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PLANNED TRAINING ON THE JOB

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▲ Preface

Consider the following learning situations involving the use of planned training on the job. Frontline employees in a regional U.S. utility company call center learn to solve customer-service problems through structured on-the-job training. Skilled technicians in a Singapore high-tech manufacturing environment learn to identify characteristic defects on hard disks in the same way. Production employees in a steel manufacturer in the Netherlands learn equipment operation through planned on-the-job learning activities. Field sales agents of an insurance company in Taiwan learn the selling process through structured training sessions with experienced agents. Newly promoted supervisors in a large U.S. hospital learn the organization's mission statement and examples of how it is implemented through a one-on-one guided discovery process with experienced managers. These situations represent the growing range of uses of planned training on the job. As jobs have become more complex, the logic of conducting the training in the actual work context becomes more apparent (Jacobs, 1999).

Contemporary use of planned training on the job represents both a return-to-training basics and a true advancement in human resource development (HRD) theory and practice. As a return to training basics, its use can be traced back to the war production efforts during World War I and, more prominently, during World War II through the Training Within Industry (TWI) program (Dooley, 1945). Both of these large-scale training efforts were borne largely out of practical necessity and predate the emergence of HRD as a field of practice. In terms of advancements in contemporary practice, planned training on the job represents theoretical understandings about the necessities of learning in context. Until recently, classroom environments had been the preferred training setting because of the apparent control it offered to designers and trainers. That planned training can be conducted on the job, all the while taking advantage of learning in situ, suggests the potential for addressing organizational performance issues more effectively.

Planned training on the job refers to a set of training approaches that share at least three attributes. First, planned training on the job invariably involves a novice employee who is trained on a set of work using a prescribed process by a more experienced employee. The set of work can refer to awareness, managerial, or technical content (Jacobs & Jones, 1995). Second, the training process occurs in the actual work setting or at least in a training setting that somehow approximates the requirements of the work environment. Third, training outcomes are specified beforehand so that the

training process focuses on what the trainees—frontline employees, professionals, or managers—should achieve by the conclusion of the training. Together, these three fundamental attributes form the essence of planned training on the job, distinguishing it from unplanned training on the job, which is more of a happenstance occurrence between individuals, and from informal training on the job, which seeks to achieve other types of learning outcomes in organizations (Marsick, 1999).

The attractiveness of planned training on the job derives mostly from its potential ability to address two fundamental issues: training contiguity and transfer of training (Jacobs & Jones, 1995). Training contiguity focuses on the proximity of the training events to each other, with the principle being that when the basic training events occur closer together—presentation of the content by the trainer, trainee's practice, and feedback by the trainer to the trainee—then training effectiveness increases. In general, transfer of training focuses on the similarity of the training setting—such as the cues, tools, design, or other critical attributes—and the work setting. The principle is that the greater the similarity between the settings, the increased the probability that the trainee will use the information after the training. Transfer of training is about using information learned in one setting in another setting.

As use of planned training on the job has increased, new forms of this training approach have invariably emerged, raising questions and issues that have not yet been fully addressed. This monograph seeks to review this information and provide a perspective to help guide future HRD research and practice on the topic.

In the first chapter, Jan A. De Jong, Jo G. L. Thijssen, and Bert M. Versloot propose a typology as a way of categorizing different types of planned training on the job. In chapter 2, David S. Stein discusses how situated learning provides one underlying theory base for planned training on the job. In the third chapter, Scott D. Johnson and James A. Leach discuss the unique nature of experts and the various challenges of using experts as trainers on the job. In chapter 4, Margaret C. Lohman presents an alternate perspective on how inductive, as opposed to the more commonly used deductive, training strategies can be used with planned training on the job. In chapter 5, Jin Hyuk Kim and Chan Lee discuss near and far transfer of training and propose that structured on-the-job training can be used with far transfer, a perspective that has not been investigated in the literature. In chapter 6, Ahad M. Osman-Gani and Suhail S. Zidan provide an overview of the issues of international cross-cultural training and the role of planned training on the job as a means to deliver this type of training.

In chapter 7, Harold D. Stolovitch and Daniel Ngoa-Nguele present how structured on-the-job training has been used in Cameroun, which serves as an example of its use in a developing-nation context. In chapter 8, Peter Dehnbostel describes how learning bays are used in German manufacturing companies. In

chapter 9, Michael J. Jones introduces the concept of just-in-time training as a challenging variation of planned training on the job. In chapter 10, Shirine L. Mafi describes the issues and promise of using planned training on the job for managerial training, a situation that unfortunately has often been overlooked. Finally, in chapter 11, Ronald L. Jacobs and Darlene Russ-Eft introduce the concept of cascade training as a means to institutionalize organizational change that often uses planned training on the job to deliver the information.

Considered together, the chapters of this monograph provide a sense of the emerging richness and scope of topics related to planned training on the job. Indeed, it can be said with some assuredness that the field has successfully moved from the early on-the-job training programs such as TWI and is now moving into new directions to address organizational issues of the 21st century.

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Planned Training on the Job: A Typology

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Bert M. Versloot

The problem and the solution. What are the different types of planned training on the job? And how do they match with types of intended learning processes? This chapter proposes four models of planned training on the job. Each model is connected to one type of learning process and one corresponding set of roles for trainee and trainer. Types of training objectives and training procedures are discussed per model. Finally, the chapter discusses the implications of the typology for human resource development (HRD) research and practice.

As a process, planned training on the job can take different forms. If one expects on-the-job trainers to guide and support these various processes, then their roles should differ accordingly. In planned training on the job, training outcomes and training procedures are prescribed. These prescriptions should be aligned with the intended trainer roles and learning processes. The spectrum of training on-the-job learning processes and related trainee and trainer roles, training objectives, and training procedures can be systematically described in a typology of planned training on the job. The following chapter proposes four models that comprise the typology, each of which is connected to a type of learning process and corresponding set of roles for the trainee and trainer. Types of training objectives and training procedures are discussed for each model. Finally, the chapter discusses the implications of the typology for human resource development (HRD) research and practice.

A Typology of Planned Training on the Job

Figure 1 shows that planned training on the job can be described from the perspective of four models:

1. job instruction,
2. apprenticeship,

	Job Instruction	Apprenticeship	Inquiry	Self-Evaluation
Learning process	Systematic skills training	Socialization/ modeling	Analysis/ problem solving	Feedback plus reflection
Trainee's role	Application/ practice	Participation/ observation	Exploration/ orientation	Goal setting/ evaluation
Trainer's role	Instructor	Master	Tutor	Coach

FIGURE 1:   A Proposed Typology of Planned Training On The Job

3. inquiry, and
4. self-evaluation.

These components are inspired by a similar set in a typology of instructional approaches in the teacher education literature as developed by Zeichner (1983), who uses the terms *behavioristic paradigm*, *traditional-craft paradigm*, *inquiry-oriented paradigm*, and *personalistic paradigm*, respectively.

Job Instruction

The job instruction model comes originally from the U.S. war production effort during World War II and builds on foundations laid in World War I. During World War II, millions of people had to be trained to work in industrial production, replacing the soldiers who were drafted into service. Specifically, the Training Within Industry Service (TWI) program introduced an approach called job instruction training (JIT) for supervisors responsible for breaking in new workers (Dooley, 1945). In a standard course, 10 supervisors at a time were taught the four-step instructional method:

1. Prepare the worker.
2. Present the operation (one step at a time, stressing "key points").
3. Try out performance.
4. Follow up.

In slightly modified forms, the job instruction model has been proposed by Broadwell (1986), Rothwell and Kazanas (1994), and Jacobs and Jones (1995). The job instruction model is characterized by a comprehensive analysis of the task; an emphasis on technical skills, although this aspect is changing; and a detailed understanding of the trainee's prerequisite knowledge and skills. The learning process of the job instruction model is characterized by guided acquisition of knowledge and skills, by listening, observing, and practicing. The role of the trainer is that of an instructor, and the trainee is expected to attend to the

instruction and be prepared to practice and apply the information afterward, initially closely supervised by the trainer.

Important elements of the job instruction model are the following:

1. The trainer receives training on how to perform task analyses and how to instruct.
2. A task analysis includes the systematic identification of the behaviors and resources required to do the task.
3. The key points are identified and include anything in a step that might make or break the job, injure the worker, make the work easier to do.
4. A relatively fixed training delivery format is being used.
5. Performance tests are used to measure both products and processes.

Apprenticeship

The apprenticeship model has a relatively long history starting with the early apprenticeship system for skilled craftsmen (Smith, 1981). Recently, it has been rediscovered in some contemporary organizations after a long period of some disinterest. Sfard (1998) recognized two metaphors that dominate the academic debate about learning: the acquisition metaphor and the participation metaphor. In the acquisition metaphor, learning is conceived of as obtaining a skill or knowledge. In the participation metaphor, learning is conceived of as a process of becoming a member of a certain community. This entails, above all, the ability to communicate in the language of this community and act according to its particular norms (Sfard, 1998). This seems to be the function of the apprenticeship model. The apprenticeship model suggests that practical knowledge about the social milieu of the task is just as indispensable for adequate performance as the technical knowledge. This information exists only in practice and in the practice setting, and the only way to acquire it is through an apprenticeship experience with a master (Tripp, 1993).

Training objectives in the apprenticeship model come down to job task performance according to the (often implicit) standards of expert performers. This information can be formalized by demanding a public demonstration of exemplary task performance or the exhibition of a masterpiece. In the apprenticeship model, the major learning process is through the socialization process that occurs between the master (or a group of experienced workers) and the apprentice. The master serves as a model in most respects to the apprentice, who observes and works alongside the master.

From descriptions by Lave and Wenger (1991) and others, the following characteristics of the apprenticeship model can be derived:

1. Learning occurs through legitimate peripheral participation as the trainee serves in an assistant role on real work projects.
2. Learning is identity formation: The trainee is socialized as a member of a community of practitioners.

3. Learning in informal contacts with fellow trainees and representatives of the community of practitioners makes the apprentice aware of communal knowledge, which is often transferred through stories and prolonged interactions.
4. The learning process often entails moving from peripheral to core work activities. At first, the trainee may do tasks in the final stage of production, thus learning about the quality criteria used; earlier stages of the process may be tackled later on.
5. Training often occurs indirectly through examples, assignments, recognitions, and through quality criteria employed in evaluating the work.

Inquiry

In both the job instruction model and the apprenticeship model, new employees are more or less passive participants in the learning process. That is, they are expected to receive the information from others. However, one can conceive of some forms of planned training on-the-job learning whereby trainees play a more active role, combined with a less directive, but still supportive, trainer role. In this model, trainees actively collect information relevant to the task being learned, and then the learning occurs as part of having trainees reflect on that information. It might be said that this model of planned training on-the-job learning represents a basic learning model of all individuals. Farnham-Diggory (1994) describes three such models: the behavior model, the apprenticeship model, and the developmental model. The first two can be associated with the job instruction model and the apprenticeship model as described in this chapter. The developmental model conceptualizes learning as a qualitative shift in personal theories and explanations as the result of experienced anomalies. It has roots in the traditions of John Dewey and other proponents of inquiry-based learning, experiential learning, and action learning.

Jacobs and Jones (1995) provide a description of structured learner-directed discovery that fits somewhat into the inquiry model. In this type of planned training on the job, the employee learns while doing, using information engineered into the work setting to guide the learning. The employee can trust the system to help make the learning easier and reduce frustration. Furthermore, Dehnbostel (1992, 2001) describes this model of on-the-job training through learning bays, whereby a group of trainees has the responsibility for fabricating a product or for managing a machine part. The trainees perform the task while being supported by a trainer in a tutor role.

As in the apprenticeship model, training objectives are not specified as skills to be learned but as broad tasks to be mastered. It is considered most important that the trainee is well-informed and can provide sufficient and valid reasons for the way he or she deals with the task requirements. The learning process is characterized by inquiry and problem solving. Trainees are urged to proactively

explore their task environment, whereas the trainers should take a more reactive stance. The critical elements of the inquiry model are the following:

1. Trainee assignments require them to collect relevant information and allow them a certain degree of freedom in planning and carrying out the tasks to be learned.
2. Responsibilities of the trainees can be gradually expanded, by having them do several explorative assignments covering varying aspects of their jobs.
3. Trainees spend much time investigating work processes, work tools, procedures, and background information, in the course of orienting on how to perform specific job tasks.
4. Job aids and relevant background information are well within reach and well maintained.
5. A tutor role is most common for the trainer, supporting the trainees in scheduling their task performance; monitoring quality; protecting them against major risks; and, when asked, providing them with information.

Self-Evaluation

The fourth model of the typology can be considered a variant of the inquiry model. In the context of teacher supervision it is known as clinical supervision (Pajak, 1993) and in the general context of employee supervision as coaching (McFarlane, Shore, & Bloom, 1988; Tyson, 1985). According to Pajak (1993), the strong emphasis on the encouragement of reflective thought characterizes the literature on teacher supervision and can be attributed to the influence of John Dewey. The notion of clinical supervision was first introduced by Cogan (1973) as a vehicle for developing professionally responsible teachers who were capable of analyzing their own performance, who were open to change and assistance from others, and who were self-directed in their own improvement activities (Pajak, 1993). Furthermore, in the context of employee supervision, the concept of coaching has been introduced to indicate a less control-oriented and more enabling and improvement-oriented management style (Zuber & Miller, 1995). With the advent of the learning organization, this concept introduced an attractive alternative to the dominant Tayloristic organizational philosophy. Thus, from this perspective, coaching was increasingly recognized as an indispensable instrument to improve employee performance.

Similar to the inquiry model, the self-evaluation model treats the trainee as an active player in the learning process. Continuous goal setting, feedback seeking, and reflecting on past experiences are important trainee activities. The role of the trainer is more of a coach, helping to set performance goals, providing feedback, and helping to plan improvements. Some of the critical elements of this model are the following:

1. It involves a cyclical model, containing the following phases: formulating learning goals, planning the observations, reflecting on performance, and planning specific improvement actions.
2. There is active trainee involvement in all phases.

3. Systematic observation and evaluation of trainee job performance are critical for the trainer to provide appropriate feedback.
4. The use of formal training sessions is downplayed.

Implications for Human Resource Development

The various models of planned training on the job presented in this chapter are meant to provide options for HRD professionals. That is, planned training on the job can have more variations than what might be believed at first glance. Of course, making such selections presumes knowledge of the task to be learned and the nature of the training objectives to be achieved. Some exploratory studies have been done on how to match task environments and types of planned training on the job (e.g., Poell, Van der Krogt, & Wildemeersch, 1999; Versloot, De Jong, & Thijssen, 2001).

Also, even if an on-the-job training program has been developed according to one of the models delineated, it is not guaranteed that on-the-job trainers will behave as the model presumes they will behave. Studies in the educational tutoring literature such as Person and Graesser (1999) suggest that the kind of interventions and interactions thought to be characteristic of tutoring hardly show in the actual tutoring sessions. When they are confronted with student errors, for example, the tutors, often out of politeness, tend to restrain from providing negative feedback. Detailed descriptions of the interactions as they *do* take place lead to a revised conception of tutoring as an educational strategy.

In conclusion, the typology proposed here seeks to codify the complexities of planned training on the job. Certainly, more research in these various approaches is needed, especially to determine more precisely the conceptual boundaries between them and when each of them are best used.

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Situated Learning and Planned Training on the Job

David S. Stein

The problem and the solution. A prominent feature of planned training on the job is that it occurs in the actual work context. That working and learning occur in the same location is often viewed as a potential advantage of this training approach. However, the interaction of working and learning in the same context has seldom been explained beyond the claim of increased relevance. This chapter proposes that situated learning constructs can be used to explain how trainees construct knowledge from job performance. Of importance in situated learning are the constructs of work content; the work context; and the availability of a work community to guide and assist in planning, interpreting experience, and constructing learning.

This chapter proposes that situated learning constructs can provide a framework for understanding planned training on the job. Other theoretical frameworks could also be used to explain planned training on the job, such as social learning theory. However, situated learning, as a constructivist approach, seems better suited for understanding how knowledge is acquired based on the nature of the work content, the work context, and the influences of a community of experts who help guide and shape the learning of others. Those aspects comprise the various constructs of situated learning. By having the learning and working in the same location, there is a greater chance that job performance can supply the content for learning.

Specifically, the chapter describes situated learning in the context of working and learning in the same location. Second, the chapter discusses the constructs related to situated learning in the workplace. Finally, the chapter discusses the relationship between situated learning and the use of planned training on the job, especially as it relates to the role of the trainer.

Situated Learning

Situated learning represents a set of principles regarding the nature of knowledge, thinking, and learning. Most discussions of these ideas have

treated learning merely as the process of acquiring knowledge and skills thought to be useful in a wide variety of settings. Situated learning, on the other hand, challenges the assumption that cognition is independent of the context in which it occurs. Instead, situated learning posits that the physical and social contexts in which an activity takes place are an integral part of the activity and that the activity in turn is an integral part of the learning. As such, one can expect mutual interactions between the two. How an individual learns and the situation in which the information is learned ultimately become a fundamental part of what is learned. Situated learning focuses on social interactions that include trainees interacting with others as well as the objects in the environment.

Discussions about situated learning invariably suggest the importance of creating authentic learning experiences, usually in the context of classroom activities. A major part of authentic learning experiences is the opportunity to manipulate the things and symbols that are important outside of the learning situation, including all the uncertainty and chaos that accompany the actual situations (Courtney & Maben-Crouch, 1996). Acquiring knowledge becomes a collaborative rather than an individual process with trainees and a work community contributing to the dialogue about the meaning of work situations. Through dialogue, learning is created. Knowledge is acquired by framing unique job situations as opportunities to apply insight as well as test knowledge gained from texts and instructors (O'Neil & Dilworth, 1999). Situated learning embraces critical reflection as essential to knowledge creation. The notion of dialogue and explicit knowledge creations differentiates planned learning from informal on-the-job learning, in which job experiences may or may not be made explicit as knowledge (Marsick & Volpe, 1999). In situated learning, trainees acquire job content knowledge from engaging with the job tasks. To situate the learning in the actual work context—which is the ultimate authentic situation—one can bypass the need to create an authentic learning setting. In fact, by learning in the work setting, the learning becomes a matter of constructing knowledge from the activities of daily working. To situate learning means placing thought and action in a specific job task (Lave & Wenger, 1991). Situated learning recognizes that knowledge construction is the result of a complex process of social interactions. Learning takes place in a social network involving interactions with other workers as well as the context and content of the task. Learning is not haphazard but is fashioned by, and located in, the doing of the assignment. The trainee becomes creator and active agent in the doing and the learning (Merriam & Caffarella, 1999).

It is from this understanding that situated learning emphasizes the importance of developing a learning community composed of those who take on the role transmitting cultural, historical, and normative information to others (Lave, 1988). Thus, an important element of situated learning is the role

of the community of experts. In effect, these individuals define what is known as legitimate knowledge such that through their example they assist others in becoming full participating members of the practice community. The process of passing along knowledge is often worked out over time through dialogue and negotiation within the practice community.

In sum, situated learning states that all knowledge is by definition situated in a particular context and constructed by learners within the confines of prevailing historical, cultural, and organizationally sanctioned behavior. Thus, situated learning represents an overarching framework for thinking about how the learning process occurs in a particular work environment.

Situated Learning Constructs

This section discusses the major constructs by which trainees acquire knowledge and apply knowledge to situations in the workplace.

Content

Learning is crafted from job situations. Content is embedded in tasks that are surrounded by socially determined ways of accomplishing the tasks. Content is acquired by doing the task. To acquire content, trainers look for situations challenging the intellectual and psychomotor skills learners will apply on the job. Learning is embedded in the job performance. Trainees do not extract knowledge from the situation but remain inside the situation, experiencing what works and what does not (Elkjaer, 2000). Learning becomes inseparable from the situation involving the physical, intellectual, and intuitive forms of knowing. Ziegler (1999) presented a case of an organization's employees developing new skills from the content of everyday job interactions:

> They learned team meeting skills in actual team meetings. They developed problem-solving skills as they followed actual processes in the plant. They learned computer skills creating project management charts or completing a job for a customer using a new computer tool. (p. 58)

Learning occurs not merely through task accomplishment but from discussing and reflecting with others on the meanings derived from the experience.

Retention of content is not necessarily the goal of learning. By placing content within the daily transactions of work life, content becomes a tool applicable to the ways in which practitioners approach the environment. Content becomes a tool for learners to acquire, to refine thought, to develop problem-solving skills, and to apply knowledge in the same way as expert practitioners (Cobb, Gravemeijer, Yackel, McClain, & Whitenack, 1997). Whereas content describes what is learned, context describes the values, beliefs, sociocultural, and environmental cues by which the learner gains

and masters content. Context is the background shaping how content is interpreted.

Context

Context refers to the complex relationships learners navigate through on a daily basis. Learning in context refers to building an instructional environment sensitive to the tasks trainees must complete to be successful in practice. Context embraces notions of power relationships; organizational politics; competing priorities; and the trainee's interaction with the values, norms, and culture defining a community of practice (Courtney, Speck, & Holtorf, 1996). Context is composed of the social, psychological, and material environment in which the trainee is situated. Context gives texture and organization to content acquired from formal and informal learning opportunities. Context provides the template for interpreting experience gained by trainees. It is the lens that the trainee uses to understand how a particular workplace operates. Context helps define the application of knowledge and skills in specific ways. Torraco (1999) argued that work and learning must be connected. High performance levels cannot be attained without embedding learning in the site of and context of the actual work. Rather than training preceding performance, training and performance might occur simultaneously. Whereas context provides the setting for examining experience, a work community provides the shaping of the learning.

Work Community

Community contains the distributed knowledge of experience. Through a community of work, experts and peers are introduced to the ways of interpreting, reflecting, and forming meaning from work experiences. Community provides the setting for the social interaction needed to dialogue with others to see various and diverse perspectives on any issue (Wenger & Snyder, 2000). Community is the joining of practice with analysis and reflection to share the tacit understandings and to create shared knowledge from the experiences among participants in a workspace. Through community, master practitioners pass on practitioner and organizational cultural knowledge to trainees (Jacobson, 1996). Trainees learn to perceive, interpret, and communicate experience from the norms learned in interactions with other workplace members. Community provides the opportunity for learners to observe, dialogue, and internalize the ways and means of doing work in a particular organization.

Community provides the trainee with a means for interpreting the meaning of the experience and creating local knowledge. It is the process of inter-

action with others that produces and establishes meaning systems among the practitioner community. From a situated learning perspective, knowledge production occurs in a social setting through dialogue with others in the community. Learning becomes a process of reflecting, interpreting, and negotiating meaning among the participants of a community. Learning is the sharing of the narratives produced by a group of learners. On-the-job sharing of stories, events, and know-how is an opportunity for trainees to interpret, invent, and interrupt the usual pattern of accomplishing job tasks. Learning comes about through reflecting on the experience, dialoguing with others, and exploring the meaning of events in a particular space and time, such as the context and the community (Orner, 1996). For instance, new state of Ohio Highway Patrol troopers return to the academy after 60 days of performing in the field. The field is considered the postgraduate phase of learning. Back at the academy setting, troopers are tested on knowledge gained from field use of radar and Breathalyzer™ situations. Troopers engaged in sharing stories of life as practicing troopers and particularly dealing with difficult and stressful situations. It is through the stories and sharing that more effective strategies for handling situations are created. In a work community, experts and novices create and negotiate the meanings of different responses to a situation. By engaging in reflection on experience and through sharing of everyday work stories, trainees and trainers construct job knowledge about local workplaces and work processes. Thus, community consists of the groups with which the learner will create and negotiate meaning of the situation. Community determines how the learning is manifest on the job (Brown, Collins, & Duguid, 1989a; Lave, 1988).

Situated Learning and Planned Training on the Job

In planned on-the-job training, to situate learning in the workplace implies that learning is a social process taking place within the complexity and ambiguity of performing job tasks. Trainee understanding of the job situation develops from immersion in the daily life of the organization. Trainers may impart factual information through readings, lectures, or demonstrations or provide trainees with explicitly documenting procedures for performing a task, as in structured on-the-job training (Jacobs & Jones, 1995). However, understanding, in which trainees come to own the knowledge, happens when insights gained through job performance are made explicit through analytic and reflective conversations with other workers engaged in similar situations. The conversational objective is to help trainees become more aware of the environmental cues guiding task performance, the thought processes involved in taking actions, and the conditions influencing the action taken and the consequences. In the United States Army, every field exercise is followed by an after-action review (AAR). The

AAR is a group discussion designed to make explicit how a unit and its individual soldiers performed a series of tasks. An AAR is not a performance critique but an opportunity for those who participated in the action to discuss how and why decisions were made, the consequences of actions taken, and possible actions that might have been taken that would have improved the performance of the unit. Learning is situated in a reflective performance review, not in the teaching of specific ways to perform the task. *Lessons learned* is the term used to describe knowledge constructed from the blending of experience and doctrinal knowledge. Learning is located in performing tasks and emerges from group interactions around the task experience.

In situated learning, it is the trainee, with the assistance of the trainer, who is the ultimate designer and interpreter of the learning experience. Trainees make meaning from the raw data of experience and, perhaps with guidance from experts, analyze and reflect on experience and learn how to become fully qualified members of a work group (Anderson, 1996; Wilson, 1993). Situated learning contributes to our understanding of planned on-the-job training by focusing on the trainee as the interpreter of the learning experience; by grounding learning in job tasks; and by posing learning as a social process encompassing ways of thinking, perceiving, decision making, and interacting with a community of practice.

When applied to planned on-the-job training, trainers not only assist with reflecting on, and drawing implications from, previous experiences but also seek ways to immerse trainees in and with various job experiences. Trainees negotiating and interacting with other experts create new knowledge. The structure of the learning is implicit in the experience rather than in the subject matter selected and structured by a trainer. Knowledge is found in the field rather than in a text or lecture. Lave (1997) described a process for constructing knowledge as way in and practice. *Way in* is a period of observation in which a learner watches a master and makes a first attempt at solving a problem. *Practice* is refining and perfecting the use of acquired knowledge. Applied to the workplace, situated learning is not only reflecting on, and drawing implications from, previous experiences but is immersion in and with the experience. In the workplace, trainees participate with instructors in discussing the tools; mental and material tools that are likely to be needed in the environment.

Of importance in understanding the relationship is how situated learning guides the process that occurs between trainers and trainees. Indeed, considering a situated learning framework invites some expansion of the current conceptualizations of planned training on the job, which are often too narrowly defined. For instance, trainers in most planned training on-the-job situations may be considered as transmitters of established ideas only. Yet, situated learning suggests that the trainer's role becomes more involved than

this alone. For instance, Young (1993) suggested that trainers should consider four critical tasks when designing situated-learning experiences.

Trainers must select situations that will engage the learner in complex, realistic, problem-centered activities that will support the desired knowledge to be acquired. Trainers must plan for the type and intensity of guidance necessary to help learners master the situations. As learners acquire additional skills, less support will be needed. Trainers recast their roles from one of content transmitter to one who facilitates learning by tracking progress, assessing products produced by learners, building collaborative learning environments, encouraging reflection, and helping learners become more aware of contextual cues to aid understanding and transference. The last task is to continually assess the trainee's knowledge and skills growth. The idea of cognitive apprenticeships incorporates four steps useful for increasing mastery in the workspace. (Brown, Collins, & Duguid, 1989b).

Situated learning concepts also provide insights as to how mastery might be achieved while planned training on the job occurs. From a cognitive apprenticeship perspective, learning proceeds through four stages: observing, modeling, scaffolding, and generalizing. Given an unfamiliar task, a worker *observes* expert performers. Interpretative schemata are developed as the learner attends to the nuances of the situation and the interactions between workers and the environment. Expert performers *model* their skills by trying to make explicit tacit knowledge or how it is that the learner performs in this way. Learners perform simple tasks at first and increase the complexity of learning as knowledge is developed. *Scaffolding* is an instructional process by which expert performers gradually introduce learners to more complex tasks and coach rather than directly teach the task. It is a supportive tool to encourage learners to become self-directed and more confident in handling tasks of increasing complexity. *Generalizing* involves a reflective process in which the trainee integrates new experience with past experiences and forms constructs, which may guide future performance (Brant, Farmer, & Buckmaster, 1993).

Trainees and experts share in developing strategies to problem solve. Trainees observe how instructors solve problems and develop their own solution paths. Learning is situated in performing, not in the teaching or the acquiring of data. The tools of the cognitive apprenticeship include discussion, reflection, evaluation, and validation of the community's perspective. What is learned is dependent on the relations between group members. Thus, knowledge is not universal but particularistic and relational. Knowledge is particularistic in that it is negotiated within the confines of a specific setting and problem situation. Knowledge constructed represents how it is done here and now. It is relational in that it is constructed out of trainee interactions with experts; the job; and is influenced by organizational culture, history, and politics.

When informed by situated learning, planned training on the job offers intriguing opportunities for trainers to interact with trainees in more meaningful ways. Situated learning reminds us that learners and master performers are a rich and diverse source of stories for learning how the workplace works. These stories can transform training from a process of transferring decontexualized knowledge from trainer to trainee to a process that encourages job performers to create workplace knowledge linked to the experiences of the job performer and dynamic workplace circumstances. Situated-learning concepts may challenge the idea that learning in the workplace can be planned outside of an actual encounter with daily job tasks. Trainees may not be aware that a learning transaction is happening until discussion with others about performance and/or reflection on performance takes place.

Because of the negotiated and constructed nature of knowledge, learning contracts, needs assessments, and checklists of desired characteristics may not be appropriate for developing and monitoring learning on the job (Johnson & Pratt, 1998). The planning in planned on-the-job training may mean that trainers plan to use performance discussions, reflective practice discussions, and outcome evaluations as tools to enhance learning. Interactions between the learners and the environment hold the promise of having learners directly intervene in, and change, the processes that surround their performance in the workplace.

Conclusion

Situated learning represents a set of concepts that may assist trainers to better understand the processes by which job performers acquire authentic knowledge, that is, knowledge acquired from the workplace. The value of situated learning is that it provides a framework to understand how work content, work context, and a work community may influence and determine learning. When combining working and learning in the same location, situated learning informs trainers that planning may mean more than selecting and structuring specific job knowledge and experiences. Planned on-the-job training may come to mean planning opportunities on the job for trainees in a community to reflect on their job performance and, through discourse with others, construct specific and situational workplace knowledge.

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▲ Chapter 3

Using Expert Employees to Train on the Job

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The problem and the solution. The importance of on-the-job training (OJT) for enhancing workforce knowledge and skills is undisputed. Unfortunately, the effectiveness of OJT varies widely due to unstructured approaches and unprepared trainers. A critical component of effective OJT is the development of experts as effective trainers. This article reviews the nature of employee expertise in terms of its importance for instructional effectiveness and discusses the value of using employees to pass along what they know and can do directly to others. Training principles and strategies for better preparing content experts to be effective on-the-job trainers are presented.

On-the-job training (OJT) is one of the oldest forms of workforce development and the most prevalent strategy for enhancing employee knowledge and skills. With rising levels of investment in training—estimated at more than $62.5 billion in 1999—one would expect the return on investment to be obvious and positive (Industry Report, 1999). Despite the impressive investment in training, the effectiveness of using employees to train their peers by passing along what they know and can do is less successful than one may think (Jacobs & Jones, 1995).

Attempting to improve the performance of others by using master or star performers as models has been advocated for many years and has been used with some success in a number of large companies (Froiland, 1993). However, most of these OJT efforts are unstructured, which means there is no written documentation; little supervisor involvement; no formal trainer selection process; conflicting goals between training and production; inconsistency in structure of training processes, materials, and methods; little development of trainer skills; and wide variability in evaluation procedures (Furst-Bowe & Gates, 1998).

Although OJT supervisors may acknowledge the importance of communication and other training-related skills for OJT trainers, they tend to select trainers on the basis of their job experience instead of their potential for

developing training-related skills (Furst-Bowe & Gates, 1998; Kelly, 1995). This negatively affects the quality of OJT in two ways. First, although the development of expertise appears to correlate positively with amount of experience, it is not the sole determinant of expertise (Glaser, 1985). Indeed, the type of experience over time may be just as important. For example, a technician who has 5 years of experience troubleshooting engine problems has a much greater opportunity to develop troubleshooting expertise than the technician who has 20 years of experience replacing parts. Thus, basing the selection of OJT trainers on years of experience does not ensure technical competence.

Second, selecting OJT trainers based on experience also ignores the importance of the many instructor-related skills needed to successfully guide the learning of the trainee. Ironically, most OJT trainers must develop their training skills on the job (Swanson & Falkman, 1997). If OJT is to truly become a strategic component of human resource development, then more structured approaches are required to develop experts as trainers.

The purpose of this chapter is to review the competencies needed by experts who serve as trainers. Second, the chapter reviews the criteria for selecting expert employees to serve as trainers. Finally, the chapter reviews four training principles critical for better preparing expert employees to be on-the-job trainers.

Competencies Needed by Experts to Conduct OJT

The primary goal of employee development programs is to enhance employee competence, which Jacobs (1997) defined as "the *potential* to use specific sets of knowledge and skills" (p. 280). Competence is often viewed in terms of a continuum, ranging from novice to expert (Dreyfus & Dreyfus, 1986; Kolodner, 1983). Numerous publications have addressed the characteristics of star performers by contrasting experts and novices (Bereiter & Scardamalia, 1993; Chi, Feltovich, & Glaser, 1982; Chi, Glaser, & Farr, 1988; Chi, Glaser, & Rees, 1982; Ericsson & Smith, 1991; Fitts, & Posner, 1967; Glaser, 1985; Jacobs, 1997; Kuchinke, 1997; Larkin, McDermott, Simon, & Simon, 1980). Much attention has been given to those individuals who possess superior levels of knowledge and skill or expertise.

In general, experts possess knowledge and skill in a specific domain, and this information is often viewed as being procedural in nature. This results in the appearance of performance that is guided by intuition. In truth, the individual relies on seeking out meaningful patterns and deep principled reasoning that remain hidden from the eye of the casual observer. The result is expert performance that is much faster, more accurate, and less cognitively challenging than the performance of those with less competence.

Although no one seems to question how important technical expertise is for the OJT trainer, possessing a high level of expertise can actually hinder one's ability to effectively share his or her knowledge with a trainee. Consider that experts develop their knowledge and skills by creating interconnected knowledge structures and engaging in hours and hours of practice (Fitts & Posner, 1967). As expertise is developed, less strain is placed on short-term memory as the individual acquires the ability to automatically perform cognitive and physical tasks. The automation of overlearned processes can thus hinder the expert who is selected to provide OJT. Because performance is no longer constrained by the processing of task-related information, experts become unable to accurately describe the cognitive processes and knowledge needed to complete the task (Ericsson & Simon, 1984). Experts may be able to express the procedures they "think" are being used, but these are not necessarily the actual methods that were employed.

Employees at all levels of this continuum are often asked to provide OJT even though they may be lacking in one or more of the competency areas needed by quality trainers; technical competency, professional competency, and personal competency (McLagan, 1989; W. R. Miller, 1990). Even subject matter experts (SMEs), those who have extensive technical competence, may be ineffective as trainers if they lack professional or personal competencies. No one questions the importance of possessing a high degree of technical knowledge and skill in the area to be taught. Knowing the job well provides the OJT trainer with credibility, confidence, and the experience needed to explain and demonstrate the work process being taught. Too often, however, it is the technical background that receives the greatest priority in the selection of the OJT trainer. Although many people assume that possessing content knowledge and skill is all it takes to be a good trainer, it is clearly not sufficient.

Many people have a high degree of content knowledge but are acutely ineffective in an instructional role. This is partly due to the fact that highly skilled performers automate their skills over the years and are therefore unable to accurately explain their actions to others (Polanyi, 1962). Without possession of other training-related competencies, there is no reason to think that technical experts will be able to successfully transfer their technical knowledge to the trainee.

Possessing skills in instructional planning, instructional delivery, and evaluation of learning is equally important for OJT trainers. Unfortunately, this is an area that is too often ignored in OJT programs. Although OJT trainers may have highly developed skills in their area of expertise, they are likely to have little awareness of the procedures and strategies that will make them effective trainers (Williams, 2001).

In addition to technical and professional competencies, experts who conduct OJT need to possess personal and behavioral characteristics that influ-

ence the way they are perceived by others (Leach, 1991). The difference between excellent trainers and their average counterparts, however, has little to do with the trainers' perceived degree of competence in instruction (Leach, 1996) but instead has to do with their ability or willingness to integrate their personal competencies into their training behavior, something that their average counterparts fail to do. The critical personality characteristics of expert trainers appear to be responsiveness, humor, sincerity, flexibility, and tolerance (Leach, 1996).

Selecting Experts to Conduct OJT

Jacobs (1997) offers three important points related to the development of employee competence that are relevant to the selection and development of experts as OJT trainers. First, the relationship between training competence and job performance is not always linear. Although we may assume that employees who have the most experience will be the best trainers, this is not always the case. Depending on their job assignments over the years, some employees with 30 years of experience on the job seem to acquire 1 year of experience thirty times. The important issue in selecting experts as OJT trainers is not the number of years of experience but the degree of competency they have accumulated over the years and their ability to communicate that experience to others.

Second, OJT trainers may not need high levels of competence in all job tasks to be effective as trainers. Most good coaches have a thorough understanding of the skill to be taught and are able to communicate effectively, and yet they are seldom the best performers. In contrast, the highest performing experts are often unable to explain what they do because they have automated their skills through years of experience. It is likely that a productive and competent employee who is not at the highest level of performance may be the best candidate to provide OJT. Third, it is incumbent on organizations to precisely match competence levels and job performance requirements. The selection of OJT trainers needs to be based on intelligent decisions according to job competence and training ability. Selecting OJT trainers solely on the basis of their ability to perform the job does not guarantee that quality training will result.

Transforming a content expert into an effective trainer is not a trivial task. Even with considerable effort directed at the identification of trainer competencies in recent years (Kaeter, 1995; Mager, 1996; Marquardt & Engel, 1993; McLagan, 1989; Olson, 1994; Reddick, 1997; Richey, Fields, & Foxon, 2001), no clear model has emerged to describe the specific competencies needed by the SME who provides OJT.

Because the content expert already possesses sufficient technical competency, training and development efforts must enhance the personal and pro-

fessional competencies through training. Efforts to train the OJT trainer should be organized around sound learning and pedagogical principles, as well as a systematic model for conducting an OJT session.

Three effective programs that use experts to conduct structured OJT include the Quaker Oats Training System, the Caterpillar Equipment Training certification program, and ComEd's OJT Training and Task Performance Evaluation system. Quaker Oats has developed a systematic process to provide competent employees with the skills and instructional materials they need to conduct OJT. Caterpillar has developed a formal process to certify competent heavy equipment operators as trainers. The approach taken by Caterpillar combines a formal train-the-trainer program with an intensive skills assessment to validate their OJT certification program. The Nuclear Generation Group at ComEd has developed a training program for OJT that specifically highlights the criteria for the selection, training, and qualification of OJT trainers.

Although each company has taken a different approach to preparing their SMEs as trainers, they all rely on the same fundamental principles and strategies. For example, each company offers formal train-the-trainer courses for the content experts. During these courses, the content experts learn basic principles about learning, formally plan OJT sessions, and participate in practice sessions where they apply the principles in simulated OJT settings. Through this formal and structured process, the content experts acquire the knowledge and skills they need to conduct a quality OJT session.

Although the Quaker Oats, Caterpillar, and ComEd OJT trainer development programs include a wide range of information and activities, there is a core set of concepts that serve as the building blocks for their programs. Based on the success of the OJT programs in these companies, each of the following principles should be included in any program that prepares the content expert to conduct quality OJT.

Training Principles

The following four training principles are critical to consider when using expert employees as trainers.

Determine Content Priorities

Trainers often think that everything they cover is of equal importance, even though some information is critical for efficient job performance, whereas other information is merely "nice to know." Because the time allocated to OJT is limited, the trainer should emphasize only the critical knowledge and skills needed by the trainee. Much of what is covered in any training session is "must-know" content that is absolutely essential to perform

the job satisfactorily. The OJT trainer should focus on this content first. A second category of knowledge and skills represents "should-know" information that is very important but not absolutely essential. The trainer should focus on this content only after the learner has successfully gained the knowledge and skills in the must-know category. Finally, if time permits, the trainer can devote time and attention to the information in the nice-to-know category. This category often includes information and skills that build on training content included in the other categories but are not essential for job performance.

Remember the Rule of Seven

In OJT, there is a tendency to mentally overload trainees by telling them everything they need to know to perform the task. Providing too much information in a short period of time contributes to the problem of memory overload, which makes learning difficult and leads to confusion and poor retention. Psychological studies show that most people can manage about seven "pieces" of information at one time without too much difficulty (G. A. Miller, 1956). Providing more than that amount of information at one time overloads short-term memory. The *Rule of Seven* encourages the trainer to limit the amount of information presented to no more than seven pieces of content at one time (Clement, 1985). The Rule of Seven suggests that the trainer "chunk" the information to be covered in an OJT session into smaller groups of content and ensure that the trainee has learned each chunk thoroughly before moving on to new content. Using this strategy will result in a better understanding of all the information covered in an OJT session.

Consider the Relationship Between Confidence and Accomplishment

Self-confidence is critical to learning. If learners do not have confidence in their abilities to learn the tasks at hand, they will likely give up trying out of a sense of frustration and hopelessness. A learner's self-confidence is related directly to accomplishment. The relationship can be understood best if viewed as a spiral. When learning is accomplished, the learner's self-confidence increases, which leads to further accomplishment and results in increased self-confidence. However, the spiral can also move in a downward direction. Lack of accomplishment or learning usually leads to a decreased self-confidence, which leads to further failure and even greater reductions in self-confidence. There is little question that most trainers recognize this relationship and understand its importance. However, understanding the concept is not enough. It is the trainer's responsibility to do everything pos-

sible to ensure that the trainee's confidence and accomplishments are spiraling upward.

Use a Systematic Approach to Deliver OJT

Assigning experts to conduct OJT is not a guarantee that training will be successful. OJT is often inefficient and ineffective because it is usually unplanned and often conducted in an unorganized, haphazard manner. Because they lack formal preparation as trainers, content experts too often ignore the use of techniques that are based on sound learning and training principles. Based on the work of others, including Jacobs and Jones (1995), the following five-step process provides an organized and systematic approach for experts to follow when conducting OJT.

1. Prepare the trainee. It is just as important to provide an effective introduction to an OJT session as it is in formal classroom training. The trainer may be more conversational during the introduction than would normally be the case in classroom instruction. However, it is essential that the trainee be prepared to learn. Three components are needed to prepare the trainee: (a) establishing comfort and explaining the context, (b) describing the purpose or objectives of the training, and (c) emphasizing the importance of learning the task(s) at hand.

2. Explain the process. Too often, trainers simply start the OJT session by showing the trainee how to do the task without first providing a verbal explanation of the process. Once the trainee is prepared to learn, the entire process to be learned should be explained by the trainer. Most people are better able to learn a process when the big picture or overall task is clear to them. The procedures to be learned should be presented by the trainer in clearly differentiated sequential steps that are organized into small groups to address the Rule of Seven.

3. Demonstrate the procedures. During this step, the trainer demonstrates each part of the process by going slowly enough so the trainee does not miss any key points. The trainer should verbalize each step in the process as the demonstration progresses. This helps the trainee to understand more clearly the sequence of steps and how the steps relate to each other. The trainer should ask questions during the demonstration to help ensure understanding of each step and to encourage the trainee to think through the task. The trainer also needs to be attentive to nonverbal clues from the trainee. Blank expressions or glances at the clock may indicate that the procedures are not clear to the trainee. If this is the case, the trainee's attention may need to be recaptured, questions answered, and steps may need to be repeated.

4. Observe the trainee. At this point, the trainee should be very familiar with the process. The steps have been verbalized by the trainer twice, and the trainee has observed the process, has been asked specific questions to ensure under-

standing, and has had an opportunity to ask questions. The trainee should now have enough confidence to try the process. During this phase, the trainer acts as a coach by encouraging the trainee to try the process and talk through the steps as they are performed. Thinking out loud forces the trainee to be structured and provides the trainer with opportunities to correct errors before they occur. The trainer should not expect perfection during the first attempt but provide proper corrective feedback and encouragement to try again until error-free performance is achieved.

5. Summarize. The final step in the systematic process for conducting OJT is to ask the trainee to reflect on the training experience. The trainer should ask questions regarding what aspects of the job are the most difficult or easiest and get them to talk about anticipated problems. This reflective thinking provides reinforcement of what has been learned and will enhance retention. The trainer should also take the time to follow up later to ensure that the trainee has not forgotten steps, that bad habits or shortcuts have not been developed, and to answer any questions that may have arisen.

Conclusion

Without question, SMEs who possess high levels of knowledge and skill can be ideal OJT trainers. Improving the performance of others by using master or star performers as models has been advocated for many years and has been used with some success in a number of large companies (Froiland, 1993). However, the strategy of selecting OJT trainers solely on the basis of their content knowledge and skill may not result in the quality of training that is desired. Identifying and using experts to conduct OJT makes sense. Taking this approach a step further by training SMEs on how to successfully conduct one-on-one instruction makes even more sense.

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Deductive and Inductive on-the-Job Training Strategies

Margaret C. Lohman

The problem and the solution. Planned training on-the-job programs have historically used deductive training strategies as a means to deliver the training content. However, the changing nature of work in today's organizations demands that employees be more effective problem solvers and independent learners than ever before. Therefore, alternative training strategies, such as an inductive approach, must be considered to respond to these changing job demands. Although inductive training strategies hold much promise for developing higher level cognitive skills, they are not without their limitations. This chapter compares deductive and inductive training strategies and presents factors to consider when selecting a strategy for planned on-the-job training.

Deductive training strategies have been the predominant approach to planned on-the-job training (OJT). In the past, this approach was appropriate because the tasks that individuals needed to learn were generally technical in nature and fairly well-defined (Lohman, 1997). However, the nature of work today is more ill defined and complex than ever before. High-level performance now calls for advanced problem-solving and independent learning skills. Because inductive training strategies have been found to promote these types of higher level cognitive skills (Gallagher, 1997; Marsick, 1990; Smith & Ragan, 1999), the decision of whether to use a deductive as opposed to an inductive strategy for OJT has become of paramount importance.

The purpose of this chapter is to analyze the processes and outcomes commonly associated with deductive and inductive training strategies and discuss implications of this analysis for the design and research of planned OJT programs.

Comparing Deductive and
Inductive Training Strategies

Human resource developers use a variety of training strategies to promote different types of training outcomes (Davis & Davis, 1998; Joyce & Weil, 1996). In a broad sense, training strategies can be categorized as being either deductive or inductive. The classification of a training strategy as deductive or inductive is based on the type and sequencing of training events, who will be responsible for carrying out those events, and the training outcomes associated with the training experience (Smith & Ragan, 1999).

Deductive Strategies

The fundamental notion of a deductive training strategy is that new concepts, rules, and procedures are presented to trainees and then trainees receive guidance as they practice applying their new learning to a variety of job situations (Lohman, 1997). This process of presentation and practice is repeated until competency on a job task is attained (Rothwell & Kazanas, 1994).

In planned OJT, a deductive training strategy typically uses a didactic design with one trainer working with one trainee at a time. Trainers determine the knowledge and skills to be taught, select the information and examples to present in training, and direct training activities at or near the trainee's job site (Jacobs & Jones, 1995). Although trainees bear little responsibility for the selection and presentation of training content, they are expected to actively participate in planned application activities.

These key features of a deductive strategy are exemplified in a highly regarded training method called structured OJT. This training method is most frequently used for teaching technical job tasks; for instance, how to operate a meat-slicing machine, complete a purchase order, or start an intravenous fluid line. Consistent with the didactic design of a deductive strategy, structured OJT calls for the trainer to plan and manage five key training events: prepare the trainee for training, present the training, elicit a response from the trainee, provide feedback to the trainee, and evaluate trainee performance (Jacobs & Jones, 1995). This level of trainer control throughout the training process results in high levels of training effectiveness and efficiency as it relates to task-level expertise.

Although a deductive training strategy can be reliably used to develop technical knowledge and skills, one of its greatest limitations is that it does not foster the development of higher level cognitive skills (Joyce & Weil, 1996; Newbert & Binko, 1992). A deductive strategy conserves trainees' cognitive resources by limiting the responsibility that they have for structuring and managing the learning experience (Smith & Ragan, 1999). This

strategy design feature leads to predictable learning outcomes and the efficient use of training time; however, it also leads to low levels of deep mental processing of new learning. This limited level of mental engagement in the learning experience limits the development of problem-solving and independent learning skills, as well as decreases retention of new learning and motivation toward training.

Inductive Strategies

The principal difference between a deductive and an inductive training strategy is that trainees are presented with the training content with the former, whereas they are expected to generate it with the latter. Trainees generate new understandings in inductive training experiences by gathering, analyzing, and interpreting information (Joyce & Weil, 1996).

In planned OJT, an inductive strategy typically uses a guided discovery design with one trainer working with a group of 5 to 10 trainees at or near the trainees' work site (Lohman & Finkelstein, 2000; O'Neil & Marsick, 1994). In this design, the trainer leads the trainees through the process of solving an ill-structured problem. This type of problem lacks the following: clear identification, procedures for identifying solutions, and criteria for evaluating solutions (Frederiksen, 1984; Jonassen, 1997). To solve an ill-structured problem, trainees gather and analyze information about the problem situation, induce hypotheses about problem causes and solutions, and test hypotheses by applying them to new situations (Barrows, 1996; Holland, Holyoak, Nisbett, & Thagard, 1986). Trainers are responsible for providing cognitive, metacognitive, and procedural guidance to trainees as they progress through these steps of the problem-solving process (Gallagher, 1997).

These key features of an inductive strategy are illustrated in an increasingly popular method of OJT called problem-based learning. Problem-based learning is used in professional fields such as business, medicine, and education to develop problem-solving, critical-thinking, and independent-learning skills (Albanese & Mitchell, 1993). Problem-based learning promotes these types of training outcomes by focusing on ill-structured problems routinely seen in practice (Mandin, Jones, Woloschuk, & Harasym, 1997). Examples of such problems include high employee turnover in a retail operation, recurrent chest pain in an elderly patient, and a high accident rate in a manufacturing plant. In problem-based learning, trainers guide trainees through the process of examining known and unknown facts about an ill-structured problem, possible causes and solutions for the problem, and issues that trainees need to learn more about to fully understand the problem. Trainees independently research these learning issues in between training sessions and use their new learning in subsequent sessions to critique and select emerging hypotheses about problem causes and solutions.

Typically, a number of solutions emerge to form an appropriate conclusion to the problem (Albanese & Mitchell, 1993; Barrows, 1994).

As exemplified in problem-based learning, the training events in an inductive strategy require trainees to generate new understandings for themselves, to plan and manage their own learning experiences, and to focus on relevant and meaningful problems found in practice. These training events elicit deep mental processing of learning and thereby promote the retention of new learning and the development of problem-solving skills, independent-learning skills, and shared understandings of complex organizational problems and challenges (Barrows, 1994). In addition to these cognitive outcomes, inductive strategies are likely to result in more favorable affective outcomes than deductive strategies. Previous studies have shown that trainees develop more positive attitudes toward the training content and the overall training experience (Lohman, 1997) and higher levels of motivation toward learning (Barrows, 1994; Newbert & Binko, 1992) with inductive training strategies in comparison with deductive training strategies.

Selecting a Training Strategy

Deductive and inductive strategies present two dramatically different approaches to OJT. The challenge that human resource developers face is determining which one will best meet their training needs. As shown in Table 1, previous research and practice indicate that four factors are of paramount importance when selecting a deductive as opposed to an inductive training strategy for OJT.

First and foremost, the objective of training should be considered when selecting a training strategy. Deductive strategies remain an appropriate choice for OJT when the objective is the development of technical knowledge and skill (Jacobs & Jones, 1995). Conversely, inductive strategies are a more appropriate choice when the training objective involves the development of higher level cognitive skills, such as problem solving, critical thinking, and independent learning (Lohman & Finkelstein, 2000). If organizations accept that higher level cognitive skills are a key component of high-level performance in today's work environment, a commitment must be made to using inductive strategies in OJT programs. However, making such a commitment also requires careful consideration of the remaining three factors.

It may be true that OJT takes longer when an inductive as opposed to a deductive strategy is used. Trainees need more time in an inductive training experience to work through the steps of the problem-solving process (Lohman, 1997). Trainers indicate that they do not tend to use inductive strategies because sufficient time is not available for these types of training

TABLE 1:   **Factors to Consider When Selecting a Training Strategy for Planned on-the-Job Training**

Selection Factors	Training Strategy	
	Deductive	**Inductive**
Training objective	Technical skills	Higher level cognitive skills
Training time	Limited	Ample
Trainee characteristics	Higher levels of cognitive ability and task-level expertise may negatively influence attitudes toward training content and activities	Lower levels of cognitive ability and lack of experience with an inductive approach may diminish ability to engage in inductive learning process
Trainer requirements	Technical knowledge, skills, and experience	Facilitation skills

activities (Smith & Ragan, 1999). As such, trainers are more inclined to use deductive strategies—regardless of the types of training outcomes desired.

It may also be true that certain trainee characteristics impede one's ability to benefit fully from an inductive training strategy. Inductive strategies place a high level of cognitive demand on trainees. This level of cognitive demand can create a high level of challenge and discomfort for trainees with less-developed cognitive abilities and little prior experience with such a training approach (Lohman, 1997). Learning may be impeded in those situations where the level of challenge and discomfort for trainees becomes too great. To address this concern, inductive OJT programs should use heterogeneous learning groups and provide ample time for trainees to work through the steps of the problem-solving process. Conversely, deductive training strategies place less of a cognitive load on trainees. Those with higher levels of cognitive ability and technical knowledge may be bored or irritated by this low level of mental engagement and, as a consequence, develop negative attitudes toward the content and activities in an OJT program (Smith & Ragan, 1999). Practice activities tailored to the skill and ability levels of trainees should be provided throughout the training experience to ameliorate these negative attitudes.

It may also be true that trainers require a broader repertoire of professional knowledge and skills to lead an inductive OJT program compared with a deductive program. In general, trainers using deductive strategies require extensive knowledge, skills, and experience in relevant technical areas (Jacobs & Jones, 1995). Although some technical expertise is useful

for conducting inductive OJT programs, it is more important for trainers to possess a broad range of facilitation skills that enable them to lead trainees through the key steps of the problem-solving process. These skills include methods for facilitating interpersonal communication, reflection, and individual and group problem-solving processes (Albanese & Mitchell, 1993; Bierema, 1998). Because this form of facilitation is a new and challenging responsibility for many trainers, training needs to be provided to help them develop the ability to provide cognitive, metacognitive, and procedural support during problem-solving activities.

Future Research on Training Strategies

Although past research of planned OJT has focused more on deductive training strategies, the time seems appropriate to include a focus on inductive training strategies. Investigating the following three areas has the potential to provide a broader knowledge base from which to make strategy design decisions. First, future studies should investigate the relationship between length of exposure to inductive training strategies and the development of higher level cognitive skills. A second area for research is the degree to which relevant prior knowledge and cognitive abilities of trainees influence training outcomes. A third area for further research is gaining a greater understanding of the ways in which the technical expertise of trainers and the features of a facilitator training program influence training group behaviors and training outcomes in inductive OJT programs.

Evolving research and practice confirm that the decision of whether to use a deductive or inductive training strategy for OJT is not a simple one. Deductive training strategies effectively teach workers how to perform technical job tasks. However, with the pace and rate of change in today's organizations, these new tasks soon become obsolete and more training is needed. Alternatively, inductive training strategies teach people how to be critical thinkers, effective problem solvers, and independent learners, skills that enable them to continuously learn and improve their performance.

Although deductive strategies may tend to be a more popular choice for planned OJT, as Robert Frost (1995) wrote in his famous poem "The Road Not Taken," taking the road less traveled can make all the difference.

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Implications of Near and Far Transfer of Training on Structured on-the-Job Training

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The problem and the solution. It is commonly believed that because structured on-the-job training (OJT) programs feature a close match between the training and the job, this training approach should only be used in near transfer of training situations. This chapter proposes that structured OJT can be used in both near and far transfer of training. Yet, how to design structured OJT programs to achieve far transfer, especially when the task is relatively unknown, remains an issue for future human resource development (HRD) research and development.

Transfer of training continues to be an area of major interest among human resource development (HRD) scholars and practitioners. Underlying the concerns about training is the fundamental organizational need to ensure that trainees will be able to use what was learned during the training back on their jobs. One of the most frequently mentioned estimates shows that about 40% of the content of training was transferred to the job immediately after training, about 25% remain after 6 months, and only 15% remain 1 year later (Broad & Newstrom, 1992). Few organizations can show that their training investment results in employees' improved job performance.

There has been much attention paid to the transfer of training in general, but how the topic relates to structured on-the-job training (OJT) has received little if any attention. Many researchers have simply presumed that because there was a close match between the training and the task, transfer of training was not a particular issue of concerns (Jacobs & Jones, 1995). However, upon closer examination, it has been assumed that structured OJT has been used to achieve near transfer of training situations only. This viewing of structured OJT implies that transfer of the program has been restricted within the application of the types of tasks and in the setting prescribed by the training. An important issue here, and one that has received little attention in the HRD literature, is the extent to which training in one domain may generalize to a different or unintended context.

In this regard, this chapter proposes that structured OJT can be used in both near and *far* transfer of training situations. This chapter has four parts. The first part describes structured OJT. The second part discusses transfer of training focusing on near and far transfer. The third part discusses the transfer of training domain of structured OJT and then examines the factors that might affect far transfer of structured OJT. Finally, the last part discusses implications related to far transfer of training and structured OJT.

Overview of Structured OJT

In general, OJT refers to a form of training that occurs at the workplace during the performance of a job rather than in a classroom setting (Jacobs & Jones, 1995; Rothwell & Kazanas, 1994). OJT is the most widely used method of delivering training for a novice employee by an experienced employee today and is one of the most important components of learning in the workplace (Jacobs & Jones, 1995; Rothwell & Kazanas, 1990). Unfortunately, despite its frequency of use, most OJT is informal or unstructured in nature and therefore has received serious criticism for it often being haphazard, incomplete, and unpredictable (Jacobs, 1990; Jacobs & Jones, 1995; Rothwell & Kazanas, 1994).

Structured OJT has recently emerged as a subject of interest in the HRD field. In contrast to informal or unstructured OJT, structured OJT uses a planned approach to the training (Jacobs & Jones, 1995). Structured OJT is generally referred to as a planned process that is conducted by an experienced employee for the purpose of providing the knowledge and skills to perform tasks of a novice employee at or near the workplace. Structured OJT has the following four main points (Jacobs & Jones, 1995).

First, as a planned process, structured OJT requires an investment of time and effort before it can be used. As a result, trainees should be able to learn the appropriate content and achieve the desired training objectives. Second, structured OJT focuses on the task level of jobs. Structured OJT does not involve an entire job, just a small part of it. Third, structured OJT should be delivered by an experienced employee with the qualifications to become a trainer. Not every employee can necessarily become a trainer. Finally, structured OJT usually occurs at the job setting, although in some instances, it may occur near the job setting. The training location depends on constraints in the job setting and the performance requirements of the task.

Near and Far Transfer of Training

Transfer of training refers to the extent to which individuals can apply what was learned in one situation to another situation (Baldwin & Ford, 1988; Holton, Bates, Seyler, & Carvalho, 1997). Transfer of training

involves applying the task to contexts other than those used in the training setting. Trainers expect the trainee to learn the new behaviors and use them back on the job. The literature suggests that the extent to which transfer of training occurs depends on several sets of variables. For instance, Baldwin and Ford (1988) proposed a framework that identified the variables in the training design (principles of learning, the sequencing of training material, and the job relevance of the training content), the trainee characteristics (ability or skill, motivation, and personality), and the work environment characteristics (supervisory or peer support, constraints, and opportunities to practice learned material on the job). Holton et al. (1997) have proposed an instrument to measure the readiness of transfer of training in organizational settings.

Perhaps of greatest importance in determining the transfer of training is the relative match between the training setting and the work setting (Baldwin & Ford, 1988). That is, the principle states that the greater the similarity between the two settings, the greater the likelihood of the transfer of training to occur. To be true, the training setting should have the same critical features, including the physical attributes, the various work-related cues, and social settings that will be encountered later on in the actual work setting. Some of these features might be deduced to their simplest forms with the expectation that the training can focus on these alone, with the elimination of extraneous information. However, the extent to which the match exists and, by extension, the extent to which transfer of training occurs depend in part on the nature of the work and the expected training outcomes.

Transfer of training can be categorized in several ways. For example, Royer (1979) identified some bipolar transfer of training classifications, such as lateral and vertical, specific and nonspecific, literal and figural, and near and far dimensions. Royer emphasized viewing those various constructs as being on a continuum rather as being two distinct phenomena. As shown in Figure 1, near and far transfer of training can be compared in terms of the relationship between the work task and emphasis of training design. Near transfer requires a close match between training and task content, a close match between the training and task outcomes, and emphasis on specific concepts and skills. In contrast, far transfer requires an approximate match between training and task content, an approximate match between training and task outcomes, and emphasis on general concepts and skills.

The characteristics of near transfer suggest that trainees should apply known sets of knowledge and skills. For example, after an employee learns the repair procedures for a Hyundai engine, they repair only that one particular Hyundai engine once they are back on the job. Far transfer, on the other hand, is akin to having trainees learn more general concepts and principles, which might be applied to a wider set of contexts than those necessarily presented in the training setting. For example, an employee might learn to

	Near Transfer	**Far Transfer**
Relationship between the training content and work task	Close match such that the training content and outcomes relate to one work task	Approximate match such that the training content and outcomes relate to a set of related work tasks
Training design	Specific concepts Procedures Problem solving Decision making	General concepts Broad principles Problem-solving rules Decision-making rules

FIGURE 1:   Comparing Near and Far Transfer of Training

repair a Hyundai engine, but for far transfer to occur, the trainee would be able to transfer what was learned about engines in general during training to an array of other engines, such as Chrysler, Ford, or Honda. Far transfer suggests that by learning the fundamental aspects of something along with specific skills, there is a greater chance for applying that information to more than one setting later on. Thus, the greater similarity between the training and working settings suggests relatively near transfer of training. Less similarity suggests the need for more far transfer.

The concepts of near and far transfer of training are frequently discussed relative to training objectives, transfer theory, and learning requirements. In terms of the training objectives, the distinction between the types of transfer is related to types of skills transferred (Clark & Voogel, 1985). Clark and Voogel distinguished between procedural learning objectives, in which concrete and practical knowledge of relatively simple routines are included, such as something that can be learned as a step-by-step sequence of behaviors, and a declarative learning objective, in which concepts and principles have formal properties. Procedural types of training objectives tend to involve near transfer, whereas declarative training objectives are more likely to contribute to far transfer.

In terms of transfer theory, the literature has focused on two kinds of transfer of training theories. For example, Goldstein (1993) describes two transfer theories necessary for explaining near and far transfer: the identical elements and transfer-through-principle theories. The identical elements theory posits that transfer of training occurs when the material being acquired during the training is identical to that which the trainee performs in an actual context. According to this theory, transfer is maximized to the extent to which the tasks, equipment, tools, and environment at the training setting are similar to those encountered at the actual work setting. In contrast, the transfer-through-principle theory proposes that the general princi-

ples necessary to learn a task should be emphasized in order to solve problems related to the transfer task. Regarding the issue of training environment design, this theory is not highly concerned with similarity between the training setting and the actual work setting. Therefore, near transfer enables trainees to meet the relatively known predictable conditions of their job and apply their knowledge and skills, while in far transfer, the trainees are expected to learn concepts and principles to deal with situations not always encountered during the training.

Finally, research suggests that near and far transfer of training requires different learning requirements. The requirements for near transfer depend mostly on the similarity between the training and the task. However, achieving far transfer of training requires additional considerations. For instance, Laker (1990) stated that far transfer depends on whether the training includes information about the assumptions underlying the skills and behaviors they are learning. In addition, a number of studies have suggested that the more trainees practice in different contexts and use novelty in their practice exercises, the more effective the far transfer (Ellis, 1965; Goldstein, 1986; Baldwin & Ford, 1988). Clark and Voogel (1985) stressed the importance of incorporating a variety of situations and problems to develop and apply skills.

Structured OJT and Transfer of Training

As mentioned, structured OJT has been perceived as an effective training approach in part because of its potential to achieve transfer of training. It is one of the benefits of structured OJT that trainees have much more possibility for transfer than classroom training (Jacobs & Jones, 1995). Transfer of training is often the major concern for managers and HRD professionals. Because structured OJT is conducted near or at the job setting, trainees are available to use the same equipment, tools, and environment that they are supposed to use to perform their actual tasks. Structured OJT also enables trainees to practice the task during training because the task is similar in both training and transfer.

When there is a greater match between a training setting and a job setting, trainees can transfer what they have acquired to the job more successfully. As mentioned, structured OJT has been perceived as an effective training approach in part because of its potential to achieve transfer of training. One of the benefits of structured OJT is that trainees have a greater possibility for transfer than classroom training (Jacobs & Jones, 1995). Transfer of training is often the major concern for managers and HRD professionals. Since structured OJT is conducted near or at the job setting, trainees are able to use the same equipment, tools, and environment that they normally use to perform their actual tasks. Moreover, structured OJT also enables trainees to

practice the task during training because the task is similar in both training and transfer. Because of the inherent association between structured OJT and the feature of transfer, it is commonly believed that structured OJT should only be used in near transfer of training situations.

Figure 2 presents how structured OJT differs by the nature of the task—established or varying—and near or far type of transfer of training. Figure 2 also shows examples of these dimensions. The classifications between near and far transfer and established and varying tasks provide an approach to the transfer-of-training domain of structured OJT. The established and varying classification provides a complementary dimension to near and far transfer. Whereas the near and far transfer is a classification about the conditions under which training and transfer tasks are performed, the established and varying task is a classification about the nature of the tasks themselves. Established tasks involve the specific procedural training content and sequence. In contrast, varying tasks involve the complex of general information in training content and sequence. The combination of a near or far type of transfer and the established or varying tasks can provide a means of characterizing transfer of tasks on structured OJT.

Established tasks and near transfer of training (cell 1) have characterized most structured OJT programs. In this instance, the training focuses on units of work in which the content and sequence are established, so that the trainee is expected to perform closely matching job tasks. Established tasks and far transfer (cell 2) focus on units of work in which the content and sequence are established, but the trainee is expected to perform across a set of related tasks. In this instance, the training focuses more on having trainees learn reliable principles that govern relationships between variables. This combination will attract most attention from organization managers because far transfer would seemingly reduce the amount of training early on.

The combination of having varying tasks and near transfer (cell 3) suggests that the training focuses on units of work in which the content and sequence are changeable, for the purpose of performing closely matching job tasks. At first glance, how to achieve such a combination might appear illogical, but it points to situations where training is provided for complex, constantly changing work situations. Finally, in considering varying tasks and far transfer (cell 4), the training focuses on units of work in which the content and sequence are changeable, for example, to perform a set of related job tasks. In this instance, the training provides the broad principles, often drawn from the underlying structure of the task. This broad base can be transferred to multiple-task situations. Given these combinations, it becomes necessary to present level of transfer, which focuses more on general principles and concepts. This is followed by embedding of suitable training objectives and content for the desired level of transfer.

	Near	**Far**
Established	Cell 1 Training focuses on units of work in which the content is fixed to perform closely matching job tasks • Installing tires in a car • Calculating interest payments on customer mortgage loans	Cell 2 Training focuses on units of work in which the content is fixed to perform related job tasks • Learning Microsoft Word and apply the conceptual understanding and skills to WordPerfect
Varying	Cell 3 Training focuses on units of work in which the content and sequence are changeable to perform closely matching job tasks • Determining customers' insurance needs	Cell 4 Training focuses on units of work in which the content and sequence are changeable to perform related job tasks • Learning principles of a discussion and then apply them to the understanding of facilitating team meetings

FIGURE 2:   Comparing Types of Tasks and Transfer of Training

Regardless of the level of transfer, a precondition for using structured OJT is that the trainees have the necessary prerequisites and are adequately encouraged and supported to perform the acquired skills or knowledge during training (Richey, 1992). However, when there are other common conditions for near and far transfer, factors more likely important to affect far transfer will exist. In attempting to identify the factors, this section will use Baldwin and Ford's (1988) categories to organize how best to design structured OJT programs for far transfer of training.

Trainee Characteristics

Compared to structured OJT used in near transfer, a trainee's preferred learning style in structured OJT used in far transfer seems to more strongly affect far transfer. For example, a trainee who is field dependent—one who has difficulty detecting simple figures within a complex field—would have more difficulty than a field-independent trainee in identifying the critical features of concepts. Field-independent trainees will ask more questions related to the instruction because structured OJT provides a framework ensuring trainees understand underlying principles, concepts, and assumptions. Research suggests that the more fully trainees understand the underly-

ing principles, concepts, and assumptions of the skills and behaviors they are learning, the more efficient the far transfer will be (Laker, 1990).

Training Design

From the standpoint of training design, providing multiple examples in various contexts and practice in various contexts is required for structured OJT to achieve far transfer, for example, employees in a warehouse distribution center who are trained to pack different products (e.g., books, clothing, and dishes) in different organizational functions (e.g., shipping department or the gift wrap area). A number of studies have demonstrated that the more trainees practice in different contexts and use novelty in their practice exercises, the more effective the far transfer will be (Baldwin & Ford, 1988; Ellis, 1965; Goldstein, 1986). Clark and Voogel (1985) stressed the importance of incorporating a variety of situations and problems to develop and apply skills. Research has also shown that multiple examples from varied contexts are necessary for promoting far transfer than a one-dimensional approach (Clark & Blake, 1997). Nitsch (1977) demonstrated that training in various contexts enhances far transfer and that successive context practice requires that a given task be varied.

Work Environment

Several studies (Ford, Quinones, Sego, & Sorra, 1992; Goldstein, 1993; Jacobs & Jones, 1995; Noe, 1986; Richey, 1992) have demonstrated the need to gain further understanding of the specific conditions that foster the transfer of newly acquired skills to the workplace. In a given training program, transfer, even far transfer, occurs within a general work environment where the training occurs (Richey, 1992). In this case, a work environment is needed and is considered an important part for both the learning task and the transfer of learning to that task. Environmental factors determine training effectiveness, especially regarding far transfer (Richey, 1992). Therefore, when the work environments are supportive of the behavior and concepts achieved in training, far transfer will occur. Laker (1990) supports this notion by claiming that the more positive the reinforcement that trainees receive during training to discuss and apply the training, the more effective the far transfer.

Implications of Far Transfer

This chapter proposes that structured OJT can be used for both near and far transfer of training. Several issues determine whether structured OJT can

actually be used for far transfer. First, to achieve far transfer, structured OJT should be considered a system such that the training inputs, training process, training outputs, and organizational context are considered. Even though it may be believed that training outcomes from far transfer are less predictable, using the systems view to structured OJT would enhance the possibility for more effective training outcomes as best as it can be.

Second, a structured OJT program is viewed as an investment from which the organization can expect a return (Jacobs & Jones, 1995). When an organization needs principle-focused training to apply this to multiple job issues or when training a workforce in a broader perspective, for example in a nation, is needed, structured OJT used in far transfer would be a cost-effective approach. Integrating the principle into structured OJT can achieve job outcomes in near transfer and enhance the potential far transfer.

Third, Versloot and De Jong (1994) and De Jong (1991) supposed that the type of organization must be matched with an appropriate form of structured OJT. In their writing, forms of planned training on the job have varying levels of structuring and include on-site practice, on-site instruction, and on-site study. According to the authors, in certain circumstances, it can be better to structure less than to structure too extensively (De Jong, 1991; Versloot & De Jong, 1994). In this regard, structured OJT for far transfer could be more appropriate than structured OJT for near transfer.

Finally, with regard to the organizational context, for getting successful far transfer, trainees can be encouraged to discuss and apply the training in a context they choose. When trainees participate in the program design, the training would be expected to have a closer match between the employee's interests and the organizational needs. This approach might enable trainees to better meet current and future organizational needs.

Conclusion

Although structured OJT is now widely used as an effective training method, structured OJT has been used within a limited domain of near transfer of training. This chapter sought to explore the transfer-of-training domain of structured OJT to include far transfer. Further research and experience are required to fully examine the various issues related to designing structured OJT for far transfer of training.

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Cross-Cultural Implications of Planned on-the-Job Training

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The problem and the solution. There is growing awareness that cultural mismatches may inhibit training effectiveness and that these undesirable effects may become even more pronounced when the training is done on the job and when the trainer and the trainee come from different cultural backgrounds. This chapter addresses these issues as they relate to planned training on the job.

There is growing awareness among organization managers and human resource development (HRD) professionals that cross-cultural mismatches may inhibit training effectiveness and that these effects may become even more pronounced when the training is done on the job and when the trainer and the trainee come from different cultural backgrounds. The literature suggests that these effects may be the result of differences in the work, the work context, and the interactions between the trainer and the trainee. Indeed, given the intense nature of the trainer-trainee relationships that characterize planned training on the job, this training approach seems especially prone to be affected by cross-cultural issues.

Until recently, there has been little emphasis on this topic in the HRD literature, which is unfortunate. In this chapter, we discuss the nature of cross-cultural training. Then, we discuss the cross-cultural issues related to various training approaches. Next, we discuss the specific trainer-trainee relationship that characterizes planned training on the job. Finally, we discuss briefly the research implications of considering planned training on the job from a cross-cultural perspective.

Cross-Cultural Training

There has been no shortage of research on the topic of cross-cultural training. However, the bulk of this literature deals with culture itself as the content of training and not necessarily as the context. In addition, most of the research deals with expatriate training programs that occur before, during, and after taking an assignment abroad. In answering the question "What

is the common goal of all cross-cultural training programs?" Baumgarten (1995) stated that generally speaking, one assumes that the general goal of cross-cultural training is to improve the chances of success of international staff and their families on their foreign assignment. Thus, one of the major goals of cross-cultural training is to develop the skills and abilities for effective interactions with people from different cultures in an increasingly interdependent global environment (Osman-Gani, 2000).

With this goal in mind, several scholars in the cross-cultural training literature have offered various cross-cultural training models. For instance, Triandis (1977) emphasized the notions of affective training, cognitive training, specific training, general training, and self-insight training as they relate to cross-cultural training programs. Gudykunst, Hammer, and Wiseman (1977) viewed cross-cultural training from the approaches of intellectual, behavioral, area simulation, cultural awareness, self-awareness, and interaction. Finally, Brislin (1980) emphasized the need for attribution training, cognitive training, behavioral modification training, experiential training, and self-awareness training. Common to the models has been the need for individuals to not only understand the host culture but become self-aware of their own culture as well.

In a review of the literature, Black and Mendenhall (1990) examined the effectiveness of three major cross-cultural training outcomes: (a) cross-cultural skill development, (b) cross-cultural adjustment, and (c) job performance. In general, the authors suggested that most research to date had not been founded on a theoretical framework. The lack of a theoretical framework has resulted in raising more questions and issues than anything else, both for practitioners and researchers. An increasing number of scholars have argued that social learning theory provides the most logical theoretical basis for understanding cross-cultural learning, training, and adjustment (Black & Mendenhall, 1990; Church, 1982). Bandura (1977) stated that social learning takes place both by the effective reinforcement of behavior and modeling the behavior of others and symbolically or vicariously making associations between behavior and consequence without direct actual experience.

Despite the amount of research on cross-cultural training, its use in business organizations has not been especially widespread. A number of reasons have been cited for the limited use of cross-cultural training. Perhaps the most prevalent one being that such training is not thought to be necessary or particularly effective, and thus top management sees no need for it (Baker & Ivancevich, 1971; Mendenhall & Oddou, 1985; Ruzenheimer, 1984; Schwind, 1985; Zeira, 1975). Behind this belief lies the principle that good managers will be good performers as managers wherever they serve (Black & Mendenhall, 1990; Trompenaars & Hampden-Turner, 1998). Whether that principle has validity has not been fully tested, although it makes much logic from a commonsense perspective. Such is the current status of cross-cultural

training. That is, although much research seems to be conducted on the topic, the relative impact of the research on practice seems limited at best, based on both theoretical and practical issues. How to move cross-cultural training toward having greater influence may depend on making better decisions about training content and training method.

Cross-Cultural Training Approaches

The basic question can be stated as follows: Are the effects of training approaches bound by the content and the individuals involved only, or are they also mediated by cultural characteristics in the context? Several authors have concluded that culture is indeed an important variable in determining the appropriateness of the chosen training methods (Dills & Romiszowski, 1997; Francis, 1995; Osman-Gani, Tan, & Toh, 1998). Hansen and Brooks (1994) suggested that HRD research supports the proposition that training delivery options are constrained by national and cultural frames and that these cultures often account for differences in learning styles.

What is known about the relationship between training and culture comes from extrapolating information from specific cultures. Jones (1989) concluded that in highly formal and collectivist societies, such as in Malawi, participants have a tendency to resist individual training and evaluation approaches. Furthermore, Doktor (1982) compared cognitive styles of westerners and Asians and showed that Americans tend to use logical, sequential reasoning and are more likely to use abstract concepts and universal laws, whereas Japanese are more likely to focus on particular instances and sensitivity to the context. Thus, training methods approaches used for cross-cultural training can be selected to address these cultural features, such as being either more didactic or experiential. Didactic training, also known as trainer centered or content oriented, includes such methods as lectures, reading assignments, and demonstrations. Experiential training, characterized as being trainee focused and process oriented, is exemplified by such methods as simulations, role-plays, and other types of structured exercises. It is worth noting that planned on-the-job training can be considered a combination of both didactic (e.g., demonstrations) and experiential (e.g., simulations) training.

The cross-cultural training literature has shown some concern for using different training methods; however, the literature lacks specific guidelines supported by research to guide the matching of training approaches and culture. Landis and Brislin (1983) proposed a typology of methods based on a broad review of cross-cultural training literature. According to them, the fundamental cross-cultural methodologies are

1. information or fact-oriented training,
2. attribution training,

3. cultural awareness training,
4. cognitive-behavior modification,
5. experiential learning, and
6. interaction training.

Tung (1981) presented a contingency approach for choosing an appropriate cross-cultural training method. She argued for two determining factors: (a) the degree of interaction required in the host culture and (b) the similarity between the individual's native culture and the new culture. Black and Mendenhall (1989) proposed a three-dimensional model, which integrated Tung's and Mendenhall and Oddou's (1986) frameworks. They proposed that an organization could choose a cross-cultural training method using three situational factors of the expatriate assignment: (a) culture novelty, (b) degree of interaction with host nationals, and (c) job novelty. They also suggested a grouping of specific methods by low, medium, and high levels of rigor and discussed the duration of training relative to the interaction and culture similarity. However, the framework does not explain how the level of rigor of a specific cross-cultural training method or group of methods was determined (Osman-Gani & Jacobs, 1996).

Trainer-Trainee Relationships

When individuals from one culture train individuals from another culture, cross-cultural interaction and communication occur. Training requires communication, and planned training on the job is a special case of one-on-one communication. When an individual (a trainer) from one culture sends a message to an individual (a trainee) from another culture, they engage in cross-cultural communication, and cultural noise may distort the communication process. If the trainee does not receive the message as was intended by the trainer, then we would have a case of cross-cultural miscommunication (Adler, 1991). The cross-cultural miscommunication results from communication barriers. These are obstacles to effective communication by which meaning and messages are distorted between the sender and the receiver due to some intervening variables such as culture.

Bell (1992) identified the following barriers to communication: (a) *physical*, time, environment, medium, and so on; (b) *cultural*, ethnic, social, religious, and so on; (c) *perceptual*, views, mind-set, and so on; (d) *motivational*, mental inertia; (e) *experiential*, life happenings; (f) *emotional*, personal feelings; (g) *linguistic*, language, comprehension, and so on; (h) *nonverbal*, body language, gestures, and so on; (i) *competition*, attention, distraction, and so on. Most of the above barriers are affected by the cultural differences that exist between the communicators, such as the on-the-job trainers and the trainees.

Harris and Moran (1992) noted that even decreasing differences between people would require of them intercultural knowledge and skills in future

organizations. Five attitudinal imperatives will be needed in an age of global economic interdependence: (a) possessing a cosmopolitan mind with a sensitive, innovative, and participative ability to operate comfortably in a global or pluralistic environment; (b) acknowledging the importance of intercultural communication by recognizing cultural differences on personal needs, values, expectations, and sense of self; (c) becoming culturally sensitive by integrating the understanding of culture in general with insights gained from service in multicultural organizations or from activities that bring us into contact with ethnically and culturally different persons; (d) adjusting to the norms of a new culture, whether that be a domestic culture or another national culture; (e) building on similarities and common concerns while integrating and understanding differences to further our personal goals and to aid us in our dealings with other cultures that are, as yet, unfamiliar to us. The attitude requisite for a global economy forces us to prepare for dealing with a wide variety of persons from a broad range of cultural backgrounds. This is increasingly becoming a common phenomenon in organizations requiring frequent intercultural communications among the members (such as the trainers and the trainees) (Chen & Starosta, 1998).

In a cross-cultural context, it is the responsibility of the trainers to become aware of their own cultural attributes and to become educated about the cultural characteristics of the trainees. Evidently, trainers and trainees must have a common language to facilitate verbal communication and make instruction possible. However, verbal communication is only a small fraction of the cross-cultural communication activity. Most messages sent and received between two individuals are silent, that is, nonverbal. Although they are less obvious, nonverbal messages are more potent in determining the effectiveness of communication. Aspects of nonverbal communication are numerous. They include eye contact; touch; physical proximity; posture; gestures; and voice intonation, rhythm, and volume. In addition, successful consideration of cultural perspectives on the concept of time, time orientation, and relationship to nature, among others, affects the effectiveness of cross-cultural communication. These are referred to as kinesics, oculesics, haptics, proxemics, chronemics, and chromatics, respectively (Francesco & Gold, 1998). All of these issues of nonverbal communication will have significant implications on the cross-cultural relationships between the trainer and the trainee while conducting planned training on the job.

Implications for HRD Research and Practice

With constant changes in the global marketplace, significant impacts are now being observed in the changing nature of workforce composition, interaction patterns, and in the new management strategies. More than 2 million

North Americans now work for foreign employers, and the number of foreign companies who have built their plants in the United States is increasing. On the other hand, the ethnic composition of the U.S. domestic workforce in the start of the new millennium is five sixths non-White, women, and immigrants (Chaney & Martin, 2000).

Besides the United States, this seems to be the pattern in many other countries, where forces of free-market economy, trade liberalization, and resource (human and nonhuman) mobilization are gaining increasing strength. This signifies the importance of intercultural communications between and among the members of different cultures, within the organizational settings. With regard to planned training on the job, the significance of such cross-cultural communications between the trainer and the trainee with diverse cultural backgrounds should be underscored, and today's HRD scholars should consider this as an area of higher priority in their research agenda.

As stated, little research has so far been done in the area of cross-cultural HRD, particularly with respect to the differential impacts of training approaches. Future research should focus on the issues of cross-cultural communications between the trainer and the trainee(s), so that the barriers to such communications could be identified and measures could be taken to overcome those barriers. These communication barriers could both be due to verbal and nonverbal modes, all of which will have significant implications for the success of planned on-the-job training.

Efforts should also be taken in identifying the effective learning styles of the trainees from various cultural backgrounds. The individual learning styles are influenced by individual as well as sociocultural factors. This information would help the trainers and training professionals to choose appropriate training approaches in conducting on-the-job training. The awareness of the differences in the learning styles between the trainers and the trainees from various cultural backgrounds would be helpful in planning and designing the required structured on-the-job training programs (Jacobs & Osman-Gani, 1999).

Knowledge gathered from future research on cross-cultural on-the-job training would be useful for making relevant decisions in the area of identifying training modes, contents, appropriate duration of training, use of effective training delivery tools, use and choice of interpreters (if needed), and appropriate training evaluation strategies. For these, scholars from the fields of HRD, management, psychology, and other relevant areas should join hands in planning and designing their research agenda and in developing effective tools of measurement so that the research outputs have wider and comprehensive implications for practice.

In planning and designing the planned on-the-job training programs where domestic cultural diversity or international diversity issues are

involved, organizations should emphasize close coordinations between the content experts and the cross-cultural HRD experts. This may achieve the synergistic benefits of the effectiveness and efficiency of the OJT programs for improving performance at the workplace.

Finally, for improvements in broad theoretical perspectives, international HRD research should become more rigorous in the future, and appropriate conditions should be created for a paradigm shift. Traditionally, an emphasis on universal elements (i.e., the *etic* nature of the phenomenon) rather than on the culture-specific (i.e., the *emic* nature of the phenomenon) was found in most management/HRD theoretical developments (see Triandis, 1994, for a detailed review). This mind-set should be changed in conducting research for conceptual-theoretic developments, with the changes in today's globalized work environment. Ideally, both the *etic* and *emic* aspects of the cross-cultural constructs should be measured in all cultures, because *etics* focus on cross-cultural scientists' points of view, whereas *emics* focus on the natives' points of view (Bhawuk & Triandis, 1996). A strong shift toward incorporating contextual factors within a process-theoretic framework is required for improving the present state of theoretical robustness.

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Structured on-the-Job Training in Developing Nations

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The problem and the solution. Structured on-the-job train-
ing (structured OJT), adapted to a developing nation environ-
ment, can significantly improve, at low cost, the performance
capability of workers. The chapter presents the rationale for
structured OJT in this setting; describes an adapted model to fit
the context of a specific developing nation, Cameroun; and pres-
ents an application of structured OJT complete with results.

Globalization and the resulting competition in products and services have
created enormous pressures on businesses and governments to increase pro-
ductivity. Developed nations have risen to the challenge, streamlining and
reengineering processes, investing in technology, and identifying and
developing valuable human capital. This has resulted in vastly increased
productivity, decreased unemployment, and stabilized or even reduced con-
sumer prices. The same is not true for the developing world where the con-
text of poverty does not permit similar investment for competing interna-
tionally. There, one encounters flat or even declining productivity.
Discouraging as this sounds, within developing nations, a rich source of
capital exists—human capability. The problem is how to organize and
exploit this potential source of wealth.

Harnessing and building the value of human capital in developing nations
is what this chapter is about. The thesis put forth is that structured on-the-job
training (OJT), adapted to a developing nation environment, can signifi-
cantly improve, at low cost, the performance capability of workers. The
chapter presents the rationale for structured OJT in this setting; describes an
adapted model to fit the context of a specific developing nation, Cameroun;
and presents an application of structured OJT complete with results.

Numerous authors have reported on the status of training and education
for the workplace in African nations (e.g., Bas, 1988; Boisvert & Kamdem,
1991; Célestin, 1992; Courlet & Tiberghien, 1986; Fluitman, 1987; Fluitman &
Oudin, 1991; Maldonado & Le Bortef, 1985; Nihan, Demol, & Abodo-Tabi,
1982). In general, all recognize the inadequacy of current training practices

and outcomes. Three factors contribute to this situation. First, many larger businesses are merely satellites of foreign companies and rarely adapt training practices to local conditions and do not factor in social, communication, cultural, and educational variables that strongly influence training outcomes. Second, many African nations have adopted academic formalisms from their colonial heritage such as emphasizing memorization, passing of exams, and receiving certificates over the acquisition of useful competencies. Finally, smaller or local enterprises tend to employ traditional apprenticeship methods in which the structure of the relationship between master and apprentice is loose, arbitrary, and highly informal.

The purpose of this chapter is to examine the opportunity and appropriateness for structured OJT in developing nations and to describe a structured OJT trial in one African nation, Cameroun.

On-the-Job Training in Developing Nations

In general, most investigators favor the use of OJT in developing nations (e.g. Bureau international du travail, 1988, 1991; Célestin, 1992; International Monetary Fund, 1998a). However, because most of the OJT is unstructured, the effectiveness and efficiency of the training vary considerably. Ngoa-Nguele (1999) summarized the shortcomings of OJT as documented by investigators who have studied training practices in the African context. In general, he found that training needs are rarely systematically assessed, and as a consequence, the training objectives and practices are loosely structured, if at all. In addition, there are few experienced trainers and incentives are seldom given to trainers or trainees as a means to achieve expectations. A critical issue in African nations is that trainee selection is frequently biased based on the trainee's age, sex, or ethnic origins, rather than on a fundamental concern for addressing an established performance problem. Finally, in rural settings, the OJT largely follows an oral tradition, with limited systematization and few training materials. Competency evaluation resides solely with the master.

In this context, structured OJT offers a potentially attractive contrast to unstructured OJT. Basically, structured OJT differs from unstructured OJT in that a systematic planning process is used to design and carry out the training (Jacobs, 1990, 1999; Jacobs & Jones, 1995; Rothwell & Kazanas, 1990a, 1990b, 1994). The critical characteristics of structured OJT are that the learning takes place at the work site. The novice worker observes a task and repeats it immediately. The experienced worker serves as the trainer and provides specific feedback on task execution. There are detailed training plans with tasks and subtasks sequenced according to how the job is done.

These support materials can be used for reference throughout the training. A trained instructor—one who is recognized as a master performer—guides the trainee. The entire effort is integrated, orderly, yet includes opportunities for trial and error with corrective feedback loops. It is a complete, unified system.

Many authors have detailed the benefits of structured OJT (Jacobs, 1999; Jacobs, Jones, & Neil, 1992; Jacobs & McGiffin, 1987; Jacobs & Osman-Gani, 1998; Rothwell & Kazanas, 1990b; Scribner & Sachs, 1990). In summary, these benefits include reduced overall learning time, reduced overall training costs, greater flexibility to the needs of the individual worker, positive relationship building between novices and experienced workers/superiors, higher transfer rates than those cited for classroom and other formal training, and perhaps most important, heightened new-worker confidence.

However, in reality, the question should be asked whether structured OJT fits the needs and conditions of developing nations seeking to build human competence and increase organizational productivity. Adapting structured OJT to a developing nation demands an analysis of the technical capabilities of potential structured OJT trainers and adopting teaching strategies that fit their backgrounds. In addition, there must be an awareness of the cultural values and practices that enhance the structured OJT experience, such as age differences between the instructor and the trainee, the gender of each, their respective social origins, and education levels. Finally, there is always the parochial issue of ensuring linguistic and ethnic compatibility of those involved in the training.

Despite these daunting issues, one could conjecture that structured OJT is compatible with the developing-nation context, especially with that of sub-Saharan African nations. Consider that African culture includes a traditional custom of working one-on-one with masters, but still in a collectivist social environment. Second, there are low infrastructure and setup costs, allowing for greater flexibility and adaptability. Third, there is relatively high face validity for the training as it is conducted in the work setting. Finally, the relevance of the training can be seen immediately, which is often a critical issue with novice learners.

The remainder of this chapter describes an adapted structured OJT model and its application in a developing nation work setting. It explains how the model was operationalized and tested in a brewery in Cameroun, West Africa. It also presents the results of this trial. The purpose for describing this "case" is to respond to the question "Is structured OJT appropriate to the developing-nation context, and does it lead to improved human performance and increased organizational productivity?"

Implementing Structured OJT in Cameroun

Cameroun has a population of approximately 15,000,000 with many ethnic groups and 200 local languages. After a colonial period during which first Germany (until 1918) and then France (and over its western portion, Britain) maintained colonial control, Cameroun became independent in 1961. Average per capita income (IMF, 1998b) is approximately U.S.$764, placing Cameroun among the poorest nations of the world. Cameroun is typical of many developing nations: high poverty and unemployment, large foreign ownership, and low productivity. Its training practices are similar to those of most African developing nations. Consequently, imported technological models from developed nations have mostly failed because they have not accounted for these contextual realities.

According to Hofstede (1987) and Mveng (1985), Cameroun has a national culture with a strong collectivist sense, one in which individuals play out their roles in the context of family, village, and tribe. There is a sense of familial, village, and tribal hierarchy, whereby higher authorities often override an individual's decisions. There is low control over uncertainty and relatively high acceptance of "things as they are," which sometimes translates into apparent lack of enthusiasm to perform well in the workplace or lack of concern about organizational productivity. Finally, there is a strong sense of masculine dominance. All have a profound effect when they conflict with productivity requirements. As a result, there is a tendency to recreate a familiar social setting within the organization whereby families or tribes of work groups establish mutually binding obligations. Managers and supervisors may feel some form of affective dependence— protecting and caring for workers in return for obedience.

Adapting structured OJT to the culture of Cameroun demands analyzing technical capabilities of potential structured OJT trainers, adopting teaching strategies that fit their backgrounds, exploiting cultural values and practices that enhance the structured OJT experience (e.g., age differences between structured OJT instructor and learner, gender of each, social origins, education levels), and verifying linguistic/ethnic compatibility. The authors of this chapter created a prototype structured OJT model based on Jacobs and Jones (1995), Rothwell and Kazanas (1994), and information gathered from observation and analysis of Cameroun work organizations. They submitted it to the rigorous analysis of three expert judges (two university human resource development researchers; one Camerounian workplace organization expert and former human resources director). What emerged was the APPRIS (French for "learned") model (see Figure 1). To ensure adaptability to the local context, the model factored in the following: communication requirements due to many workers' low schooling, management hierarchy involvement in selection of participants, and selection and distribution of incentives to participate.
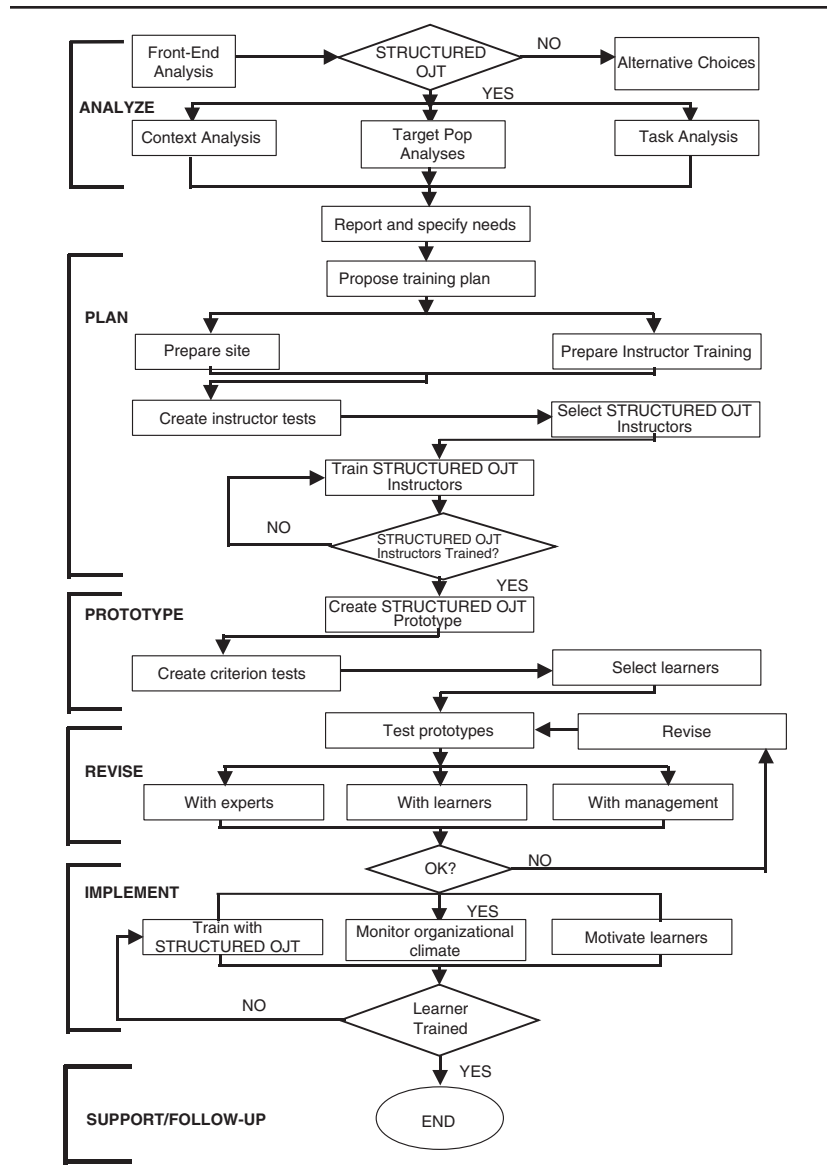
FIGURE 1:   Adapted Structured OJT (APPRIS) Model
Note: OJT = on-the-job training.

The adapted structured OJT model was tested to answer three questions: Is the APPRIS model effective in building performance capabilities of workers compared to the usual training approach? Is the APPRIS model cost

and time efficient compared to usual practices? Do management and employees have favorable attitudes toward structured OJT compared to usual practices?

The trial was conducted in a large brewery using four instructors and 12 employees assigned to the structured OJT approach and four employees assigned to the control group, which consisted of lectures and practice opportunities carried out in the training center. Two administrative assistants managed the test instruments and helped collect the data. The trainees were given performance tests, attitude questionnaires, and participated in structured debriefing interviews. The tasks involved were transporting, stacking, storing, shipping bottled drinks, and operating various vehicles in conformance with strict safety and hygiene rules. The trainers documented the tasks and developed job aids for the training. The training followed the five steps as suggested by Jacobs and Jones (1995). All trainees received pretests prior to the training. The structured OJT group was tested after 15 days of training. The control group was tested after 30 days of training.

The results showed that all trainees possessed prerequisite skills/ knowledge prior to trial, including initial skills to handle lifting equipment. On the pretest, both groups completed the tasks equally well. The posttest results showed that of the 12 trainees in the structured OJT group, 11 completed and mastered all subtasks. In the control group, the trainees did not gain in speed from the pretest and the posttest, despite 6 weeks of training (see Table 1). In addition, during the posttest, one accident was noted due to an inappropriate maneuver of equipment, resulting in several cases of drinks lost. Table 2 compares the costs of the two training approaches. The results show that the total cost of structured OJT was 25% less than the training conducted in the training center. Table 3 displays the results of a Likert-type scale instrument used to determine trainee and trainer attitudes toward the structured OJT approach. Structured OJT trainees recommended that the company adopt this training approach and suggested ways to improve its implementation. Managers responsible for training expressed interest to be more involved in future trials (especially for planning, budgeting, and participant selection).

General Conclusions From the Trial

The trial was of limited duration and numbers. Without official patronage, it is difficult to enroll organizations in developing nations to participate in such "experiments." Within trial limits, structured OJT demonstrated its effectiveness, efficiency, lower cost, and high satisfaction ratings.

Projected organizational benefits (return on investment) such as a decreased learning curve, improved worker efficiency, and decreased incident rates (e.g., damages, time/cost of cleanup, lost productivity) can be dra-

TABLE 1:   Pretest and Posttest Trial Times for All Tasks

Group	Pretest	Postest
Structured on-the-job training group ($n = 12$)[a]	Mean: 27minutes, 30 seconds Range: 25-30 minutes	Mean: 15 minutes, 40 seconds Range: 14-17 minutes
Control group ($n = 4$)	Mean: 27minutes, 30 seconds Range: 25-30 minutes	Mean: 27 minutes, 15 seconds Range: 25-30 minutes

a. Eleven completed all training.

TABLE 2:   Training Costs in Cameroun Francs

Item	Structured OJT Cost	Training Center Cost
Trainer salary	0[a]	680,000
Bonus for training	400,000[a]	0
Trainee salaries	600,000[b]	720,000
Development of training	100,000	60,000
Total cost	1,100,000	1,460,000

Note: OJT = on-the job training. Total cost of structured OJT was 25% less than training center version (U.S.$91 versus U.S.$123).
a. Structured OJT trainers continued their regular jobs but received training bonuses. Training center trainers were fully dedicated to training.
b. Structured OJT trainees trained 15 days; the control group trained 30 days. Structured OJT trainees worked and thus had higher salaries; 600,000 and 720,000 are based on 12 trainees each to keep costs comparable.

TABLE 3:   Structured OJT Satisfaction Scores[a]

Dimension	Instructor Scores	Trainee Scores
Structured OJT procedure	100	100
Structured OJT structure	100	95
Structured OJT use of time	95	98
Structured OJT relevance of content, method	81	81
Overall satisfaction	94[b]	89

Note: OJT = on-the-job training.
a. Maximum score = 100.
b. Interviewed instructors expressed great satisfaction with bonuses and increased status as structured OJT instructors.

matic. Based on the 43% better performance of structured OJT participants, immediate daily benefit was calculated at 46,440cfa in savings (375cfa/ hour × 12 workers × 8 hours × 3 daily shifts). Add in decreased incidents (no structured OJT incidents; one control group incident valued at 27,000 cfa). Extrapolating over a year, a 3,000,000cfa investment to train 36 workers could potentially yield 33,000,000cfa (1,000% return on investment).

A final note about the trial concerns lack of improved performance (pre- test to posttest) for the control group. Observations and interviews suggest considerable time was spent in a classroom environment attending lectures. There was a lack of practice time with equipment, insufficient and obsolete equipment, and a practice space with a different configuration from the actual work site.

Summary and Conclusion

This chapter began with concern about the competitive nature of global markets and its impact on developing nations whose economies and charac- teristics do not permit the same types of training investments as richer ones. Structured OJT appears to be a "natural" solution for less-developed coun- tries. It is relatively inexpensive, does not require highly specialized exper- tise to create and implement, and has demonstrated very high return in terms of transfer of learning and productivity payoff. As the literature on struc- tured OJT is devoid of examples in developing nations, this chapter makes a contribution by describing the adaptation challenges it faces in such con- texts and presenting an adapted structured OJT model (APPRIS) and a case conducted in a brewery in Cameroun. As the trial demonstrated, the results were highly positive.

The chapter concludes that structured OJT, adapted to the developing- nation context, appears to be extremely viable for building workplace com- petencies. The limited trial demonstrated how an adapted structured OJT model improves performance results compared to traditional classroom methods—and at a lower cost. Structured OJT, adapted to the developing- nation setting augurs well for improving productivity in the workplace. Solutions such as structured OJT—low cost and high yield—offer develop- ing nations an effective means for meeting global marketplace competition.

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Learning Bays in German Manufacturing Companies

Peter Dehnbostel

The problem and the solution. Concepts such as lean production, the fractal factory, and the learning organization characterize the upheavals currently taking place in our industrial systems. In the framework of these new work approaches, the ways of learning the work are changing as well. The quest for forward-looking training approaches such as learning bays is part of this fundamentally changing world of work.

Emerging concepts such as lean production, the fractal factory, and the learning organization characterize the upheavals currently taking place in our industrial systems. In the framework of these new work approaches, the ways of learning the work are changing as well. The quest for forward-looking training approaches such as learning bays is part of this fundamentally changing world of work. This situation represents a new test for organizational training, especially for the German dual system and other further education enterprises (Greinert, 1994). What innovative developments have emerged to respond to the tremendous changes? This chapter examines one important area of innovation related to new new forms of learning in the work called *learning bays*. Learning bays have been critical for decentralizing learning by integrating learning and working, and they have been implemented by several major organizations such as DaimlerChrysler, VW, and numerous midsize industrial companies in connection with the German Federal Institute of Vocational Training and Education (BIBB).

The chapter defines what is meant by learning bays, which can be considered as examples of structured on-the-job training (Dehnbostel, 1998; Dehnbostel, Holz, & Novak, 1996). In addition, the chapter describes two examples of learning bays in companies. Finally, the chapter discusses some of the theoretical aspects related to learning bays. These aspects are supported by substantial practical experience and the results of the empirical research projects from 1996 to 1999 (Dehnbostel & Dybowski, 2000; Dybowski, Töpfer, Dehnbostel, & Kling, 1999).
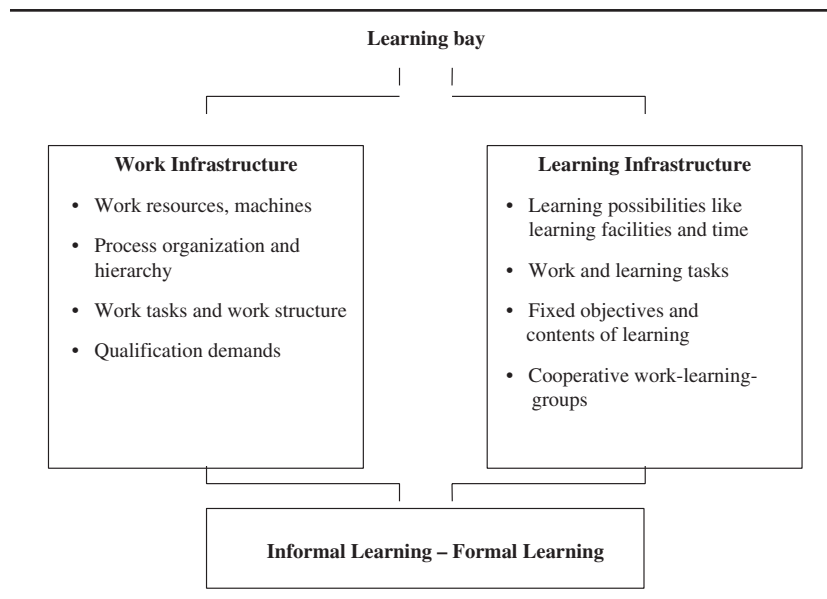
Learning Bays

Learning bays can be observed in more than than 50 midsize and large industrial companies in Germany. They were first developed in the model project called Decentralized Learning in Teamwork in two Daimler plants, one a truck and the other a car assembly plant. Learning bays are set up with a double infrastructure of a normal workplace and of a learning place. Therefore, the learning bays include all the work resources, machines, and typical work tasks of the actual work setting. Learning bays also include learning facilities such as notice boards, learning materials, and multimedia. Figure 1 illustrates the structure and the connection of informal learning and formal learning of learning bays.

During initial employee training, learning bays are used for assembly, for maintenance, and customer or after-sales service. A group of four to six apprentices spend about 6 weeks at a time in one learning bay. This occurs in the last 1½ years of their total apprenticeship assignment, which itself lasts approximately 3½ years. Before doing real work with high demands and responsibilities, there must be a time to acquire work-related knowledge and skills on a firsthand basis. The apprentices do the same work as the skilled workers in the surrounding workplaces, but they do it in a controlled environment. Each apprentice performs all the different tasks in a kind of job rotation. One of these tasks is to take the role of a team leader. A skilled worker, the learning bay trainer, accompanies the apprentices.

The work-related learning in the learning bays integrates informal learning and formal learning. The learning bay infrastructure is the basis for formal learning, whereas the work infrastructure is the basis for informal learning. The combination of formal and informal learning mostly takes place in the form of group learning. The planning, carrying out, and checking of assignments is done by the group collectively. The work and learning content is continuously discussed by the group, as are the personal attitudes of each group member. Technical, social, and special skills are learned through experience and through additional instruction. The apprentices need to coordinate their tasks by themselves, they have to learn how to conduct consultations and write protocols, and they have to learn presentation and visualization techniques.

The learning bay trainer has to design appropriate methods for this purpose. For instance, self-organized learning activities of the apprentices call for changes in mentality and patterns of behavior for the accompanying skilled workers, respectively for the trainers. The structure and the objectives of communicating and training acquire a different function than in the overall training. Communication will not take the form of instruction but in the manner of advice given in problem-solving situations. The trainer does not leave the apprentices completely to themselves but sets the framework in which they acquire the desired skills through self-managed learning.
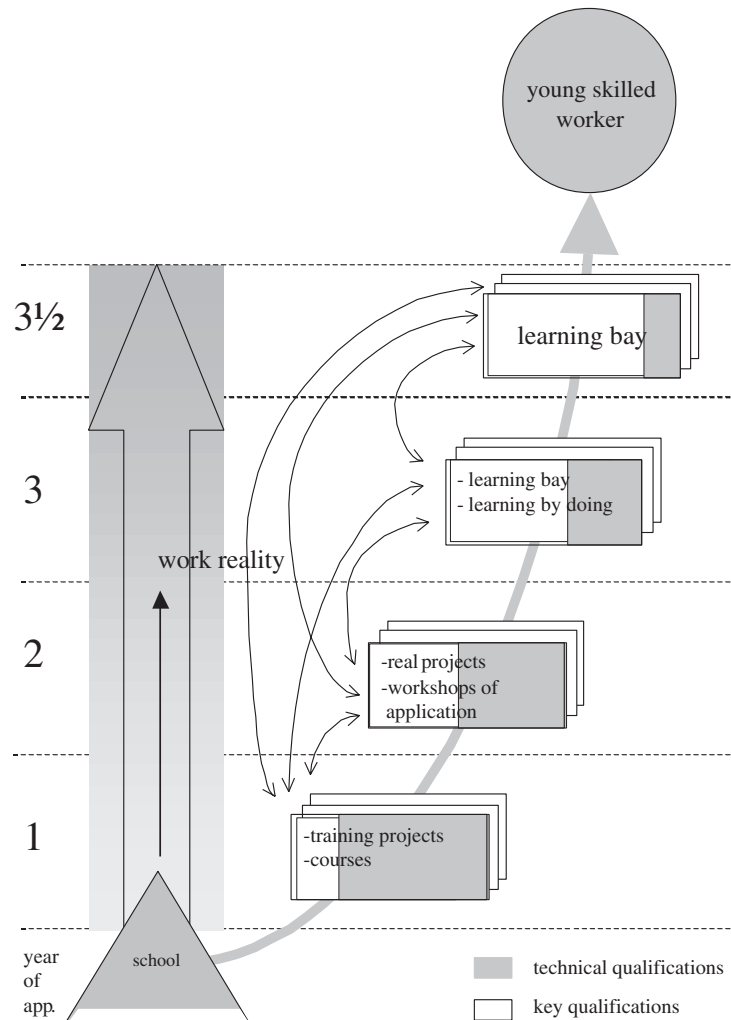
Learning bay

Work Infrastructure

- Work resources, machines
- Process organization and hierarchy
- Work tasks and work structure
- Qualification demands

Learning Infrastructure

- Learning possibilities like learning facilities and time
- Work and learning tasks
- Fixed objectives and contents of learning
- Cooperative work-learning-groups

Informal Learning – Formal Learning

FIGURE 1:   Double Infrastructure of Learning Bays

In summary, learning bays can be characterized in the following way:

- Learning bays are workplaces on the shopfloor that are designated for learning only and where trainees—both young people and adults—accomplish work tasks mostly on their own.
- Trainees work in a team environment, and the tasks are arranged in a manner similar to a semiautonomous group work.
- The learning bay trainer primarily fulfills the role of accompanying and consulting with the trainees and he or she is also a skilled worker of the respective department.
- The work tasks are holistic in nature and contain dimensions of study and learning.
- Sometimes learning bays can be used as sites to initiate innovation of new work processes, especially in organizing work arrangements.

In the German system, learning bays are generally part of four different types of training venues: the vocational school, the corporate training center, the traditional workplace for learning by doing, and the new learning bays. These venue combinations—called learning network—seek to maximize the advantages of the learning in the different environments.

Figure 2 shows the growing importance of key qualifications in the developing learning tracks for individual apprentices. The figure shows the dif-

FIGURE 2:   Learning Bay and Venue Combinations

ferent venues in the apprenticeship process, including their differentiation in the first 2 years of apprenticeship in the training center of DaimlerChrysler. It is important that the department, where the learning bay is situated, is responsible for its costs. Thus, the learning bay becomes more integrated in the work process, and the department receives back something from the investment. In this sense, individuals in the learning bay receive assignments directly from the computer-controlled order and planning system.

In further vocational training situations, the learning bays have, in principle, the same structure. One important difference is the duration as further education lasts only from 2 to 5 days as opposed to about 6 weeks. Another difference is the content used in the learning bay. At present, learning bays in further education are mostly used for adjustment purposes, which emphasizes technical skills. This also means that experiental knowledge is important for the training process and the combination of formal and informal learning. In the future, methods, social objectives, and formal learning should receive more attention.

Learning Bay Case Studies

The following two case studies describe how learning bays are being used in the plant Gaggenau of DaimlerChrysler and ZF-Getriebe GmbH plant at Saarbrucken.

DaimlerChrysler

In this organization, six to eight apprentices work and learn as a team for approximately 6 weeks to learn about assembling truck axles based on customer requirements. It is possible for there to be nearly 7,000 different truck-axle variations, and each axle is a complex and expensive mechanism. Customers select which axle combination they wish at the time of ordering the truck, and it is possible that they may change the order even during production. Axle assembly is a critical aspect of meeting the customer's requirements, even under varying conditions, and in addition, it has to be carried out under high tolerances.

The apprentices plan the conversion of the track axles, carry out the erection and fabrication works, undertake the quality assurance, and discuss proposals for the enhancement of their work. These tasks require basic technical competences as well as considerable specific competencies. Too accomplish the task, the apprentices seek to sharpen their existing competencies and acquire new competencies. All apprentices are accompanied by a learning-bay trainer. One of the apprentices in the learning bay adopts the role of the team leader. If a new apprentice joins the learning bay, he or she will be introduced into the group and the work by the team leader. The work is distributed by the principle of rotation so that the apprentice soon starts working in the first workstation by taking over particular parts of a task. He or she then passes through the following five workstations and completes the following roles:

- Technical coordination and quality assurance
- Planning and profitability investigation

- Setting up workstations and acquiring required materials and equipment
- Accounting and work documentation
- Team leader

Team meetings take place daily. The tasks of every group member changes, and new orders are discussed. Responsibility for the entire group is assumed by each group member, and the profitability study and the processes of improvement are particularly taken seriously. Questions about learning are discussed in the weekly group meetings. In these team meetings, the achieved amount of work and learning quality are discussed. The learning bay trainer is involved, although the team leader facilitates the discussion.

ZF Getriebe plant of Saarbrücken

This plant employs approximately 4,200 employees and is a leading producer of drive technology in the automobile industry. To the company also belong locations abroad, among others since 1999 a plant in Batavia, Ohio. In Saarbrücken, a wide range of products of automatic gearing is manufactured for well-known customers both at home and abroad. The organization recently implemented a learning bay for the gear wheel-forming area. Eight apprentices perform in an autonomous environment at this learning bay. They are assisted by a designated learning bay trainer. The learning bay is designed so that apprentices perform some useful work so that the costs of the learning bay are reduced. The learning sequence within the learning bay is standardized and thus can be planned as new members enter. Consequently, the arrangements made about the assignments and the care of the apprentices can be met.

In the learning bay, the apprentices change their workstations several times. In doing so, it is important that they learn to master the nature of the customer-supplier relationship at each station. By doing this, the apprentice can realize the interdependences of the work, draw conclusions, and build up coherent and systematic knowledge of the overall process. Specifically, the following shows the workstations of the learning bay:

- At the beginning, the apprentices work in the sections Customer Service or Installation (1 week)
- The first production line with forming, breaching, and inner gearing (2 weeks)
- The second production line with mill cut and helical gearing (2 weeks)
- Learning bay for measuring (1 week)

The form of learning bays encourages greater teamwork and the mutual support from each of the apprentices. Furthermore, the working and learning are endorsed by an information board to visualize all the important information on the work process and the degree of qualification required to perform the tasks in the process.

Theoretical Aspects of Learning Bays

Within the context of initial and continuing workforce training, learning bays enhance the notion of combining formal and informal learning. Learning about work refers to school-based and company-based learning processes that have as their subject the content and structures of work and accompanying work procedures. Thus, learning bays refer to a physical area in organizations that are demarcated as having specific, organization-endorsed learning goals. The following three points can be made about the relationship of learning and working in learning bays. Learning bays are (a) work integrated, (b) work connected, and (c) work oriented.

The characteristic feature of work-integrated learning is that the learning venue and the workplace are identical. The learning takes place at the workplace or within the work process. On-the-job-learning, team learning within the work process, group work, and the above-described learning bays are examples of work-integrated learning. However, from the perspective of formal and informal learning, there is an additional differentiation. On-the-job learning and group work involve informal learning that is normally not connected with formal learning. The increase of this informal learning is typical for new work forms like the group work and project work. On the other hand, the purposeful combining of formal learning is typical for new learning forms in work processes like the learning bays and similar approaches such as structured on-the-job training (Jacobs, 1999) or cognitive apprenticeships (Collins, Brown, & Newman, 1989).

In the case of work-connected learning, the place of learning and the actual workplace are distinct but are directly linked both organizationally and in terms of geographic location. Quality circles and learning workshops provide similar examples. The formal learning is more emphasized than the informal.

Finally, work-oriented learning takes place at central locations, for example, at vocational schools, training centers, and workshops. In some cases, this type of learning carries out commissioned jobs in environments that are very similar to real-life work situations. But, of course, the learning is primarily planned and organized, it is primarily a formal learning.

Another distinction has to be made between the kinds of learning and knowledge in companies. In principle, learning has to be differentiated
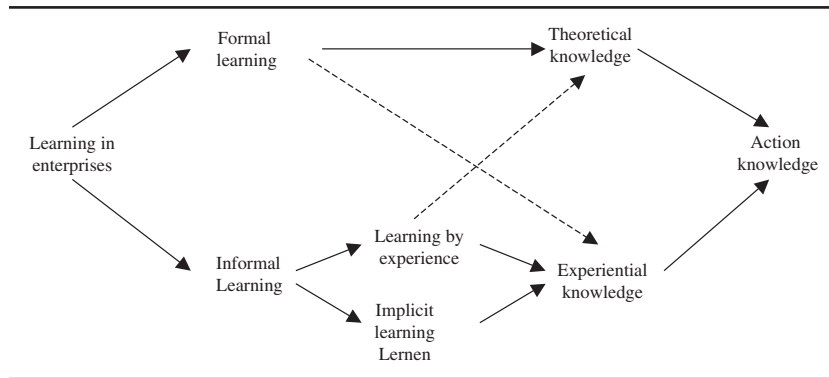
FIGURE 3:   Kinds of Learning and Knowledge in Enterprises

between informal and formal or intentional learning. Formal learning is aimed at fixed contents and objectives, whereas informal learning is uncertain and unpredictable. No doubt, informal learning can be intentional, but this intention is related to the assignments and enterprise developments and not to learning subjects. Informal learning can be distinguished in a more analytic way between experience learning and implicit learning. Whereas the last one takes place more without reflection and subconsciously, learning by experience occurs mainly through the reflective assimilation of experience. Of course, both learning kinds are overlapping in the world of work and life. Figure 3 shows the differentiation of learning in enterprises linked with the main kinds of knowledge.

Figure 3 shows that experiential knowledge results mainly of informal learning, learning by experience, and implicit learning, respectively. There is also a weak link from formal learning to experiential knowledge because in every formal learning situation, experience takes place. On the other hand, formal learning leads mainly to theoretical knowledge, in which informal learning flows in to a small extent. Both the theoretical knowledge and the experience knowledge lead to action knowledge. Today, to get a broad action knowledge and a more comprehensive action competence is the central objective of initial and further vocational training. Structured learning on the job in the combination of informal and formal learning like in the learning bays plays a decisive role to reach this goal.

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Just-in-Time Training

Michael J. Jones

The Problem and the Solution. There has emerged a need to make learning and working even more seamless than ever before. Most forms of planned on-the-job training address this need, but will current conceptualizations be sufficient to meet future organizational needs? This chapter discusses just-in-time training as a variant of planned on-the-job training, but with a greater emphasis on attaining an even greater proximity between the need and the delivery of the training. Just-in-time training is an emerging concept that derives much of its meaning from using the in regards to the scheduling and production in manufacturing settings.

The acceleration of change today has emphasized a faster working pace in most organizations. One of the most prominent aspects of this quickened work atmosphere has been the need to have immediate access to information when and where it will be used. From this emerging situation in organizations has come the concept of just-in-time (JIT) training. Initially, the JIT concept was used solely to describe the arrangement of resources in manufacturing production situations. Subsequently, human resource development (HRD) professionals have begun to use the term to describe a unique form of planned training, most of which is delivered on the job (Bechard, 1999).

This chapter reviews some of the major principles of the JIT concept as it has been originally applied in manufacturing settings, presents how the JIT concept can be applied to planned training on the job, and presents a case study example using JIT training. Finally, the chapter discusses the implications of using JIT training. It seems necessary to first understand the root meanings of JIT, before applying it to the HRD field.

Just-in-Time

The manufacturing concept of just-in-time (JIT) is rooted in Japanese management theory as popularized by Taiichi Ohno in the 1970s to establish what has become known as the Toyota production system. JIT was con-

ceived as a means to more efficiently use limited production resources. Billesbach (1991) stated that JIT can be defined as an organizational philosophy that uses employees to identify and resolve problems and efficiencies in the workplace that seek to eliminate all non-value-added activities. Many organizations have adopted JIT because of its perceived ability to address business demands for shorter cycle times, quicker decision points, and more rapid deployment of services and solutions.

During the 1980s, JIT came into use among many U.S. manufacturing companies, which generally produced substantial gains in productivity and quality. JIT is generally recognized as one of the first major quality approaches introduced in the post–World War II era. The major principles from JIT include the following:

1. Each process is a supplier to another process, and each process is a customer to another process.
2. Use a pull production approach, not a push approach.
3. Visible display of performance, production, and inventory state.
4. Deliver to factories only what is needed, when it is needed, exactly where it is needed.
5. Shipments of raw materials are unloaded directly onto the production lines.
6. U-shaped production design staffed by multiskilled workers.
7. Ship orders immediately without warehousing.
8. The kanban card is the sole inventory tracker, invoice, and reorder form between companies.
9. Creative use of tools and technology to help eliminate worker motion, strain, and error.

Many managers had difficulty understanding beforehand the dramatic changes that JIT brings to organizations. Clearly, JIT is more than just implementing quality circles to discuss issues or using statistical process control to understand defect rates. JIT infers the introduction of a complete production system, along with accompanying HRD implications, such as employee development and employee involvement. Indeed, few quality approaches are as rich as JIT in bringing about improvement and innovations in organizational design. In an ultimate sense, JIT implies a system whereby in a short period of time a customer thinks up a new product, just enough raw materials are brought to the factory to make the product, and just enough of the new products are produced to meet customer demand. Even though this vision is somewhat unrealistic from a market perspective, the general principles involved in JIT nevertheless have had a powerful influence on organizational functioning.

One of the prominent aspects of JIT is the emphasis on work processes. JIT creates the view of work processes as extending back from every customer to every employee to every supplier. That is, all work processes of importance are both cross-functional and cross-organizational. The emphasis on work processes with its emphasis on a systems view of organizations has become a common perspective among many HRD researchers and practitioners (Jacobs, 1989). An implication of JIT is the role of management in the production process. JIT requires public display of the current state of

every work area, such that JIT has come to be known as a visible management approach.

Previously, most performance data would be reported directly to middle and senior managers only. In JIT, performance information stays within the work area, because it is those individuals who would have most impact in influencing changes in the information. In a sense, JIT has falsely been characterized as the use of work teams. Instead, work teams are the means by which the production information is acted upon.

Finally, JIT pioneered the realization that the coordination of human activities could be done through relatively simple means. Thus, the kanban cards—or order and production cards—came into use through JIT systems. Thus, much of the paper flow found in many organizations were replaced with a single card or in some instances the use of signal lights mounted in production areas. It has been said that one little piece of paper could conceivably control the production flow of whole factories. Perhaps it can be said that the kanban concept forms the kernel of JIT systems because, in effect, it governs the movement of raw materials to the factory, the volume of products made from the raw materials, and the volume of finished products shipped to the customer.

JIT Training

In the last few years, the concept of JIT has begun to be considered by HRD professionals. The emerging issue seems to be how to deliver HRD programs and services more strategically to their clients, based on the need to increase the speed, flexibility, and innovation of organizational activities. That is, similar to the context of using JIT principles to conduct the business of the organization, the HRD profession seems intent on eliminating wasted organizational resources, reducing training inventory, focusing more on internal and external customers, designing learning environments that directly support work performance, reducing the cost of designing and delivering the training, and reducing the overall time required to meet customer needs.

In response, the HRD profession faces a growing emphasis on new ways to manage the delivery of training (Caudron, 1996; Van Buren & Woodwell, 2000). This awareness has shifted much more emphasis to the notion of JIT training, and this emphasis has become even more intense given the availability of advanced training technologies, such as wireless communications and the World Wide Web. The new corporate reality is that managers and employees demand critical information to be available immediately when they need it, at or near their job site. Yet, until recently, the HRD profession has focused on developing learning environments in which the trainee was away from the job and the information was delivered at the convenience of the HRD function. The thinking was that for adult learners to learn, they

must be free from the distractions that occur in the work environment. Although this approach may be viable in certain learning situations, it is neither economically prudent nor as effective for a vast majority of the learning situations that are now emerging in high performing organizations.

Other forms of planned training on the job, such as structured on-the-job training (Jacobs & Jones, 1995), have shown the potential to provide training from a JIT perspective. However, there has emerged the challenge to delineate a distinct training approach from structured OJT that would exclusively seek to address organizational issues. In addition, JIT training is now evolving from merely saying that training should be available on demand to it being a more comprehensive training approach that links training and work performance requirements.

JIT training describes the collective of training approaches and media that present a defined set of information—most of the time on the job—to be used by employees immediately following the training. This definition suggests three key points about JIT training. First, similar to other planned training programs, JIT training requires the same attention to the design process (Jacobs & Jones, 1995). This point is mentioned because although JIT training itself is delivered in an expedited basis, it does not mean that the design process should be circumvented in any way. Indeed, it may be true that JIT training requires even more careful design than other types of training because of its need to be thoughtfully embedded into the work setting. Jacobs and Jones (1995) presented a six-step process for designing and delivering structured OJT programs, starting with determining the appropriateness of the training, analyzing the task, training the trainers, preparing the materials, delivering the training, and evaluating and improving the training. Such a process seems appropriate for use with JIT training as well.

Second, the definition suggests that the training will include only the information necessary to perform at a point in time and at a specific location. It is this feature of JIT training that makes clear the relationship with the broader concept of JIT. It is the notion that information is provided to the worker at the time of need, and not any sooner. JIT training is a relatively short unit of instruction with defined boundaries. JIT training assumes that in the course of doing work, the employee realizes that he or she cannot complete the work because of a lack of competence, to which a training program is provided at that exact point in time to address the need. It is conceivable that other training approaches or even a job performance guide (Gery, 1991) might also be used to address the issues of timing and location. However, JIT training is designed specifically for use when job performance halts because of a lack of competence to proceed. Such emphasis is a major part of the uniqueness of JIT training. Specific performance issues can be addressed strategically, without unnecessary additional information.

Finally, the definition suggests that JIT training can combine differing training approaches and training media. For instance, in terms of training approaches, JIT training might use a self-paced or a trainer-driven approach, similar to that of structured OJT. In terms of training media, JIT training might use printed text materials, visual media, or electronic devices to deliver the training. It is perhaps the promise of using electronic devices, such as wireless communications or the Internet, that has given JIT training its most interesting possibilities (Clark, 1998). These allow the potential to deliver training, with access to large sets of information, in situations that would have been impossible otherwise.

JIT Training Case Study

A multinational organization employs more than 1,000 field engineers who install, maintain, and service environmental control systems on-site in client organizations. Most field engineers are experienced in servicing electronic equipment in general as many have received extensive training in the military or in other organizations. In addition, the organization provides extensive technical training to these individuals upon being hired and continuous update classroom seminars. However, certain conditions have changed in the past few years that have warranted questioning the adequacy of these training approaches alone. First, to meet changing customers' requirements, the organization has introduced several new products and sought ways to customize existing products. Thus, it is possible that even the most experienced field engineers might not have encountered all possible maintenance and repair issues.

A JIT training system was designed that made use of the technological capabilities of the work setting. That is, included as part of the installed system, the organization also has installed a dedicated high-speed connection so that field engineers can access an extensive database of troubleshooting and procedural information. For example, if experienced field engineers are alone on the job and are not certain of the action to take in a situation, they can access the JIT training database using a handheld computer. The database is organized by product name, customer history, and a general search capability. Thus, the information can guide the field engineer on how to complete the task. If the field engineer is relatively new on the job and is accompanied by a trainer, then they can access the information on demand, and the training can occur during the actual work performance.

Of note, the JIT training in this case study emphasizes three key points: (a) The field engineer has immediate access to immense amounts of updated information; (b) the field engineer uses that information in the context of providing service to a customer's equipment; and (c) the field engineer can proceed through the training in a self-paced mode, through the guidance of

on-site training, or perhaps even in the future consider the possibility of an off-site trainer.

Implications of JIT Training

The emerging workplace has done much to change how work gets done and by extension how people learn how to do their work. In one sense, HRD professionals have always been concerned with these issues, but the emerging workplace seems to place even more pressure on these issues. More and more, the compression of business events requires that HRD programs follow along in that same manner. At least five implications seem important for discussion related to JIT training.

Respond to Key Business Drivers

Most HRD professionals come to understand the factors that influence success in organizations. Yet, an implication of JIT training is the increased need to have the tools to offer an HRD response to those key business drivers. JIT training comes from the larger organizational needs of increased competitiveness, lower product and service delivery costs, and higher levels of customer satisfaction. Thus, JIT training should be viewed as a means to support those organizational needs.

Understand the Conditions of Work

A second implication of JIT training is the need to fully understand the conditions of work. In this sense, traditional work analysis techniques may not provide sufficient information for the design process. Work analysis focuses more on the behavior of the workers, and not necessarily the interaction of the worker with objects in the environment. This extended analysis requires additional information, such as (a) knowledge of the probable points of error in performing new tasks based on differences with known tasks; (b) knowledge of the potential capabilities of the work environment to receive and deliver information electronically; and (c) knowledge of the constraints, such as noise, presence of others, or other hindrances, under which the work is performed.

Calculate Financial Fundamentals

Although JIT training can be delivered in a relatively cost-effective way, such as through printed text manuals, the promise of JIT training comes more from its potential to allow access to stored information, often through

electronic means. However, just because the JIT training could provide such access, it does not mean that it makes sense to do so from a financial perspective (Burkett & Phillips, 2000). Jacobs, Jones, and Neil (1992) compared the financial benefits of structured OJT and unstructured OJT and showed that structured OJT yields higher benefits across three different task situations. However, the cost of structured OJT in these instances was relatively low because the delivery relied on the use of on-site trainers to deliver the training. For whatever appeal that technology may bring to a training situation, there is the unavoidable cost involved as well. How to resolve the potential cost issues related to JIT training relative to the performance value of the task and the resulting benefits will need to be closely scrutinized in the future.

Embrace the potential of electronic delivery systems. As stated, the potential of JIT training may well depend on the wise use of electronic technology to deliver the training. Thus, it seems critical that HRD professionals become more familiar with—and perhaps even more *comfortable* with— these devices (Marquardt & Kearsley, 1999). This is not to say that electronic delivery systems will necessarily be appropriate for all JIT training situations. Rather, this is to say that when deemed appropriate, HRD professionals should be ready to use technology within the constraints of financial and other considerations.

Maintain the Goal of JIT Training

Whenever new training approaches come forward, the natural tendency is to focus more on the approach, all the while neglecting a focus on the issues that the approach is meant to address. Similarly, JIT training may be subject to the same concern, especially when electronic technology becomes a part of its use. In the end, JIT training should be placed in its context of being a solution to a documented human performance problem, and the training should makes sense from an economic, psychological, and systems perspective. Thus, whenever JIT training is used, it should be used keeping in mind its goal, that is, to improve organizational performance.

Conclusion

Given the likely trends in HRD practice, the future use of JIT training appears bright. However, the topic has attracted little if any research interest, which is unfortunate. Only through research will the potential contributions of JIT training be fully understood. JIT training combines the most critical aspects of structured OJT and places greater emphasis on having relevant training made available to employees at the immediate point of performance need.

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Planned on-the-Job Managerial Training

Shirine L. Mafi

The problem and the solution. Despite sizable investments in managerial training, the effectiveness of this type of training has often come into question. That is, do employees actually learn information useful for meeting organizational goals? Recent efforts have sought to improve the relevance of managerial training, such as connecting managerial training with business goals in a timely manner. However, most managerial training continues to be conducted in classrooms, detached from the organization and the trainee's goals. This chapter proposes that managerial training conducted on the job, used in combination with classroom training, and aligned with business goals could improve the overall effectiveness of managerial training. Until recently, planned training on the job has mostly focused on technical training rather than managerial training.

To remain competitive, organizations now depend on managers to function amid constant change, dealing with increasingly complex issues. More and more, managers at all levels need to synthesize information coming from diverse sources and quickly orient themselves to new situations. These new realities suggest that new approaches to management training be considered—approaches that rely less on presenting general management information in a classroom setting and more on focused job-related information that, in fact, might have an actual impact on business performance. Carnevale (1990) suggested that the information-based economy requires a workforce that has a much broader and deeper range of knowledge than its previous generation. Consequently, the division of learning and working can no longer be considered appropriate. Indeed, Carnevale (1992) presented the concept of helping employees become "performance-ready," so they may keep pace with ongoing changes in their jobs.

This chapter proposes that managerial training conducted on the job, used in combination with classroom training, and aligned with business goals could help improve the overall effectiveness of managerial training. Specifically, this chapter reviews managerial training, discusses how best to

design managerial training, and discusses issues in delivering managerial training on the job instead of in a classroom setting.

In the process of developing human resources in organizations, managerial training has progressively moved from one-to-one situations to classroom-based off-the-job training. By doing so, perhaps the most important element of learning has been neglected in the process, which is actual work experience. Learning from experience can be messy, difficult, and often lengthy. Often, unlike formal classroom teaching, there is no structure and few guidelines. Structured on-the-job-training, which has traditionally been used more for imparting technical skills, has the potential to address current inadequacies in managerial training.

Managerial Training

Fulmer and Vicere (1995) conducted a survey asking executives, consultants, and university leaders about new corporate educational initiatives. They found that companies were relying less on classroom time and more on facilitated, small-group, action learning applications. These companies seem to have become aware that general management principles are best illustrated by weaving real-life corporate strategies and cases into their learning while on the job (Raelin, 2000). Otherwise, the training often ignores the nuances of individual needs, motivation, and abilities as well as the differences in the organizational contexts. The point here is that effective managerial training often requires a combination of training approaches conducted both on and off the job.

The roots of contemporary managerial training can be traced back to the Training Within Industry project during World War II, whereby job relations training (JRT) followed the widespread implementation of the job instruction training (JIT) (Dooley, 1945). In that instance, the focus of JRT was primarily on providing supervisors and managers the ability to work more effectively with the war production workforce of the time—composed mainly of individuals who had little manufacturing experience such as women and men who were unsuited for the draft.

Of note, the emphasis of JRT programs and succeeding managerial training efforts focused on a certain strata of nonproduction employees. This assumed that managerial training was reserved only to those individuals who supervised others as their primary role. However, the emerging sense today is that given the increasing spread of job expectations, managerial training has become appropriate for employees regardless of their job level. Consider that as frontline employees have become more responsible for planning and improving their own work activities, there has been a greater need for managerial training for these individuals.

For instance, as continuous improvement activities have taken hold in organizations, employees are expected to conduct team meetings with peer employees. The skills required to conduct meetings—such as establish agendas, facilitate discussions, encourage collaborative decisions—are acquired through managerial training.

Surveys have predicted that U.S. corporations will invest more than $300 billion to upgrade their employees' skills (Hattiangadi, 2000). Such investments in training logically constitute a range of types of training, which can be divided into three broad categories: (a) awareness, (b) technical, and (c) managerial training (Jacobs & Jones, 1995). In general, awareness training programs emphasize the acquisition of concepts and principles that are related to improving job and organizational performance, such as most instances of diversity training, profit-sharing information, and legal issues related to employee relations. Basically, awareness training provides information from which individuals might take action later on. Technical training programs emphasize the acquisition of knowledge and skills to allow individuals to manipulate tools, resources, and information to accomplish specific tasks, such as the ability to operate machines and use computers.

Indeed, because technical training is often most closely linked to job expectations, it often constitutes the most frequent type of training in organizations. Managerial training is unique from the other types of training in that it emphasizes the acquisition of knowledge and skills to get work done through others. Clearly, this type of training constitutes an important component of organizational competence. Consider that technical training provides individuals the ability to do many of the actual tasks of the organization. On the other hand, managerial training provides individuals the ability to plan, organize, schedule, and facilitate how that work gets done. Examples of managerial training broadly include programs for frontline employees who perform managerial types of tasks as part of their jobs, first-line supervisors, and middle to senior managers.

The performance outcomes of managerial training are usually in the form of verbal or oral skills to ensure that goals are met, projects are completed, and in general that the work gets done. Of necessity, managerial training focuses on presenting defined units of work that individuals are required to perform, rather than on general areas of underlying knowledge. Thus, similar to technical training, managerial training can have definite training objectives that have reference back to job expectations. However, unlike technical training that has used on-the-job training successfully, managerial training has not traditionally used this methodology.

Olshfski and Cutchin (1993) categorized five different types of managerial training based on the amount of integration of individual- and organizational-level goals. The taxonomy ranges from the simple indoctrination type of training to the sophisticated and intense tailored programs.

They propose that as one moves from indoctrination at one end of the continuum to intense tailored programs on the other end, there is a need to increase the trainee's contact with real problems, in real time and in real organizational settings, forcing trainees to apply the learning as quickly as possible. Burgoyne and Stuart (1977) found that managers better transferred their learning to work when they were involved in solving real as opposed to simulated management problems.

In addition, Rachham and Morgan (1977) concluded that skill retention was improved when managers were asked to perform their new managerial skills in specific contexts as opposed to learning them generically to be applied at a later time. Joyce and Showers (1988) also found that greater transfer of training occurred when the trainees were given an opportunity for local, factual feedback on their performance in actual job situations. Also, Robinson and Wick (1992) recommended a planned structure, a cycle of action and reflection embedded in training that would allow managers to reflect on what is and what is not working and why. Coaches and mentors assigned to trainees are instrumental in providing feedback during the action and reflection cycle.

Experienced peers can provide additional feedback, pressure for accountability to learn, and perhaps some emotional support because managerial development experiences can be very stressful given the time-based competition. Mafi (2000) generated a series of case studies describing exemplary managerial training practices in several large organizations. Each case study demonstrated the interconnectedness between what occurs in the classroom setting and what occurs on the job. In addition, it demonstrates how the training is geared to a very specific business goal of the organization. For instance, Goodyear Tire and Rubber Company realized that management trainees attending their global-leadership training program come from a wide range of backgrounds and contexts. Therefore, the program consists of a group component and a structured mentoring component back in their jobs.

The mentoring component requires trainees to complete an extensive new assignment on designing and implementing a global business initiative that is considered potentially critical for the organization in that part of the world. The trainee along with his or her manager does not present the proposal to top management until and unless seasoned executives acting as mentors and coaches who have helped the trainee all along have had a chance to approve the final version of the proposal.

Anheuser-Busch identifies individuals who are considered rising stars and are sent to a center to assess their strengths and weaknesses. Upon their return, they are placed into an on-the-job training situation that is designed to address their identified areas of weakness. The trainer—often from outside the trainee's department—is called upon to coach the trainee through

the established set of learning activities and monitors progress along the way toward achieving the prescribed performance standards. In this way, the trainee, the trainer, and the trainee's manager become partners in ensuring that the program is carried out as planned. The end result of the training is for the trainee to complete a challenging project that was specifically designed to address the weaknesses.

Finally, Liebert Global Services has begun to use structured on-the-job training to train their field engineers on an array of technical and managerial topics. The technical training topics logically include installation tasks, maintenance checklists, product updates, and specialized troubleshooting tasks. On the other hand, the managerial training involves helping the field engineers understand how best to interact with customers. Field engineers do most of their work at the customer's location, so there is a constant need to interact with customers—both with local technical staff and managers. The training is conducted in various on-site locations—either on-site or even in a truck—by experienced field engineers with support from the corporate technical training function. Much of the training material is delivered via a laptop computer and CD-ROM.

In a competitive market for environmental services, how to perform these customer-service tasks seems as much to determine the success as the ability to perform the technical tasks. This type of training speaks well to the mission of Liebert, which aims at helping customers achieve their objectives by providing products and services that assure the continuity and quality of power and environmental control for critical information systems and key processes.

As described in the case studies, the organizations used a combination of classroom and on-the-job training with a varying degree of structure to deliver managerial training. Worthy of note is the key elements present in all three cases: novel situations, challenging assignments, and individual responsibility to complete the learning assignment. In each case, the training included a significant portion that was completely new to the manager. This meant that when the trainee took up the assignment, it was no longer possible for him or her to use routines that he or she had worked out in previous jobs. It was necessary for him or her to move beyond his repertoire of knowledge and expertise.

The second common element among the cases was the fact that to cope with the new situation, managers had to accept major changes in their perspective from their area of expertise (specialist to generalist) to incorporate more awareness of the total context of the business. Earning this understanding was not sufficient; they also had to make decisions. With that came the responsibility part of the training. The three elements plus readiness for growth and change or "extent of developing culture" as coined by Davies

and Easterby-Smith (1984) are critical to managerial development (Wick, 1989).

Designing Managerial Training

The design of a managerial training program is often complicated by the fact that much of it occurs on an irregular basis and that its use depends on the situation at hand. Thus, the content of managerial training seldom can be viewed as an unvarying set of procedural steps such as can be found with much technical training. As suggested by Jacobs and Jones (1995), managerial training differs in its logical pattern from both technical training and awareness training. The pattern of managerial training requires trainees to first understand the underlying concepts and principles of the training, often represented as an entire model or process. Then, it seems necessary for the trainees to be able to demonstrate components of the model or process.

Finally, trainees should be able to pull together the various components into a logical whole, using various communication techniques, such as using role-plays or other practice sessions requiring interpersonal interactions. Thus, the outcomes of managerial training are often expressed by the oral or verbal behaviors of trainees.

Jacobs and Jones (1995) suggested that this general template characterizes most managerial training and provides a guide on how to design this type of training. This seems especially true when designing managerial training for use on the job because the managers serving as trainers may lack much experience in this role. Thus, it seems important to help guide the delivery of the training as much as possible. As stated, the logical structure of technical training often is derived from the task itself. Thus, trainers demonstrating a procedure can merely follow the steps one by one during the training session.

However, managerial training seldom has an apparent logical structure, which makes the imposition of a structure all the more critical. Inherent in the nature of managerial training is the whole-part/whole-design pattern (Swanson & Law, 1983). In practice, the first whole provides a sense of the big picture in which the content is embedded. It also explains the relationship between the broad context and the information to be learned. Hartley and Davies (1976) called this the first component part of the preinstructional strategies that should accompany all training. The part component presents the detailed information about the training. The final whole connects the individual parts of the training content and shows their relationships. It also promotes insights into the task that is available only as a result of learning the parts of the task.

Issues in Managerial Training on the Job

In some respects, using planned training on the job has always been a part of many managerial training programs. That is, because of its inherent logic, there has been an "on-the-job" component to many programs. However, the point here is that most instances are added on to enrich the classroom component. In fact, managerial training would benefit from an intentional inclusion of using planned on-the-job training, with specific standards and expectations of the training. Thus, one acknowledged issue in conducting managerial training on the job is determining the location in which it would be conducted. After all, doing the training in the work context is one of the major features of planned training on the job.

Logically, technical training occurs wherever the resources, equipment, or machines are located in the work setting. Managerial training may not always have such an apparent work context in the same way. For instance, to be effective, should customer service training be conducted during actual service delivery? Or would the training be just as effective if it was conducted in a classroom environment? Future research seems beneficial in this regard.

Another issue is the overreliance on deductive training strategies to deliver the training content. Earlier in this monograph, Lohman (2001 [this issue]) pointed out that planned training might be used for both deductive and inductive instructional strategies. Indeed, inductive strategies, in which trainees are asked to find the information on their own instead of receiving it from the trainer, seem most appropriate for many instances of managerial training. This seems especially true given inherent variability of managerial training content.

A final issue with managerial training on the job derives from the availability of expert trainers in many organizations. As organizations undergo change, determining whether individuals exist who can serve as trainers, coaches, and mentors becomes more and more apparent. The models for managerial competence, in fact, may not exist. The common assumption with planned training on the job is that the trainer will be an expert—at least to some extent. Whether this can possibly be true given the multiple models for management roles remains a continuing issue.

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Cascade Training and Institutionalizing Organizational Change

Ronald L. Jacobs
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The problem and the solution. Until recently, planned training on the job has been primarily used to achieve individual training objectives. How to use planned training on the job as part of the change management process to achieve broader organizational goals has recently emerged as an issue of importance. Specifically, planned training on the job has been suggested as a means to deliver cascade training. Cascade training has been defined as the process of providing the competence required to ensure the institutionalization of organizational change. Connecting planned training on the job and cascade training for the purpose of institutionalizing organizational change has implications for both human resource development (HRD) theory and practice.

The previous chapters of this monograph have focused on the nature of planned training on the job and its use to achieve training objectives for individual trainees. In this chapter, we suggest that planned training on the job, when used in combination with other training approaches, can be used to help achieve broader organizational change goals as part of the change management process. Specifically, planned training on the job can be used to help ensure that change efforts will persist beyond the initial implementation period. We call this *cascade training* because the name conjures the image of having a critical information flow from one group to another until it reaches the final destination, similar to that of a waterfall.

Although cascade training can include several different training approaches, including classroom training and computer-lab training, some form of planned training on the job is invariably a major part of its design. Indeed, the particular appeal of cascade training comes from having employees both deliver and receive the training in the actual change context.

This chapter discusses a framework for institutionalizing change and the role of training in promoting the institutionalization process. Second, the

chapter introduces cascade training and the four variations of its use. Finally, the chapter proposes four areas of research that might be followed and that integrate organizational change and planned training on the job.

Institutionalization of Organizational Change

A major insurance company recently introduced a corporate-wide performance management appraisal system to help reward the best employees, to reduce unnecessary salary costs, and to ensure greater organizational competitiveness. Using an appraisal system based on performance outcomes represented a dramatic cultural shift for the organization, because the previous appraisal system focused more on behavioral indicators and it was used inconsistently throughout the organization. The human resource development function was assigned the responsibility of informing all employees, approximately 25,000, about the system and ensuring that managers and supervisors had the competence to implement it within their areas.

The brief case study suggests two basic challenges for many organizations today. The first challenge is to determine what actions to take in response to emerging business needs. The second challenge, and perhaps the more difficult one, is to determine how to ensure that the change becomes part of the fabric of the organization in the long term. Cummings and Worley (2001) have suggested that using a change management process should address the difficulties in implementing change in organizations.

However, the reality is that despite the best efforts of those involved, many change efforts fail to persist in organizations. For instance, Goodman and Dean (1983) examined the persistence of change in selected organizations in which change programs had been successfully introduced and where positive benefits had initially been identified. They interviewed participants 4 to 5 years after the projects had been implemented and showed that only one third of the projects remained to any discernible degree, whereas the others were in decline or nonexistent. Mirvis and Berg (1977) stated that the persistence of change is distressingly low in most organization development interventions.

More recently, a research study conducted by the consulting firm A. T. Kearney (1999) reports that managers in 294 European medium-sized companies reported that only one in five change efforts were viewed as being successful. The remaining efforts either made some initial improvements but had failed to sustain them or made no improvements whatsoever. Thus, there is compelling evidence to suggest the continuing uncertainty of maintaining organizational change over time, despite the ongoing need for managers to implement change as a means to remain productive and competitive.

As shown in Figure 1, Cummings and Worley (2001) have proposed a framework for the institutionalization of organizational change, which shows how organization characteristics influence intervention characteristics and each of them in turn influences institutionalization processes, resulting in institutionalization outcomes. The outcomes show the extent to which the change has taken hold and can, presumably, be sustained over time. The framework suggests that failure can occur because of inadequate attention to any one or a combination of the organization characteristics, the intervention characteristics, or the institutionalization processes. Thus, to ensure long-term success, the institutionalization processes require as much attention as the other parts of the framework, if not more so.

Cummings and Worley (2001) have posited that institutionalization processes infer a developmental order, such that having competence related to the intervention is prerequisite to employee commitment, employee commitment is prerequisite to the allocation of rewards, and the allocation of rewards is prerequisite to the diffusion of the change beyond the immediate setting, and so on. Logically, it follows that having the ability to meet new role expectations serves to reduce uncertainty, a primary barrier for accepting change (Nadler & Gerstein, 1992).

Cascade Training

Cascade training has been defined as the process of providing the competence necessary to ensure the institutionalization of organizational change (Jacobs, Russ-Eft, & Zidan, 2001). The first reported use of cascade training was to implement job instruction training (JIT) programs as part of the Training Within Industry (TWI) effort during World War II. As reported by Dooley (1945), plant managers were trained by the TWI staff on the need for effective technical training in their organizations. In turn, these individuals were expected to train their line managers on the issue, who in turn helped their supervisors become on-the-job training (OJT) trainers. In the end, supervisors were expected to deliver the technical training through OJT to production employees. The TWI used a deliberate approach to influence how individuals at each level of their client organizations viewed training and its importance for turning out quality products to support the war-production effort.

Cascade training appeared again in the early 1980s as several organizations such as Xerox and Ford used the approach to convey general concepts about total quality management (Galagan, 1990). Cascade training offered a logical approach to disseminate this information through the ranks of employees in a relatively short period of time.

Organization Characteristics

- Congruence with the organization
- Stability of the social environment
- Unionization and presence of contractual agreements

Intervention Characteristics

- Goal specificity
- Formal mechanisms to control of critical issues
- Level of change target
- Internal support from consultants
- Sponsors/champions

Institutionalization Processes

- Competence to meet new expectations
- Commitment to the change
- Expectation and allocation of rewards
- Diffusion beyond the immediate setting
- Corrective action process

Institutionalization Outcomes

- Job behaviors
- Job performance
- Attitudes/Preferences
- Emerging consensus about norms
- Emerging consensus about values

FIGURE 1:   A Framework for Institutionalizing Change

We have identified four types of cascade training: (a) hierarchical, (b) process, (c) employee role, and (d) project. Although these types will be discussed separately, they are most often used in combination and are selected based on considering the following questions:

- What is the target level of the change? Organization? Workflow? Individual?
- What is the purpose of the change? Improvement? Innovation? Transformation?
- What are the training outcomes for each group of employees affected by the change?
- Which organizational characteristics might affect the training, such as availability of employees, organizational structure, organizational culture, location of employees, or timeliness?
- What intervention characteristics might affect the training, such as the specificity of the change goals, availability of consultants, and availability of change sponsors?

Hierarchical

This is perhaps the most common type of cascade training whereby the training follows the vertical structure of the organization, usually starting with upper management levels and moving downward through the ranks of employees. For example, the insurance company used a hierarchical approach starting from the CEO and executive committee to senior managers to managers and supervisors to frontline employees. Another approach to hierarchical cascade training can proceed from the lower employee levels of the organization upward through to the executive levels. For instance, consider the case where a production team in a manufacturing plant implements an initiative on their own that results in improved performance, which is then recognized by senior management as something that should be adopted by others throughout the organization.

The hierarchical approach to cascade training ensures that everyone organization-wide understands the change and addresses three issues related to employee competence: (a) which tasks to keep doing, (b) which tasks to stop doing, and (c) which new tasks to begin doing.

Process

This type of cascade training follows the chain of cross-functional relationships of suppliers and customers on a business process. For example, if a corrective action team at one station of a hard-disk producer improves how

an operation is done, then the stations before and after should be aware of the changes, so that they might make any required adjustments. It ensures that whenever change occurs in one part of the process, others become aware of it and acquire the areas of competence necessary to respond accordingly. Another example would be the product-to-market process, which encompasses researchers, engineers, and designers, as well as operations and marketing personnel.

Role

This type of cascade training follows peer relationships. For example, it might be advisable to have managers train other managers across the organization on how to deliver a performance appraisal interview to subordinates. Another example involves team leaders training others who are about to lead teams in another part of the organization. Such an arrangement makes use of the particular insights that only those in a particular role might have in adjusting to the new task. It ensures that individuals understand the change from a credible source and have the competence to respond accordingly.

Project

This type of cascade training follows the interconnections of groups, both internal and external to the organization, who are working in achieving a goal. One common example involves the use of the same software package by all members of a project group. This situation requires all of the project team members to obtain and learn how to use that software. In another example, the various groups involved in the rollout of a new product line need to know about changes occurring in one group, say, the restructuring of the marketing function. It ensures that the stakeholders understand the change, even though not all groups will be affected by it to the same extent.

Cascade Training and Planned Training on the Job

Given the foundational role of individual competence on successful organizational change, it follows that training be considered a key institutionalization process (Carnevale, 1991; Jacobs & Jones, 1995). Indeed, numerous authors have pointed out the importance of training to facilitate the organizational change process (e.g., Worley, Hitchin, & Ross, 1995). However, few if any of these references provide specific information on what outcomes the training should achieve or how the training should be done. We suggest that when training is part of the institutionalization process, it should achieve the following goals:

1. Address the respective competence needs of the employees affected by the change, including the use of awareness, managerial, and technical training.
2. Use an array of training approaches that are best suited to meet those needs, including both training conducted on the job and off the job.
3. Be coordinated so that the training outcomes of one group are reconciled with the training outcomes of other groups.

Arguably, planned training on the job would help achieve these goals as well as any training approach, if not more so. Unfortunately, few if any research studies have studied the institutionalization process in general and the critical role of training in specific. The convergence of the two lines of research—organizational change and planned training on the job—suggests four possible areas of future research.

First, given the proven efficiency of planned training on the job, research questions could be posed whether this efficiency also extends to its use as part of cascade training and whether this efficiency results in more rapid change. The pace of organizational change dictates that critical change information be disseminated quickly. It could be hypothesized that through cascade training, change could be implemented more quickly. The rationale is that more employees could be trained in a shorter period of time, without the delays caused when waiting for groups of employees to be scheduled to come together at one location.

Second, research questions could be posed about the perceived relevance of the change information to the trainees. It could be hypothesized that because cascade training focuses on the areas of competence for each employee level, all employees would receive the appropriate amount of information, not all the information, because some of the information would be irrelevant. The issue of how to connect employee expectations with broader organizational goals would be addressed in this way.

Third, research questions could be posed about the levels of employee commitment as a result of the cascade training. It could be hypothesized that because employees would have more relevant knowledge about the change and that issues could be immediately addressed by a credible source through cascade training, there would be greater understanding of the change and, by extension, greater employee commitment to following it. The issue of employee commitment, that is, ensuring the match between employee intentions and actual behavior, has been a continuing issue of concern in the organizational-change literature.

Finally, research questions could focus on the effectiveness and longevity of the change initiative. It could be hypothesized that with increased competence, more relevant knowledge, and greater commitment, the change initiative would become more institutionalized. Thus, studies such as the ones by A. T. Kearney (1999) would find an increased percentage of change efforts that were viewed as being successful.

Conclusion

How to ensure the long-term persistence of organizational change has become an issue of concern for many organizations. If the persistence of organizational change depends in large part on employee knowledge, then planned training on the job seems to play a key role in whatever cascade training plan that is devised for the situation. Until now, the human resource development literature has provided few if any studies connecting planned training on the job and organizational change. Given the proven efficiency and effectiveness of planned training on the job, however, such attention seems now warranted.

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