills need to be learnt first?', 'In what order should the knowledge, skills and behaviour be taught?' and 'What order will make sense to the trainees?'. It is also important to consider the target audience. Any information about their training and experience, their motivation for taking the course, their interests, learning styles and background (such as education and work experience) will be useful for choosing meaningful examples, determining program content, deciding on support materials and building the credibility of the training. Information about the target audience should be available from the person analysis of the needs assessment (see Chapter 3). Additional information can be collected by talking to the 'clients' (such as managers) who requested the training program and to past program participants, if available. Support materials include any equipment needed for delivery of instruction, such as computers, projectors or VCR, DVD or CD players. Trainers should arrange for the purchase of any whiteboards, flip

TABLE 4.14 Sample of a training session plan

Course title:	Conducting an effective performance feedback session
Training session title:	Using the problem-solving style in the feedback interview
Training session length:	Full day
Learning objectives: 1. Describe the eight key behaviours used in the problem-solving style of giving appraisal feedback without error 2. Demonstrate the eight key behaviours in an appraisal feedback role play without error	
Target audience:	Managers
Prerequisites:	
Trainees:	None
Instructor:	Familiarity with the tell-and-sell, tell-and-listen and problem-solving approaches used in performance appraisal feedback interviews
Room arrangement:	Fan-type
Materials and equipment needed:	DVD player, overhead projector, pens, transparencies, DVD entitled 'Performance Appraisal Interviews', role play exercises
Evaluation and assignments:	Role-play; read article titled 'Conducting Effective Appraisal Interviews'
Comment:	Article needs to be distributed two weeks prior to session

Training session outline	Instructor activity	Trainee activity	Time
Introduction	Presentation	Listening	8.00–8.50 a.m.
View videos of three styles		Watching	8.50–10.00 a.m.
Break			10.00–10.20 a.m.
Discussion of strengths and weaknesses of each style	Facilitation	Participation	10.20–11.30 a.m.
Lunch			11.30 a.m.–1.00 p.m.
Presentation and video of eight key behaviours of problem-solving style	Presentation	Listening	1.00–2.00 p.m.
Role plays	Watch exercise	Practise using key behaviours	2.00–3.00 p.m.
Wrap-up	Answer questions	Ask questions	3.00–3.15 p.m.

TABLE 4.15 Features of an effective training session plan

Feature	
Learning objectives or outcomes	What is the training session designed to accomplish? What is the standard for successful learning?
Target audience	Who is in the training session? What are the characteristics of the audience?
Prerequisites (trainees and instructor)	What will trainees need to be able to do before they can benefit from the course? Who is qualified to be in the program? Who is qualified to be an instructor?
Time	How much time will be devoted to each part of the training session?
Training session outline	What topics will be covered? In what sequence?
Activity	What will the trainees' and the instructor's role be during each topic covered?
Support materials	What materials and/or equipment is needed for delivery of instruction or to facilitate instruction?
Physical environment	Is a certain size or arrangement of room necessary?
Preparation	Do trainees have homework that needs to be completed before the training session? What does the instructor need to do?
Training session topic	What topic is the training session going to cover?
Evaluation	How will learning be evaluated (e.g. tests, role plays)?
Transfer and retention	What will be done to ensure that training content is used on the job?

SOURCE: Based on R. Vaughn, *The Professional Trainer* (Euclid, OH: Williams Custom Publishing, 2000); R. F. Mager, *Making Instruction Work*, 2nd edn (Atlanta, GA: Center for Effective Performance, 1997); L. Nadler and Z. Nadler, *Designing Training Programs*, 2nd edn (Houston, TX: Gulf Publishing, 1992); and Big Dog's Human Resource Development page, http://www.nwlink.com/donclark/hrd.html.

charts or markers that may be used in instruction. Any exercises needed for trainees' practice or preparation, such as readings, role play exercises, assessments or pre-tests, need to be ordered or reproduced (after copyright permission has been obtained). In considering instructor and trainee activity, the focus should be on ensuring that the training session has as many features of a positive learning process as possible, including communication of objectives, feedback, opportunities for practice, opportunities for trainees to share experiences and ask questions and modelling or demonstration. Transfer and retention strategies might include chat rooms, follow-up meetings with the manager and action planning. Transfer and retention strategies are discussed in Chapter 5.

Because the training session objective involves having trainees successfully demonstrate the key behaviours, meeting this objective requires that trainees both understand the key behaviours and practise using them. The sample training session plan in Table 4.14 shows that the instructor is involved in presenting key behaviours to the trainees, facilitating discussion and overseeing role play exercises. The trainees in the session are involved in both passive learning (listening) and active learning (discussion, role play exercises).

The prerequisites include (1) arrangement of the training site, equipment and materials needed; (2) instructor preparation; and (3) trainee prerequisites. In the example, the trainer needs a DVD player to show a video of performance appraisal feedback styles. The trainer also needs an overhead projector to record points made by the trainees during the planned discussion of the strengths and weaknesses of the appraisal styles presented on the video. The room needs to be fan-shaped so trainees can see the trainer and each other. The fan arrangement is also good for role-play exercises that involve trainees working in groups of two or three.

Trainee prerequisites refer to any preparation, basic skills or knowledge that the trainee needs prior to participating in the program. Trainee prerequisites may include basic mathematical and reading skills, completion of prior training sessions or successful completion of tests or certificate or degree programs. Instructor prerequisites indicate what the instructor needs to do to prepare for the session (such as rent equipment or review previous day's training session) and any educational qualifications the instructor needs. Training session plans may also cover how the training session will be evaluated and any assignments that the trainees need to complete. In the example, trainees are required to read an article on effective performance appraisal feedback interviews. The instructor needs to be familiar with the eight key behaviours for conducting problem-solving appraisal feedback interviews.

SUMMARY

Learning must occur for training to be effective. This chapter began by defining learning and identifying the capabilities that can be learnt: verbal information, intellectual skills, motor skills, attitudes and cognitive strategies. To explain how these capabilities can be learnt, the chapter discussed several theories of learning: reinforcement theory, social learning theory, goal-setting theory, need theories, expectancy theory, adult learning theory and information-processing theory. Next, the chapter investigated the learning process and the implications of how people learn. The section on learning process emphasised that internal processes (expectancy, storage and retrieval) as well as external processes (gratifying) influence learning. The potential influence of learning styles and age differences in learning was examined. The chapter then discussed the relationship between the implications of the learning process and design of instruction. Important design elements include providing learners with an understanding of why they should learn, meaningful content, practice opportunities, feedback, a model, a coordinated program and a good physical learning environment. The chapter concluded by discussing how to select and prepare a training site and by discussing effective program design. Effective program design includes developing course parameters, objectives and a detailed training session plan.

DISCUSSION QUESTIONS

1. Compare and contrast any two of the following learning theories: expectancy theory, social learning theory, reinforcement theory, information-processing theory.
2. What learning condition do you think is most necessary for learning to occur? Which is least critical? Why?
3. What value would it be to know that you were going to be training a group of people between the ages of 20 and 35? Would it influence the approach you would take? How?
4. Consider the ages of people in the group mentioned in the previous question. What suggestions would you make to the instructor or trainer as to how to better teach the course, given the generations represented in the group?
5. How do instructional objectives help learning to occur?
6. Assume you are training an employee to diagnose and repair a loose wire in an electrical socket. After demonstrating the procedure to follow, you let the trainee show you how to do it. The trainee correctly demonstrates the process and repairs the connection on their first attempt! Has learning occurred? Justify your answer.
7. Your immediate manager says, 'Why do I need to tell you what type of learning capability I'm interested in? I just want a training program to teach employees how to give good customer service!' Explain to the boss how 'good customer service' can be translated into different learning outcomes.
8. How does practice help learning? What could a trainer do in a training session to ensure that trainees engage in metacognition?
9. Can allowing trainees to make errors in training be useful? Explain.
10. What learning conditions are necessary for short- and long-term retention of training content to occur?
11. Under what circumstances might a traditional seating arrangement be superior to a fan-type seating arrangement?
12. Detailed training session plans have important information for trainers. List the different types of information found in a detailed training session plan. Also, indicate the importance of each type of information for learning.
13. You have a one-day training experience in which you need to help a group of engineers and software programmers learn to become project managers. After training, they will have to manage some significant projects. Discuss the instructional characteristics and activities you will use to ensure that the engineers and software programmers learn project management. Identify the course parameters and develop a sample training session plan.

APPLICATION ASSIGNMENTS

1. Using any source possible (magazines, journals, personal conversation with a trainer), find a description of a training program. Consider the learning process and the implications of the learning process for instruction discussed in the chapter. Evaluate the degree to which the program facilitates learning. Provide suggestions for improving the program.

2. You are the training director of a hotel chain, Antipodean Suites. Each Antipodean Suites hotel has 100 to 150 rooms, a small indoor pool and a restaurant. Hotels are strategically located in regional cities throughout Australia and New Zealand. You receive the following email message from the General Manager of Operations. Draft an answer.

   To: You, Training Director

   From: General Manager, Operations, Antipodean Suites

   As you are probably aware, one of the most important aspects of quality service is known as 'recovery'—that is, the employee's ability to respond effectively to customer complaints. There are three possible outcomes to a customer complaint: the customer complains and is satisfied by the response; the customer complains and is dissatisfied with the response; and the customer does not complain but remains dissatisfied. Many dissatisfied customers do not complain because they want to avoid confrontation, because there is no convenient way to complain or because they do not believe that complaining will do much good.

   I have decided that to improve our level of customer service we need to train our hotel staff in the 'recovery' aspect of customer service. My decision is based on the results of recent focus groups we held with customers. One theme that emerged from these focus groups was that we had some weaknesses in the recovery area. For example, last month in one of the restaurants, a waiter dropped the last available piece of the chef's signature apple pie on a customer as he was serving her. The waiter did not know how to correct the problem other than by offering an apology.

   I have decided to hire two well-known consultants in the service industry to discuss recovery as well as to provide an overview of different aspects of quality customer service. These consultants have worked in service industries as well as manufacturing industries.

   I have scheduled the consultants to deliver a presentation in three training sessions. Each session will last three hours. There will be one session for each shift of employees (day, afternoon and midnight shifts).

   The sessions will consist of a presentation and question-and-answer session. The presentation will last one-and-a-half hours and the question-and-answer session approximately 45 minutes. There will be a half-hour break.

   My expectations are that following this training, the service staff will be able to successfully recover from service problems.

   Because you are an expert on training, I want your feedback on the training session. Specifically, I am interested in your opinion regarding whether our employees will learn about service recovery from attending this program. Will they be able to recover from service problems in their interactions with customers? What recommendations do you have for improving the program?

3. Identify what is wrong with each of the following training objectives, and then rewrite it.
   (a) To be aware of the safety rules for operating the ribbon-cutting machine in three minutes.
   (b) Given a personal computer, a table and a chair, enter the data into a Microsoft Excel spreadsheet.
   (c) Use the internet to learn about training practices.
   (d) Given a street address in the city of Toowoomba, Queensland, be able to drive the ambulance from the station to the address in less than 10 minutes.
4. Go to http://www.nwlink.com/~donclark/hrd/sat.html, Big Dog's Instructional System Design (ISD) page. This website is an excellent resource that describes all aspects of the ISDesign

model. Click on Learning and scroll to the concept map or the list of terms under the map. Click on Learning Styles and take the VAK survey. What are the implications of your learning style for how you best learn? What type of learning environment is best suited for your style? Be as specific as possible.

5. Go to http://agelesslearner.com/intros/adultlearning.html, a site authored by Marcia L. Conner about how adults learn. Scroll down to the bottom of the page and click on Learning Styles Assessment. Complete the assessment. What are the assessment's implications for the way that you learn best?

ENDNOTES

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